العوامل التي تؤثر على اعتماد الدفع باستخدام تطبيقات الجوال: المنظور الهندي في استخدام نموذج UTAUT

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يبحث هذا العمل في العوامل المحددة للدفع عبر تطبيقات الهاتف المحمول مِن قِبَل العملاء في الهند. لقد اقترحنا نموذجًا لفهم نية المستهلكين لتبني تطبيقات الهواتف في الهند، وتم تسمية النموذج "النظرية الموحدة لقبول واستخدام التكنولوجيا". كما أنه تم إضافة البنية الأمنية لدراسة تأثيرها على سلوك الاستخدام لتطبيقات الأجهزة المحمولة في المعاملات المالية عبر الإنترنت.

في الدراسة الاستقصائية التي شملت 405 أشخاص، وجدنا أن متوسط الأداء المتوقع والجهد والتأثير الاجتماعي وتسهيل الحالة والعادات والأمان المتوقع له تأثير إيجابي كبير على نية اعتماد تطبيقات الأجهزة المحمولة في المعاملات المالية. ستعمل ثقة المستهلك والأمان الملحوظ للمعاملة على تغيير عادات المستهلكين، وتعزيز تكيفهم مع تطبيقات الهاتف المحمول في المعاملات المالية. يحاول هذا العمل إدخال نموذج "النظرية الموحدة لقبول واستخدام التكنولوجيا" في نظام المعاملات المالية.

الكلمات المفتاحية: المعاملات المالية، تطبيقات الهاتف المتحرك، تبني التكنولوجيا، UTAUT، الهند.

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Discussion

Theoretical Contribution

This study employed the UTAUT framework for examining the influence of various factors on mobile apps payment adoption intention in India. Researchers also added an additional construct 'Perceived Security'. The results have shown that performance expectancy, effort expectancy, social influence, facilitating condition, habit, and perceived security have a significant positive impact on mobile apps adoption intention. These findings are consistent with the previous works of Venkatesh et al. (2003), Gholami, Ogun, Koh, & Lim (2010), Yang, Lu, Gupta, Cao, and Zhang (2012), Oliveira et al. (2014), Phonthanikitithaworn, Sellitto, & Fong (2015), and Bhatiasevi (2016). The findings have also supported the results of Sinha & Mukherjee (2016), Shankar & Datta (2018), which are undertaken in Indian context. However, hedonic motivation has an insignificant impact on adoption intention (Figure 2).

Managerial Implication

With the increase in the growth of smartphones, their effectiveness and positive usage in various activities of consumers, it is favorable to state that Indian consumers expect smartphones to increase their productivity, save their time, and enable them to perform their daily routine activities quickly. The heavy reliance on and usage of mobile technology support these results and behaviour of consumers. In terms of effort expectancy, the explanation could be that Indian consumers are technology-savvy and more involved in the diffusion on new technology, especially mobile technology. The less amount of effort required for learning and using mobile applications-based payment systems and performance of fewer skills to use such time-saving technology motivated customers to adopt it. Indian society is characterized as family-oriented society. This means that individuals are highly committed to families, extended families, and social relationships. In this context, the study found that Indian consumers adopt mobile apps for payments because they are highly influenced by people that are close to them. They prefer to use such services because they believe that if people who are important or familiar to them think that they should use mobile apps. They have started using mobile apps because people around them and, in their surroundings, use it.

Indians also believe that they possess the necessary resources (internet, smartphones, monetary and time) to adopt mobile apps payments, and that it is compatible with their lives. They also believe that assistance is available to them when they encounter problems in using mobile apps services. The educated peer members, promotion and support provided by bank staffs, retailers' preferences for cashless payments and digitalization efforts of Government of India motivated customers to adopt mobile applications-based banking services. Further, the outcomes of this study show the positive sign for the growth of mobile apps among Indian users, meaning that they do not believe that using mobile banking would cost them a lot of money, nor would they incur any financial burden if they adopt mobile banking. They also believe that the tools needed to use mobile apps service are inexpensive.

Indian consumers value their privacy and believe that mobile apps banking is more secure, safe and keep their personal information confidential. Due to advancement of technology and security features in such technologies, they also believe that mobile apps banking is secure in conducting daily transactions and provides them with a secure environment. Surprisingly, the findings of the study indicate that hedonic motivation (fun, enjoyment and entertainment) is not encouraging consumers to adopt mobile apps payment services. Tech-savvy Indian consumers adopt mobile apps-based payment services for performing daily works and for convenience.

The pace of adoption has increased dramatically after demonetization of currency in India. Now people have limited choice other than cashless transactions for payment. In addition, most of the Indian banks have launched their wallet and are advertising it heavily to attract young Indian consumers in this emerging market. Introduction of attractive promotional efforts such as cashback, reward points and referral points have also attracted consumers to adopt such services. As India is an emerging potential market for mobile apps payment, this study provides better understanding of consumer-centric attributes affecting mobile payment adoption intention. Increased popularity of mobile application will help in rapid growth of such services in the near future. Service providers and banks should organize campaigns to increase the awareness on the usefulness and convenience. Error-free, reliable and responsive customer services can also motivate customer to use these services regularly and safely. Mobile apps service providers including banks and financial institutions should come up with some innovative strategies to develop a belief among consumers that this new system is more useful than traditional payment system.

Conclusion & Future Research

This study employed the existing UTAUT model with one additional construct, i.e., perceived security, to identify the factors that foster the adoption of mobile apps-based payment services in India. The results indicated that performance expectancy, effort expectancy, social influence, facilitating condition, habit, and perceived security have a significant positive impact on mobile apps adoption intention. Mobile apps service providers and financial institutions should develop promotional strategies keeping these factors in mind. The awareness about mobile payments has grown rapidly over the last five years, but some customers are still reluctant to use mobile apps based financial transactions due to various concerns. To promote mobile payments, service providers need to eliminate these concerns and create an environment more conducive to customer confidence. This study provides empirical evidence as to what factors are taken into account by consumers in their decision to adopt mobile apps services. It is especially important for banks and mobile application developers to understand the behavior of the consumers when they develop applications and try to promote its usage and growth among the consumers.

There are some limitations to this study, and thus the results should be interpreted with caution. First, this study is limited to Indian mobile apps-based payment users only. Further, studies are required to know the significant factors in other cultures and contexts. Second, the small sample size of 405 respondents is another limitation of this study. Third, data collected in this study was done at a single point in time making it cross sectional. The longitudinal method of data collection might serve as a better approach of collecting data in the future. Thus, these shortcomings indicate the limited generalizability of the results and provide further avenues to researches in UTAUT and technology adoption.

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Table 3: Regression Analysis: Components of UTAUT and Intention to Use

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.588	.174		3.382	.001		
Performance Expectancy	.024	.046	.018	.518	.605	.656	1.524
Effort Expectancy	.062	.040	.064	1.540	.124	.458	2.182
Social Influence	.170	.047	.186	3.637	.000	.299	3.348
Facilitating Condition	-.003	.045	-.002	-.058	.954	.466	2.145
Hedonic Motivation	.200	.045	.232	4.480	.000	.291	3.431
Habit	.283	.037	.290	7.729	.000	.556	1.800
Perceived Security	.185	.037	.231	5.027	.000	.370	2.703
R = 0.830 R^2 = 0.689 F = 125.752 p = 0.000, Durbin-Watson = 1.990							
a. Dependent Variable: Intention to Use							

Table 4: Regression Analysis: Intention to Use and Use Behaviour

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.626	.144		4.360	.000		
Intentions to Use	.869	.034	.788	25.683	.000	1.000	1.000
R = 0.788 R^2 = 0.621 F = 659.623 p = 0.000 Durbin-Watson=1.916							
a. Dependent Variable: Uses Behaviour							

Table 4 shows the results of the regression analysis between 'Intention to Use' on 'Uses Behaviour' of consumers towards mobile apps payment system. The Durbin Watson Test was carried out to check the autocorrelation in residuals from regression analysis. The calculated value of The Durbin Watson test was found to be 1.916 which indicates a positive correlation as a rule of thumb test statistic values in the range of 1.5 to 2.5 are relatively normal. The impact of 'Intention to Use' on 'Uses Behaviour' was significant (F = 659.623, p = 0.000) and contributed 78.8% (R^2 = 0.788) to the use behaviour of consumers.

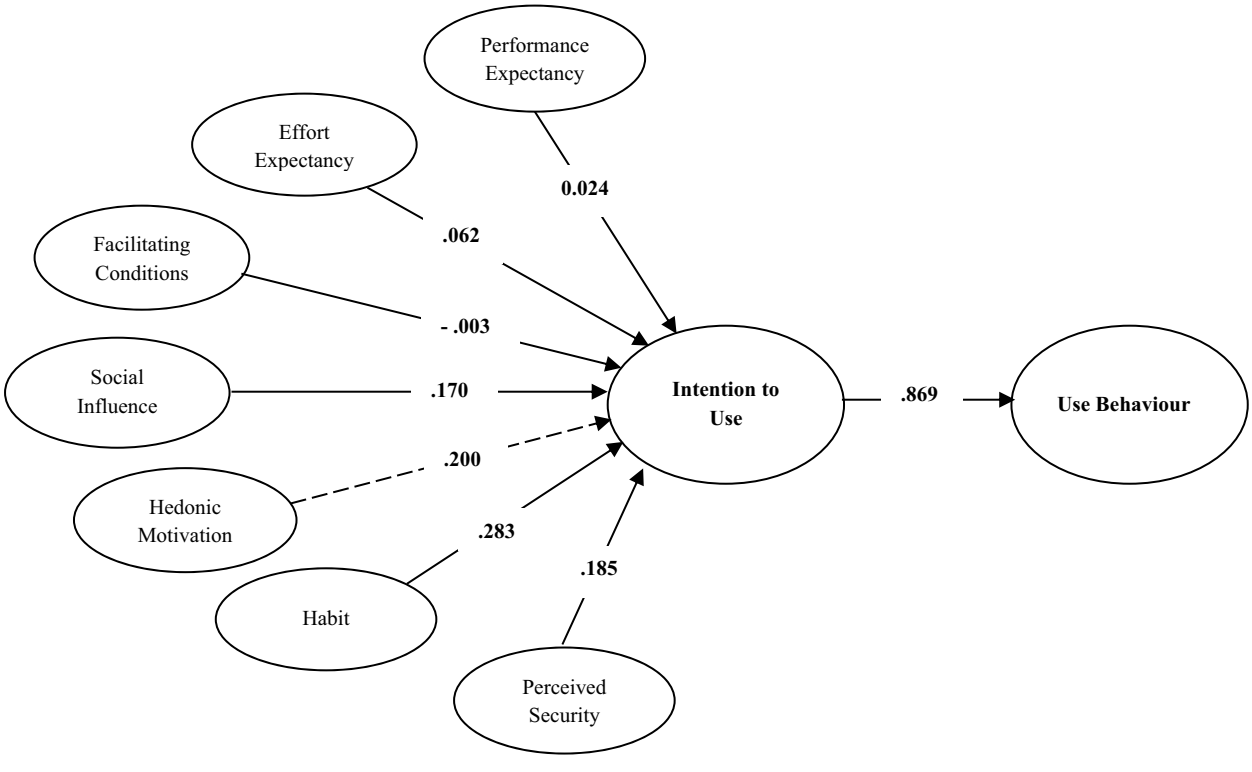

Figure 2: Hypotheses Testing (—— = Significant Relationship; ---- = Not Significant Relationship)

Table 2: Components of UTAUT Model: A Descriptive Statistics (N = 405; α = 0.956)

Variables	Mean	SD
Performance Expectancy	**4.07**	**.688**
I find mobile apps very useful for me in my online transaction.	4.02	1.074
Using mobile apps for online payment increase my productivity.	4.04	1.201
Using mobile apps increase my chances of getting several future benefits.	4.06	1.085
I find mobile apps useful in my daily life.	3.99	1.161
I believe that using mobile apps helps me in exploring various options.	3.98	1.146
I believe I can save time using mobile apps in my digital transaction.	4.36	.919
Effort Expectancy	**3.87**	**.948**
My interaction with mobile apps is clear and understandable.	3.98	.944
It is easy for me to become skillful at using the mobile apps in my transaction.	3.90	1.177
I find it easy to use mobile apps provided for banking transaction.	3.84	1.142
Learning to operate mobile apps provided for financial transaction is easy for me.	3.80	1.250
I believe that learning how to use mobile apps is easy for me.	3.83	1.368
Social Influence	**3.79**	**1.010**
People who are important to me think that I should use mobile apps for transaction.	3.72	1.349
People who influence my behavior think that I should use mobile apps.	3.64	1.238
Bank staff are helpful in using the mobile apps for online transaction.	3.41	1.350
The branch encourages mobile apps for promoting digital transaction.	3.85	1.084
Uses of the mobile apps in my financial transaction have been very helpful for me.	3.96	1.148
Facilitating Condition	**3.96**	**.842**
I have the necessary resources to use the mobile apps system.	4.17	1.116
A specific person/group is available for assistance with mobile apps uses difficulties	3.36	1.292
I believe that I have the necessary smartphone to use mobile apps.	4.23	1.799
I believe that I have the necessary knowledge to use mobile apps.	3.97	.982
I feel comfortable using mobile apps.	3.95	1.068
I believe mobile apps are compatible with other technologies I use.	4.09	.997
Hedonic Motivation	**4.03**	**1.073**
I believe that using mobile apps for digital payment transaction is fun.	4.05	1.227
I believe that using mobile apps for digital transaction is enjoyable.	4.07	1.099
I believe that using mobile apps is very entertaining.	3.98	1.179
Habit	**3.73**	**.980**
The use of mobile apps for my digital transaction has become a habit for me.	3.67	1.421
I am in favor of using mobile apps.	3.65	1.286
I feel the need to use mobile apps for my digital transaction.	3.70	1.208
Using mobile apps my smartphone has become habitual to me.	3.82	1.300
Perceived Security	**3.89**	**1.158**
When using mobile apps, I believe that my information is kept confidential.	3.76	1.398
I believe that my transaction through mobile apps is secure.	3.82	1.214
I believe that my payment transaction privacy will not be breached.	3.94	1.288
I believe that the mobile apps transaction environment is safe.	4.02	1.142
Intention to Use	**4.14**	**.925**
I intend to use the mobile apps provided for financial transaction.	4.16	1.075
I hope that I would use mobile apps in future.	4.33	.972
I plan to use the mobile apps provided in the coming days.	4.23	1.077
I will always try to use mobile apps for my transaction.	3.90	1.261
I plan to continue to use mobile apps frequently in all types of transaction.	4.14	1.860
I intend to continue using mobile apps in the future.	4.19	1.130
Uses Behaviour	**4.22**	**1.020**
I use the mobile apps when learning digital payment system.	4.28	1.026
I use the mobile apps for accessing materials for digital payment system.	4.18	1.170
Portability issue motivates me to use mobile apps for different digital payments.	4.22	1.064

Regression Analysis

Regression analysis was applied to measure the coefficients of the linear equation involving the seven factors (performance expectancy, effort expectancy, social influence, facilitating condition, hedonic motivation, habit, and perceived security) contributing to consumers intention to use mobile application-based payment. Combined factor means were used in the analysis. Table 3 shows the results of the regression analysis. Multi co-linearity test was carried out to test whether there is similarity between independent variable in the model. Based on the coefficient output as presented in Table 3, co-linearity obtained VIF value is between 1.524 to 3.431, meaning that the VIF value obtained is between 1 to 10 and hence it can be concluded that there is no multi co-linearity symptom in the model. Further, the impact of seven factors (performance expectancy, effort expectancy, social influence, facilitating condition, hedonic motivation, habit, and perceived security) on consumers' intention to use was significant ($F = 125.752$, $p = 0.000$) and contributed 68.9% ($R^2 = 0.689$) to the use intention of consumers. The Durbin Watson Test was carried out to check the autocorrelation in residuals from regression analysis. The calculated value of The Durbin Watson test was found to be 1.990 which indicates a positive correlation as a rule of thumb test statistic values in the range of 1.5 to 2.5 are relatively normal. In the Table 3, the estimated regression weights, standard errors and p-values for all the predictors (Independent Variable) are given. It is observed from the Table 3 that Habit ($\beta = 0.283$, $p = 0.00$), Perceived Security ($\beta = 0.185$, $p = 0.00$), Hedonic Motivation ($\beta = 0.200$, $p = 0.00$), Social Influence ($\beta = 0.170$, $p = 0.00$) have significant influence on customer intention to use mobile apps for day-to-day financial transactions. Performance Expectancy ($\beta = 0.024$, $p = 0.605$), Effort Expectancy ($\beta = 0.062$, $p = 0.124$) and Facilitating Condition ($\beta = -0.003$, $p = 0.954$) were not a significant predictor of framing intention to use.

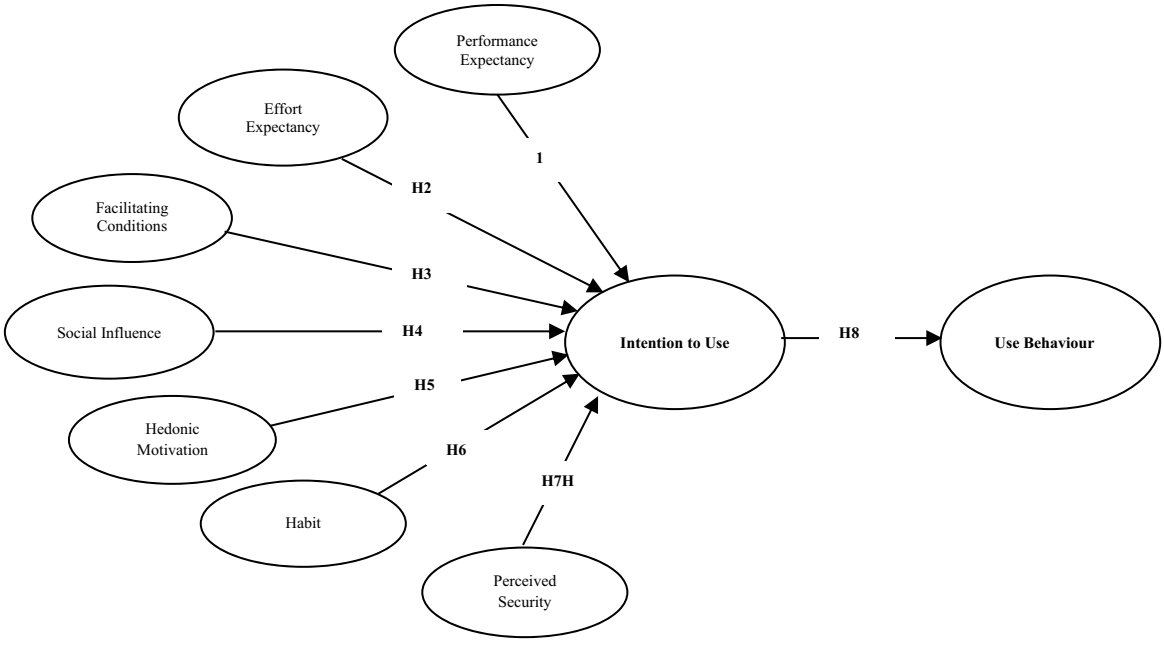

Figure 1: Conceptual framework and proposed hypotheses

Results

The sample profile as presented in Table 1 indicates that majority of the respondents fall in the age group of 31-40 years as 35.1% of respondents in the sample indicated it. Another 30.4% of respondents are in the age group of 21-30 years. 11.9% of respondents fall in the age group of 41-50 years. 16.5% of respondents are found to be in the age group of 51-60 years. Very few respondents (3%) are in the age of above 60 years. Remaining 3.2% of the respondents in the sample fall in the age group of 20 years and below. Majority of the respondents were male (54%). Survey indicates that sample consists of well-educated people as 63.7% of respondents completed higher education. This signifies that the sample is a combination of diverse demographic group of respondents

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Table 1: Demographic Characteristics of Respondents (N = 405)

Categories		Frequency	Percentage
Age	20 Years and Below	13	3.2
	21-30 Years	123	30.4
	31-40 Years	142	35.1
	41-50 Years	48	11.9
	51-60 Years	67	16.5
	Above 60 Years	12	3.0
Gender	Male	222	54.8
	Female	183	45.2
Educational Level	High School and Below	8	2.0
	Diploma	35	8.6
	Bachelor	92	22.7
	Higher Education	258	63.7
	Others	12	3.0

Descriptive Statistics

Data summarized in Table 2 reveals that Performance Expectancy has scored highest mean value (4.07). It is followed by Hedonic Motivation with mean value (4.03) and Facilitating Conditions (3.96), Perceived Security (3.89), Effort Expectancy (3.87), Social Influence (3.79), and Habit (3.73). Attribute "I believe I can save time using mobile apps in my digital transaction" has scored highest mean (4.36), followed by attribute "I hope that I would use mobile apps in future" with mean (4.33) and "I use the mobile apps when learning digital payment system" (4.28). It is observed from the table that attributes "A specific person (group) is available for assistance with mobile apps uses difficulties" has scored lowest mean (3.366) with SD = 1.29240 and attribute "Bank staff are helpful in using the mobile apps for online transaction" has scored second to lowest mean of 3.4099.

a person perceives that there are organizational and technological infrastructures needed to use the intended framework (Ghalandari, 2012). Facilitating conditions are factors in the environment that make it possible to use smartphones for financial transaction and digital payment. In accordance with previous studies (Martins et al, 2014; Oliveira et al., 2016), researchers believed that the facilitation criteria had significant influence on users' intention of accepting the internet banking transaction and its likely success. Thus, it was hypothesized as:

H3: Facilitating conditions positively affects the behavioral intention and uses behavior of consumers to adopt mobile apps for digital payment transaction

Social Influence: The degree to which someone perceives that other people consider the use of the new system to be important is social influence. This reflects behavioral effects, including user's views of friends, family and superiors (Venkatesh, Morris, Davis, & Davis, 2003). Michel & Michel (2016) found a positive correlation between social impact and mobile payment behavior. According to Martins et al. (2014), social influence will have a positive impact on the user's intention to adopt internet-banking services. Previous studies have shown significant social impact on adoption of internet banking transaction (Chaouali et al., 2016; Kesharwani and Bisht, 2012; Martins et al., 2014). These argument leads to following hypothesis:

H4: Social influence positively affects the behavioral intention and uses behaviour of consumers to adopt mobile apps for digital payment transaction.

Hedonic Motivation: It refers to an effect on the desire of a person to move towards a target or away from the threat from the receptors of enjoyment or pain. Hedonic encouragement is the degree of fun and pleasure a person has when using the technology and encouraging online purchase intention (Anderson, et al., 2014). Theoretical factors that influence consumer willingness to embrace internet banking are considered the most significant factors of hedonic motivation (Curran and Meuter, 2007; Celik, 2008; Riffai et al., 2012). Regarding inherent motivation, Hwang and Kim (2007) acknowledged that honesty and capability has significant impact on e-trust. It means the consumers who love and appreciate perceived internet banking in the same way and have built confidence to use online platforms. Akhlaq and Ahmed (2013) have reported that the impetus behind the internet banking industry plays an important role in building consumer trust. Therefore, it was proposed that:

H5: Hedonic motivation positively affects the behavioral intention and uses behavior of consumers to adopt mobile apps for digital payment transaction.

Habit: A habit is a behavioral pattern that is frequently repeated and continues to happen subconsciously. Venkatesh et al. (2012) indicated that habit refers to the degree in which a person is inclined to perform behaviors automatically in the course of learning. If a consumer has a higher degree of automatism in mobile learning, he will use mobile learning more than a consumer with a low degree of automaticity (Yang, 2013). Researchers including Harsono and Suryana (2014), Escobar-Rodriguez, Carvajal-Trujillo, and Monge-Lozano (2014), and Yeh and Tseng (2017) have indicated that habit has shown a positive influence on behaviour intention. Thus, it was postulated that:

H6: Consumer habit positively influences behavioral intention supporting consumer acceptance of mobile apps for digital payment transaction.

***Perceived Security*:** The degree to which a customer believes that a particular technology is secure to use. The introduction of new technology is always accompanied by security concerns. Rahi, Ghani and Ngah (2018) and Oliveira et al. (2016) found that perceived technology security has positive effect on user intention to adopt online transactions. The security of mobile platforms and services must also be applied to the application of mobile channels and networks. Commercial banks should also invest in an integrated security framework to facilitate the adoption of mobile banking by their customers. According to Lee (2019), the safety risk associated with the introduction of Internet banking is reversed as the Thai commercial banks are currently providing their customers with the security system by sending an SMS, confirmation proofs and requesting a password for the transaction (Viriyarungsarit, 2017). Hence, it was hypothesized that:

H7: Perceived security has a positive effect on the intention to use a mobile application-based payment.

Intention to Use

Employing the theory of Fishbein & Ajzen (1975), several studies have confirmed that behavioral intention is the best predictor of behavior. Existing researches in the context of internet banking, mobile payments, online travel purchase behavior, mobile app-based shopping, and tourist adoption of smartphone apps (Escobar-Rodríguez & Carvajal-Trujillo, 2014; Baptista and Oliveira, 2015; Bhatiasevi, 2015) have found a positive relationship between behavioral intentions and use behaviour. Thus, it is hypothesized:

H8: Intention to use has a positive relationship towards use behavior for mobile application-based payment.

Figure 1 indicates the conceptual framework of the study and the proposed hypotheses among the study constructs.

Methodology

The responses were gathered from Indian customers through an online survey method. Customers were asked to participate in the study through email requesting prospective respondents to complete the questionnaire developed on Google forms. The online survey was opened by sharing the URL to referral groups and social networking sites (Facebook) between December 2019 and January 2020. After excluding incomplete and insincerely answered questionnaires (95 questionnaires), 405 valid questionnaires were used to analyze the adoption of mobile apps payment among Indians. The review of previous studies including Venkatesh et al. (2003), Venkatesh and Davis (2003), Kim, Mirusmonov & Lee (2009), Thakur & Srivastava (2014), Slade, Williams Dwivedi, Piercy & (2015), Bhatiasevi (2016), Shankar & Datta (2018) helped in designing the survey questionnaire and questions were carefully chosen from relevant research studies. Some questionnaire items were altered for content validity and adjusted by researchers to focus on particular information.

The demographic characteristics of the respondents were covered in the first part of the questionnaire. The second section consists of the measurement variable related to various constructs of various behavioral aspects of mobile apps for financial transactions. Thirty-three items for measuring constructs of UTAUT model were developed for evaluating and assessing UTAUT model for influencing intention to use and uses behavior of consumers of mobile apps for day-to-day financial transactions. The third section consists of nine items related to measuring behavior intention and uses behavior of mobile apps. In section two and three, respondents were instructed to evaluate each item on five-point Likert scale (1 – strongly disagree to 5 – strongly agree). To ensure the content validity of the survey instrument, an initial questionnaire was vetted and validated by six experts (two professors, two assistant professors and two consumers). While editing the data, some outliers were found in the data that were identified and replaced with the nearest mean. The value of Cronbach's alpha index was found to be 0.956 for the complete scale, which recommended the acceptable level of reliability of the instrument. To achieve study objectives, all the received data was systematically arranged, tabulated and analyzed using SPSS version 22.0.

concluded that there was a positive relationship between perceived credibility and behavioral intention. Thakur & Srivastava (2014) investigated the relationship between adoption readiness, perceived risk, personal innovativeness and usage intention for mobile payments in India. They found that adoption readiness (consisted of perceived usefulness, perceived ease of use, facilitating conditions and social influence) is a critical factor for intention to use mobile payments. The research results also showed that security risk and privacy risk were found to be significant sub-dimensions of perceived risk, and monetary risk does not play a significant role in adoption of mobile payments. When conducting financial transactions, it is important to feel secure in order to minimize concerns while making online payments. To promote mobile payments, service providers need to eliminate these concerns and create an environment which is more conducive to customer confidence (Thakur & Srivastava, 2014). Kapoor, Dwivedi, & Williams (2014) investigated the role of attributes from the technology acceptance model in influencing the behavioral intention and adoption of the Interbank Mobile Payment Service (IMPS) in the Indian context. The results of linear and logistic regressions showed a positive relationship between relative advantage and intention, and the relationship between ease of use and behavioral intention. The ease of use was also found to positively impact relative advantage. Furthermore, behavioral intention also displays a significant impact on the actual use of IMPS.

Integrating constructs from the technology acceptance model (TAM), diffusions of innovation (DOI) model and trust theory models, Sinha & Mukherjee (2016) conclude that factors namely trust on technology, trust on bank, perceived ease of use, perceived usefulness, complexity are the factors that influence customer significantly to use off branch e-banking in India whereas factors like perceived risk was insignificant. Studies also establish importance of these factors in order of trust in technology, perceived ease of use, perceived usefulness, trust on bank and complexity with trust in technology being the most important factor. Shankar & Datta (2018) identified the factors affecting mobile payment (m-payment) adoption intention in India by proposing a conceptual framework based on technology acceptance model (TAM). In addition to construct of TAM, four user-centric constructs have been added to evaluate m-payment adoption intention in India. The results of structural equation modelling exhibited that perceived ease of use, perceived usefulness, trust, and self-efficacy have a significant positive impact on m-payment adoption intention. However, subjective norms and personal innovativeness have no significant impact on m-payment adoption intention.

Reddy & Rao (2019) examined the factors influencing the mobile wallet customers' satisfaction and motivations behind the continued usage of a specific service provider. The results of structural equation modeling revealed that the positive and strong influence of perceived ease of use on both satisfaction and continuance intention was found to be the key factor that motivated mobile wallet users to continue using a particular mobile wallet application.

Pillai, Sandhya & Rejikuma (2019) investigated the acceptance of mobile payments and UPI technology in Indian context using technology acceptance model (TAM) as the base theoretical framework. They found that there is a significant positive influence of simplicity and interoperability on the mobile payment adoption. However, timely contacts and security proved to have a negative influence on the adoption of such services. They also concluded that people are more concerned about the security aspects as they believe that their monetary details are not safe while doing online transactions.

UTAUT Model

Several theoretical frameworks have been developed and tested in the research of user acceptance and adoption of new information technology innovation in different contexts and countries. Venkatesh et al. (2003) reviewed and synthesized eight models of technology use into a single unified theory of acceptance and use of technology (UTAUT) model to integrate the fragmented theory and research on individual acceptance of information technology into a unified theoretical model. The UTAUT model uses four core determinants of usage and intention (performance expectancy, effort expectancy, social influence and facilitating conditions). Hedonic motivation, price value and habit are the additional constructs in the model that make the framework more consumer focused. As emotions such as fun, pleasure and enjoyment are involved in technology acceptance, hedonic motivations are strong predictors of its adoption. Further, consumer satisfaction is a relevant driver of continuity of use, but the trust is the most important factor in determining the intention of continued use by the users. Several researchers have pointed out that security concerns are a hindrance to the use of many paid digital services and e-commerce activities. Security is a set of procedures, mechanisms and computer programs to authenticate the source of information and ensures the integrity and privacy to avoid the problems of the data and the network. Security relates to how the electronic payment system can protect consumer transactions. In addition, security is also associated with regulatory and legal protection perceived by consumers. Accordingly, concerns regarding the security of mobile payment systems are among the key factors affecting attitudes.

Performance Expectancy: The performance expectation refers to the degree to which a person perceives that he/she can achieve a job performance using a program (Venkatesh et al., 2003). It can also be defined as the degree to which a consumer perceives smartphones/mobile applications to improve their financial transactions and performance. Performance quality expectation remains relevant for the adaption of smartphone in financial transaction. If a customer believes that using smart phones for mobile transactions would make a significant contribution to enhancing his or her efficiency or productivity, he or she may be able to use it favorably and have positive attitude and behavior and be more optimistic in adapting new technologies. Huang (2016) identified a positive relationship between perceptions of success and actions. Hence, this study proposes hypothesis 1

H1: Performance expectancy positively affects the behavioral intention and uses behavior of consumers to mobile apps for digital payment transaction.

Effort Expectancy: Effort expectancy measures the level of ease of use associated with the utilization of technological advancements. Venkatesh et al. (2003) interpreted the effort required as the degree of ease associated with the implementation of an information system. Effort expectancy is established on the idea that there exist relationships between the efforts exerted at task, the result obtained from such effort and the benefits gained from the effort (Ghalandari, 2012).. The developers need to maintain simplicity while developing as it has proven impact on the user adoption success rate. Some other scholars have demonstrated major effort expectancy on the adoption of technology (Al-Qeisi et al., 2014; Oliveira et al., 2016). Therefore, relying on current literature (Al-Qeisi et al., 2014; Chaouali et al., 2016; Oliveira et al., 2016), researchers have concluded that the investment of efforts are required to increase the adoption of online transaction among consumers. Thus, the argument leads to the following hypothesis as:

H2: Effort expectancy positively affects the behavioral intention and uses behavior of consumers to mobile apps for digital payment transaction.

Facilitating Conditions: It refers to the degree to which

Literature Review

Technology Adoption Model & UTAUT

Various researches in the field of technology adoption resulted into theory and model development which further have explained the intention of organizations and to use technological innovations. Five widely referred and applied theoretical models from the field of research are Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), Model combining the Technology Acceptance Model and the Theory of Planned Behavior (C- TAM-TPB), and Innovation Diffusion Theory (IDT). Venkatesh et al. (2003) synthesized the widely referred and applied theories of technology adoption and postulated the Unified Theory of Acceptance and Use of Technology (UTAUT). In their research work, they shared the findings of six-months of study conducted in few organizations, suggesting that previous theories and models on technology adoption indicated between 17 and 53 percent of variance in user intentions to use technology. However, UTAUT has delivered the best result among all the eight individual theories and models with an adjusted R2 of 69% (Venkatesh et al., 2003).

UTAUT and Mobile Apps Payment Adoption: Global Perspective

Slade, Dwivedi, Piercy & Williams (2015) applied the UTAUT, extended with more consumer-related constructs, to explore the factors affecting consumers' intentions to adopt Remote Mobile Payments (RMP) in the United Kingdom. The findings revealed that performance expectancy, social influence, innovativeness, and perceived risk significantly influenced users' intentions to adopt RMP, whereas effort expectancy did not. Inclusion of mobile payments knowledge as a moderating variable revealed that there was a significant difference in the effect of trust on behavioral intention for those who knew about mobile payments than for those who did not. Drawing on the Unified Theory of Acceptance and Use of Technology (UTAUT) model, Gholami, Ogun, Koh, & Lim (2010) revealed that perceived benefits, effort expectancy, social influence, trust, awareness, and demographic variables affected individuals' intention to adopt e-Payments in Nigeria.

Chang (2006), Oliveira, Baptista & Campos (2016) indicated that the user-friendliness of mobile apps payment was considered highly effective by consumers. They also suggested that consumer knowledge and perceived ease in using mobile payment led to higher adoption of such financial services. In addition, Oliveira, Baptista & Campos (2016) and Morosan & DeFranco (2016) found that individuals' behavioral intentions to accept mobile payments increase with information and support for technological users. Wu & Wang (2005) in their study on the acceptance of 3G services in Taiwan found performance expectancy and social influence as predictors of behavioral intention. Yang, Lu, Gupta, Cao, and Zhang (2012) identified the determinants of pre-adoption of mobile payment services and found that behavioral beliefs, social influences and personal characteristics encourage customers to use mobile payments. In another work, Martins, Oliveira, and Popovic (2014) developed a conceptual model that combines the Unified Theory of Acceptance and Use of Technology (UTAUT) with the perceived risk to explain behavioral intention and internet banking user behavior. The survey was conducted with students and former students of a Portuguese University and concluded about the importance of the performance expectation, effort expectation, social influence and risk factors in the prediction of Intention. Phonthanikitithaworn, Sellitto, & Fong (2015) found compatibility, subjective norms, perceived trust and perceived cost as significant factors that have impacts on intention to adopt mobile applications-based payment in Thailand.

Venkatesh, Morris, Davis, & Davis (2003) acknowledged that social influence plays a significant role in adoption of a new technology. They found that if the individuals who consider or employ such technology as important to an individual, their behavior affects strongly the wish of the individual to use such technology. Oliveira, Baptista, Campos, & Thomas (2016) indicate the ability for mobile t echnology networks to be supported by the views and guidance of people with relevance and influence. Michel & Michel (2016) found a positive correlation between social impact and mobile payment behavior. Regarding habit, several researchers including Harsono and Suryana (2014), Escobar-Rodriguez, Carvajal-Trujillo, and Monge-Lozano (2014) advocated that habit has shown a positive influence on behavior intention to adopt new technology, especially mobile payment services.

Since the usage of mobile technology involves storage of highly personal and financial information of consumers, several academicians have studied the impact of trust and adoption of mobile applications-based payment system. Studies of Alghatrifi and H. Khalid (2019) review several literatures, employed UTAUT as a baseline framework, and used core constructs of UTAUT to predict behavioral intentions towards IPV6 adaption. Alqahtani & Atkins (2017) and Hollingsworth & Dembla (2013) proved that trust has a positive influence on perceived usefulness. In addition, Fan, Shao, Li & Huang (2018), Gefen, Karahanna & Straub (2003) and Wen et al. (2011) also found that trust affected technology usage intention directly and indirectly through perceived usefulness. Khechine, H., Ndjambou, P. & Lakhal, S. (2016), in this research on the meta-analysis of the UTAUT model, 74 publications from 2003-2013 were analyzed and it was found that performance expectation, effort expectation and social influence explain IS / IT adoption, and behavioral intention is used as a proxy for system use that supports UTAUT model's strength as an explanatory model for IS / IT acceptance and use. To promote mobile payments, service providers need to eliminate these concerns and create an environment which is more conducive to customer confidence (Thakur & Srivastava, 2014). Lack of security is the most frequent reason for refusing to use mobile payment among the barriers to mobile payment adoption. Security risk is one of the key factors contributing to the unfavorable and slow growth rate of user acceptance of m-commerce (Siau & Shen, 2003). Security is a very important factor, which leads to adoption of mobile payments (Heijden, 2002; Sahut, 2008). Studies of Cruz et al. (2010) in Brazil, along with studies of Laukkanen and Kiviniemi (2010) in Finland found that perceived risk and monetary risk play a significant role in the adoption of mobile payment services. In the context of Thailand, Bhatiasevi (2016) found that performance expectancy, effort expectancy, social influence, perceived credibility, perceived convenience, and behavioral intention to use mobile banking posited a positive relationship. However, financial cost and facilitation conditions in the adoption of mobile banking were not supported.

UTAUT and Mobile Apps Payment Adoption: Indian Perspective

Availability of mobile devices and internet connection are the key drivers of the digital payment system. In India, there are more than 1 billion mobile phone subscribers and 333 million internet users (TRAI, 2017 February). In India, with substantial 165.04 per cent urban and 52.84 per cent rural wireless tele-density, overall mobile penetration rate is 89.90 per cent (TRAI, 2017 February). Demonetization, promotion of digitalization, limitations in ATM withdrawal and approach towards cashless economy encouraged several researchers to study the Indian consumer adoption of mobile payment system. This section covers some prominent works, which have been undertaken to understand Indian consumer behavior towards mobile application-based payment.

Dasgupta, Paul and Fuloria (2011) examined the behavioral intentions towards mobile banking usage and

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Factors Affecting Mobile Application Payment Adoption: Use of UTAUT Model in the Indian Context

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Abstract

The present research work has been undertaken to explore the determinants of mobile application-based payment adoption by customers in the Indian context. The unified theory of acceptance and use of technology (UTAUT) model has been proposed to understand consumer mobile apps adoption intention in the Indian context. In addition, perceived security is the additional construct that was added for examining the impact of this construct on behavioral intention and usage behavior of mobile apps for online financial transactions. In a survey of 405 respondents, it was found that performance expectancy, effort expectancy, social influence, facilitating condition, habit, and perceived security have a significant positive impact on mobile apps adoption intention. Consumer confidence and perceived security of the transactions can change their habit and enhance their adoption of mobile apps in the financial transactions. This paper tries to address the UTAUT model application in the financial transaction system.

Keywords: Financial Transaction, Mobile Application, Technology Adoption, UTAUT, India.

Introduction

Information technology and its extensive application into different financial sector has changed significantly in the 21st century. Technology in the present financial environment has witnessed phenomenal change and offered convenience in day-to-day life to the people. The primary goal of technical development in financial transactions is the delivery of public comfort and facilitating smooth decision-making. Many sectors have started convergence of technology such as financial services to attract customers. Furthermore, modes of payment have changed, whereby society is moving from a cash economy to an electronic transaction economic system indicating the use of credit cards and other mobile apps in their financial transactions. The concept of digital banking includes internet banking, mobile banking, SMS banking and digital wallets, which are operating in the country. These user-friendly solutions help the consumers to monitor accounts, deposits, transfers and all other financial activities conveniently using the internet and mobile devices. In India, cashless payments are rising rapidly than elsewhere. The reasons for such a positive growth of digital payments are favored demographics, educated young generation, socio-economic advancement, high rate of internet penetration, 3G and 4G mobile services, social media savvy generation, growing numbers of smartphone users, and the ambitious Digital India Project of the Indian Government (Kala & Chaubey, 2018). According to Bank for International Settlement (BIS) report, digital transactions in India has increased by 55% from last year, compared to 48% in China and 23% in Indonesia (BIS, 2019).

Digital payments in India are expected to grow at a rate of approximately 29% annually in developing markets by 2024 (KMPG, 2019). Digital transactions also received a boost from the Unified Payments Interface (UPI), which facilitates payments between bank accounts in real time. Digital payment companies have become one of the world's fastest growing and most profitable businesses, with digital transactions replacing cash. The growth rate for the total digital transactions during 2018-19 was 58.8 percent in value, compared with 50.4 percent in 2017-18. In 2018-19, the value of digital transactions increased by 19.5 percent, up from 22.2 percent in 2017-18. Retail portion of digital transactions, excluding RTGS customers and interbank transactions, reported a volume increase of 59.3% in 2018-19, compared to 50.8% in the previous year (RBI, 2019). India has over 45 mobile carriers and around 50 carriage suppliers based on UPIs according to KPMG. According to the German BIS, in India, only 18 cashless payments per population took place in 2018, compared to 142 in China and 529 in Sweden. The country still offers plenty of room for growth. Mobile application-based payments have increased and awareness of how managers can increase the number of customers who choose to pay in this way efficiently is needed.

This research work has been undertaken to examine the factors of mobile application-based payment in the Indian context. Considering the demographical advantage, emerging nature of economic activities, favored internet penetration and smartphone user base, and growing number of convenience-oriented and techno-savvy customers, a study of this nature is highly contemporary and justifiable. Studies on digital payment adoption in mobile apps in India are therefore important, as they will help identify the major drivers of adoption. The objective of this empirical study is to explore the determinants of mobile application-based payment adoption intention by review of previous relevant studies, and the unified theory of acceptance and use of technology (UTAUT) model has been proposed to understand consumer mobile apps adoption intention in Indian context. In addition, perceived security is the additional construct that was added for examining the impact of this construct on behavioral intention and usage behavior of mobile apps for online financial transactions. The outcomes of the present work will be beneficial for financial institutions and marketers in designing suitable promotional strategies in particular to encourage consumers to adopt mobile application-based payment in this emerging economy.