DETERMINANTS OF BEHAVIORAL INTENTIONS TO USE MOBILE WALLETS – A CONCEPTUAL MODEL

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ABSTRACT

The widespread use of smartphones and various technological advancements are transforming the way we make payments. Smartphones are used as communication devices, entertainment tool, internet access tool, and now even as a payment tool. People have started making payment for purchase of goods and service through mobile wallet. Despite its number of advantages, the acceptance of mobile wallets as a payment method is not so impressive. Consumer looks for convenience, usefulness and benefits over the existing leather wallet in order to decide whether they would adopt or reject the mobile wallet as a payment method. The purpose of this paper is to develop a conceptual model that examines the consumer’s behavioral intention to use mobile wallet services based on Technology Acceptance Model (TAM) and Unified Theory on Acceptance and Use of Technology (UTAUT) model.

Keywords: Behavioral Intention; Mobile Wallets; Perceived Ease of Use; Perceived Usefulness; Perceived Security; Technology Acceptance Model; Unified Theory on Acceptance and Use of Technology Model


http://www.iaeme.com/JOM/issues.asp?JType=JOM&VType=5&IType=5

1. INTRODUCTION

In this fast paced modern world smartphones have become an essential part of daily life. The number of smartphone users in India has increased radically during the past few years mainly due to the fact that a large number of companies are able to sell smartphones at an affordable price to the large sections of the Indian society. As of now, India is the second largest smartphone market in terms of users. Smartphones are used as communication devices, entertainment tool, internet access tool, and even as a payment tool. Till recently technology
based e-payment were all through credit or debit card or internet based payment. Now-a-days, mobile phones are not only a tool for communicating with another person but are mainly multi-functional devices that enable both entertainment and work. Its functionality has gone way beyond communication to a multitude of other applications (Musa et al., 2016; Wong, Lee, Lim, Chua, & Tan, 2012). With the exponential increase in the use of mobile data in India since the launch of a low-cost data network facility by Reliance Jio, it is expected that mobile transaction is the future of e-business in India (Kumar, Adlakaha, & Mukherjee, 2018). The convergence of wireless telecommunication development, multi-functional mobile phone devices and the payment system developments have created the biggest possibility of transacting in the real world in methods other than cash and card.

Mobile payments are any payment where a mobile device is used to initiate, authorize and confirm an exchange of financial value in return for goods and services (Au & Kauffman, 2008). Mobile wallet is a form of payment that enables users to conduct payment electronically via use of a mobile device, replacing the physical wallet so that payment transaction can be completed at a merchant’s location (Shin, 2009). It not only stores payment data, but loyalty cards and coupons can also be incorporated, allowing customers to benefit, if they so choose, from Point of Sale (POS) discounts. The adoption of mobile wallet would obviate the need to carry so many cards and would enable other valued offerings, such as location-based services, m-banking, m-payments, m-transfers, m-payments, and m-finance refer collectively to a set of applications that enable people to use their mobile telephones to manipulate their bank accounts, store value in an account linked to their handsets, transfer funds, or even access credit or insurance products (Donner & Tellez, 2008).

While the sudden growth in the digital payments scenario in India has been driven to a great extent by the increased smartphone penetration and low-cost internet, one cannot discount the catalytic effect other factors such as government initiatives, improved infrastructure and enhanced services have had on the industry (Shukla, 2016). Some of the measures undertaken by the Government include withdrawal of surcharge, service charge or convenience fee on card and other digital transactions. Another reason that can be highlighted is demonetization of all ₹500 and ₹1000 banknotes which resulted in cash shortage for a prolonged period. People have started making payment for purchase of goods and service through mobile wallet. Mobile wallets are far more secure than physical cards as it incorporates latest technologies like fingerprint authentication. Although not every mobile user pays using their mobile phones, the number of m-payment system users is projected to increase significantly in the coming years (Wong, 2014). People tend to adopt a technology if they perceive that the technology makes their life more convenient (Hossain & Prybutok, 2008). There exists a huge untapped market for digital wallets both in terms of increasing awareness as well as its usage (Batra & Kalra, 2016). Also, the frequency and value of each transaction using digital wallets remains limited.

The major factors which play an important role in consumer adoption are convenience in buying products online, brand loyalty and usefulness of digital wallet (Rathore, 2016). Perceived trust, perceived mobility and attitudes positively affect the adoption of Mobile Payment Systems (Peša & Brajković, 2016). Most of the customers are concerned about the security of mobile payments and the ones who use mobile payments do so because of instant payment solutions (Sardar, 2016). By simply offering faster payments would no longer be good enough; the industry players will have to counter the real pain points such as giving consumers the ability to see what’s on stored value cards at any moment in time, access loyalty points, or automatically receive digital copies of payment receipts (Shukla, 2016). Security issues in transaction and privacy are the most concerned factors among users (Doan, 2014).
Consumer looks for flexibility, mobility and efficiency in order to decide whether they would adopt or reject different mobile services (Rao & Troshani, 2007). Despite its number of advantages, the acceptance of mobile wallets as a payment method is not so impressive. This paper is an attempt to develop a conceptual model to explain the behavioral intention to use mobile wallets with the help of Technology Acceptance Model and Unified Theory on Acceptance and Use of Technology (UTAUT) Model along with additional constructs.

2. LITERATURE REVIEW AND MODEL DEVELOPMENT

2.1. Technology Acceptance Model

The research model adopted in this study is rooted in Technology Acceptance Model (TAM) proposed by Davis (1989). Davis, in order to identify those variables that influence someone’s behavioral intention to use a specific technology, conceived the Technology Acceptance Model. The TAM was an early attempt to apply psychological factors to information systems and computer adoption. It assumed that perceived usefulness and perceived ease of use were major influences on an individual’s attitude toward using technology and, thus, ultimately, were related to actual use (Davis, 1989). Previous research has demonstrated the validity of the TAM across a wide range of IT. TAM model is replicated in various studies to provide empirical evidence on the impact of usefulness and ease of use on adoption of new technologies such as online banking, online buying, tele-banking, mobile internet, computer technology, broadband services to name a few. Interestingly, there is a common agreement that TAM model was valid in explaining individual’s acceptance of newly emerging technologies. TAM model is also used in predicting service quality of new technology; for e.g. Gorge & Kumar (2014). The TAM proposes that two particular beliefs, Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are the primary drivers for technology acceptance. However, the two cognitive response constructs of Perceived Ease of Use and Perceived Usefulness are not sufficient in their own right to explain an individual’s acceptance of technology (Mathieson, 1991). George & Kumar (2013) added perceived risk with the twin TAM constructs to predict customer satisfaction in internet banking. In the research studies related to mobile payments, many articles have used concepts from the original TAM, extending them with different constructs.

2.1.1. Perceived Usefulness

The Technology Acceptance Model introduces two important constructs, perceived usefulness and perceived ease of use. Perceived Usefulness is the degree to which a person believes that using a particular system will enhance his or her performance (Davis, 1989). Previous researchers have found that perceived usefulness is significant in determining behavior intention to adopt a technology and in shaping the attitude of a user towards that technology (Akturan & Tezcan, 2012; Aldás-Manzano, Ruiz-Mafé, & Sanz-Blas, 2009; Khalifa & Shen, 2008; Wong et al., 2012; Wu & Wang, 2005). Likewise, on a study conducted in Malaysia, perceived usefulness was found to be the strongest direct influence among all the variables on the intention to use m-commerce (Wei, Marthandan, Chong, Ooi, & Arumugam, 2009). In another study, it was found to be a significant factor in the intention to use mobile ticketing (Herlina & Wibowo, 2011). Also, perceived usefulness is positively associated with behavioral intention to adopt wireless banking (Luo, Li, Zhang, & Shim, 2010). Hence, it is hypothesized that:

H1: Perceived usefulness has a positive effect on intention to use mobile wallet.
2.1.2. Perceived Ease of Use
Davis (1989) defines Perceived ease of use as the degree to which a person believes that using a particular system will be free of effort. This perception forms an attitude towards the system and this attitude develops intention to use and the intentions cause actual system usage. Although most people are familiar with using mobile phones, they may be new to such mobile applications. Features such as performing a financial transaction through a mobile application might be a difficult task for a new user. If a system is simple and effortless, it will have a great impact on the acceptance of that system (Moore & Benbasat, 1991). Any technology which can be learned and managed easily will satisfy an individual which in turn increases the intention to use the system (Childers, Carr, Peck, & Carson, 2001). Perceived ease of use is a significant factor in a consumer’s intention to shop online (Lin, 2007). When consumers find it easy to interact with e-commercial websites, to search product information, and to pay online, they will consider online shopping more useful (Wen, Prybutok, & Xu, 2011). Likewise, perceived ease of use was found to be a crucial factor in the intention to use mobile cloud storage services (Arpaci, 2016). The customer will surely intend to use any technology if the effort required is less. So, the following hypothesis is formed:

H2: Perceived ease of use has a positive effect on intention to use mobile wallet.

2.2. Unified Theory on Acceptance and Use of Technology (UTAUT) Model
The Unified Theory on Acceptance and Use of Technology aims to explain user intentions to use an information system and further usage behavior. According to the theory, there are four crucial constructs which determines usage intention and behavior. They are performance expectancy, effort expectancy, social influence and facilitating conditions. Since performance expectancy and effort expectancy are similar to perceived usefulness and perceived ease of use respectively and since facilitating conditions like organizational and technical infrastructure is not applicable in this context, only social influence from the UTAUT model was chosen for the research model.

2.2.1. Social Influence
One of the major shortcomings of the TAM model is that it neglects the social context in which the technology is being adopted. It does not account for social influence in the adoption and utilization of new technologies. Social influence is defined as the degree to which an individual perceives that important others believe he or she should use the new system. It reflects the effect of environmental factors such as opinions of a user’s friends, relatives and superiors on behavior (Venkatesh, Morris, Davis, & Davis, 2003). People use mobile services in a public social context in which they observe other’s activities and in which they must adapt to other’s interactions (Nysveen, Pedersen, Thorbjørnsen, & Berthon, 2005). Many studies incorporated social influence into their research models and found empirical support (Agarwal & Karahanna, 2000; Lu, Liu, Yu, & Wang, 2008). Social influence was found to be a very significant factor influencing mobile technology adoption in multiple studies (Hew, Lee, Ooi, & Wei, 2015; Schierz, Schilke, & Wirtz, 2010; Slade, Williams, Dwivedi, & Piercy, 2015; Yang, Lu, Gupta, Cao, & Zhang, 2012). Social influence had a considerable role in successful adoption in the case of Mobile Suica, a mobile wallet company in Japan (Amoroso & Magnier-watanabe, 2012). Also, social influence was found to be a significant factor in predicting behavioral intentions to adopt mobile wallet solutions in India (Madan & Yadav, 2016). When the social influence is positive it may encourage the user to adopt mobile payment services. So consistent with prior studies, it is hypothesized that:

H3: Social Influence positively influences customer’s intention to use mobile wallet.
2.3. Other Constructs from Literature

Even though this study is rooted in Technology Acceptance Model (TAM) and Unified Theory on Acceptance and Use of Technology (UTAUT) model, additional constructs are incorporated that are suited to the context of the technology which is being studied. Trust and security were found to be significant factors in the intention to use e-government services (Alharbi, Papadaki, & Dowland, 2017) and mobile wallets (Seetharaman, Kumar, Palaniappan, & Weber, 2017). Since TAM and UTAUT does not consider the role of trust and perceived security in using such technology, those constructs are added to extend our research model.

2.3.1. Trust

Trust can be defined as the willingness to be loyal to a service provider expecting a positive outcome regarding the service provider’s future behavior (Zhou, 2013). While using mobile phones, the customers provide more personal and financial information, which might create a concern in their minds regarding the level of security. Earlier researches has proven that trust is an important determinant in adoption and continuance of usage (Alalwan, Baabdullah, Rana, Tamilmani, & Dwivedi, 2018; Gao, Waechter, & Bai, 2015; Khalilzadeh, Ozturk, & Bilgihan, 2017). Prior literature has also proved that trust has a positive influence on perceived usefulness (Alqahtani & Atkins, 2017; Hollingsworth & Dembla, 2013). Prior researchers also found that trust affected technology usage intention directly and indirectly through perceived usefulness (Fan, Shao, Li, & Huang, 2018; Gefen, Karahanna, & Straub, 2003; Wen et al., 2011). Accordingly, the following hypotheses are formulated.

H4: Trust has a positive effect on the intention to use mobile wallet
H5: Trust has a positive influence on perceived usefulness of mobile wallet

2.3.2. Perceived Security

Perceived security is defined as the degree to which a customer believes that using a particular mobile payment procedure will be secure (Shin, 2009). The introduction of new technology is always accompanied by security concerns. When conducting a financial transaction, it is important to feel secure inorder to minimize concerns while making payments online. To promote mobile payments, service providers need to eliminate these concerns and create an environment more conducive to customer confidence (Rakhi & Mala, 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). Lack of security and trust will be perceived as barriers to adoption of the mobile wallet. Information security concerns make buyers skeptical and it’s a major barrier to e-commerce adoption (Hoffman, Novak, & Peralta, 1999). Security is a very important factor which leads to adoption of mobile payments (Heijden, 2002; Sahut, 2008). A study based in Ahmedabad, India, found that perceived security has a significant and negative effect on intention to use mobile wallet services (Patel, 2016). So the hypothesis regarding perceived security is aimed at determining how perceived security influences the intention to use a mobile wallet. Also, a study of 179 consumers shows a significant relationship between consumer’s perceived security and trust in electronic commerce transactions (Chellappa & Pavlou, 2002). These studies also reveal that trust has a significant positive impact on user’s attitude towards mobile payment use. Hence the following hypotheses are formulated:

H6: Perceived Security has a positive effect on the intention to use a mobile wallet
H7: Perceived Security has a positive effect on user’s trust in mobile wallet
2.4. Additional New Constructs

2.4.1. Demonetization

Demonetization is the act of stripping a currency unit of its status as legal tender. It occurs whenever there is a change of national currency, i.e., the current form or forms of money is pulled from circulation and retired, often to be replaced with new notes or coins. Sometimes, a country completely replaces the old currency with new currency. The main reasons why nations resort to demonetization is to combat inflation, corruption and crime and to discourage a cash dependent economy.

In 2016, the Indian government decided to demonetize the 500 and 1000 rupee notes, the two biggest denominations in its currency system which accounted for 86 percent of the country’s circulating cash. It led to disarray in the cash-dependent economy where 78 percent of all customer transactions were in cash, as long lines formed outside ATMs and banks, which had to shut down for a day. The new rupee notes have different specifications, including size and thickness, requiring re-calibration of ATMs which added to the misery. This is when many Indians switched to alternative payment avenues and the biggest gainers were mobile wallet companies that offer ease of transaction through a large network of partners. It saw the number of users and the number of transaction increase many fold in a very short span of time. So demonetization had an impact on mobile wallet adoption and hence it is felt necessary to include this construct in the model. Hence the following hypothesis is formulated:

H8: Demonetization has a positive effect on the customer’s intention to use mobile wallets

2.4.2. Promotional Offers

Promotional offers are the act of offering a lower price temporarily in order to enhance the effectiveness of product sales efforts to cost sensitive consumers. Many businesses will offer promotional offers as a sales incentive when initially launching a particular product line to potential customers. Cash back offers, discounts and tie ups with merchants are some of the ways by which customers are lured towards mobile wallets. As Indians have the tendency to save money, they are easily attracted by the coupons, discounts or cash backs that allow them to spend less. Most of the mobile wallet companies in India provides users with cash backs or discounts which can be availed at online as well as offline stores. This coupled with the ever increasing merchant tie-ups helps them to expand their customer base. Considering this, the following hypothesis is formed as it is felt promotional offers is a significant factor in the intention to use mobile wallets:

H9: Promotional offers have a positive effect on the customer’s intention to use mobile wallets.

2.5. Behavioral Intention to Use

In the literature, there are many antecedent variables to predict the adoption of technology; for e.g. Kumar, Bijoy & George (2012). Consumers with a higher intention to adopt a new technology will most likely become adopters and will recommend the technology to others (Miltgen, Popović, & Oliveira, 2013). Nowadays social networks pose many challenges as well as provide opportunities to companies, as they can use it as a medium to express their opinions and experiences about mobile payment services, products and technologies (Zhang, Wang, Pablos, Tang, & Yan, 2015). The effect of perceived security, performance expectancy, effort expectancy and social influence are significant in explaining the behavioral intention of the user to recommend mobile payment technology to others (Oliveira, Thomas, Baptista, & Campos, 2016). On the basis of this, the following hypothesis is formulated:
H10: Behavioral Intention to use has a positive effect on the customer’s intention to recommend mobile wallet.

2.6. Conceptual Model
A research model was developed after reviewing the well-known models in the domain of technology adoption. This model has its roots in Technology Acceptance Model and Unified Theory on Acceptance and Use of Technology model, and we extended it with new constructs. The proposed research framework includes five independent variables and four dependent variables. The research model is depicted in Figure 1.

![Figure 1 The Conceptual Model](image.png)

3. IMPLICATIONS AND CONCLUSIONS
There is a huge potential for the growth of mobile wallets in Kerala, India, since cash is still the preferred mode of payment. Adoption of mobile wallets by the people will help them to track their payments as well as avail discounts at many of the online and offline retailers. It will help in transforming our country into a cashless economy which will lessen a good deal of burden on the Government.

Nearly all the literature is concerned with the factors that affect a consumer’s decision to adopt mobile wallet payments with most of the studies using the Technology Acceptance Model (TAM) which was proposed by Davis (1989). Most of the studies are concerned with the reasons as to why customers are reluctant to adopt mobile wallet payments. Moreover, region specific studies especially in Kerala, India, about the factors that lead to the adoption of mobile wallets are almost non-existent.

A conceptual study is required to understand the underlying factors that motivate users to use mobile wallets. This paper highlights the importance of various factors on consumer intention to use mobile wallets and to recommend it by proposing a model by taking into
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account several technology adoption models and by extending it with new constructs. The proposed conceptual model is a contribution to the existing literature since various unexplored variables have been added that will influence behavioral intention to use mobile wallets. Also, this model can be empirically tested to oversee further research in this area. In this context, the findings will stimulate key players in the industry to take up action towards attracting more and more users to adopting mobile wallets. It will also help them to identify the areas in which more focus should be put on so as to improve their services.

REFERENCES


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