

Factors influencing adoption intention of Indian consumers for mobile payment services

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Abstract: The objective of this paper is to identify important factors and analyse their effect on the consumers' intention to adopt mobile payment services in the context of a developing country such as India. For the purpose of this study, 208 mobile phone users were surveyed, and a framework consisting of eight independent and one dependent factor was proposed. The data collected was analysed using binary logistics regression technique in IBM SPSS. The independent factors were able to explain a 55.3% variation in the adoption intention of the respondents. All proposed factors were found to be significantly affecting the adoption of mobile payment services except for effort expectancy, price value and perceived regulatory support. The findings of this paper are useful for the value-chain partners in the mobile payment domain such as smart-phones manufacturers, service providers, mobile app writers and institutions involved in facilitation and regulation of such services for developing a suitable strategic framework to encourage its adoption.

Keywords: mobile payments; adoption; binary logistics; promotional benefits; India.

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1 Introduction

India is one of the largest economies in Asia and one of the most rapidly growing economies across the globe. It is home to over 1.3 billion people, i.e., almost one sixth of the world population resides in India, making it the largest consumer market. In the times when most of the world economies went crashing down, India as a growing economy stood its ground and showcased the resilience and potential it has for growth to the world (Dana, 2000). The present economic structure of India is a result of its rich history and evolution of trade practices which can be dated to pre-colonial period to British colonialism and to the independent times. The European colonialism in Asia brought new economic structure and new trade patterns (Dana, 2007). With gaining Independence in 1947, India and other Asian economies continued to be influenced by their historical experiences (Dana, 2007).

Since independence India has evolved from being a traditional Bazaar-type economy, wherein there existed an economic, cultural and social system of vendors physically clustered to facilitate consumer's comparative information search, to The New Economy having a system of vendors virtually clustered to facilitate consumer's comparative information search (Dana et al., 2008). The unparalleled growth and advances in the area of information technology witnessed in the last few decades (Jaradat and Faqih, 2014) is part of this evolution. Further depicting this transition is the emergence of mobile based commercial activities in the country.

Mobile phones have become an indispensable part of our daily life evolving from being a basic tool for communication to a device having multiple functions (Schierz et al., 2009; Balaji et al., 2013; Shin, 2014). The advancements in information technology

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and spurt in the number of individuals using mobile phones has a strong social and economical impact on our society (Manvi et al., 2009; Zhao et al., 2010; Liébana-Cabanillas et al., 2014). It has altered the payment systems used in the traditional business activities (Liébana-Cabanillas et al., 2014), making the mobile payment systems (MPS) popular, as an alternative to the traditional modes of payment in many countries (Lui et al., 2011; Kang, 2014).

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Mobile payment refers to making payment for goods and services purchased via electronically transferring funds from one party to other using mobile devices like tablets, smart-phones, personal digital assistants (PDA) and the like (Zhang and Dodgson, 2007; Mallat and Tuunainen, 2008). They are popularly referred to as mobile money, virtual money, digital wallets or mobile wallets (Koenig-Lewis et al., 2015).

The rising popularity of MPS can also be attributed to the benefits it claims to have over its traditional counter-parts. The main benefits of MPS are the features of ubiquity and flexibility it offers to both the consumers as well as vendors, enabling them to materialise a financial transaction at anytime from anywhere (Zhou, 2013; Jaradat and Al-Mashaqba, 2014; Yan and Yang, 2015; Phonthanukitithaworn et al., 2016). Moreover, it offers an opportunity for the small and medium-sized retailers of taking advantage of lower operating costs (Koenig-Lewis et al., 2015). Other significant advantages of MPS to vendors and consumers include increased versatility of services, prompt transactions, enhanced convenience, time-saving and lower prices due to discounts and promotional codes (Mehra, 2010; Liébana-Cabanillas, 2012; Daştan and Gürlér, 2016).

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Experts worldwide share a common view point that with the increasing proliferation of mobile devices there be an apparent increase in the usage of payment services through mobile by individuals both in the developing as well as developed nations (Jaradat and Faqih, 2014).

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However, the rate of adoption for mobile payment services in both developing as well as developed countries is still low as compared to the mobile penetration rate (Bouwman et al., 2012). Reasons for its low adoption can be the technical difficulties associated with it, such as small screen size, slow responses, low resolution and inconvenient input (Zhou, 2013; Jaradat and Al-Mashaqba, 2014; Yan and Yang, 2015). MPS are virtual systems offering a completely distinct set of features compared to the traditional payment systems. It involves lesser control, greater uncertainty and risk with respect to greater vulnerability to hacking and intercepting of personal accounting and financial information (Yan and Yang, 2015). These distinct features call for a focused research from the users' perspective in order to identify factors promoting or impeding potential users from adopting and using MPS (Jaradat and Faqih, 2014).

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The objective underlying this study is identification of important factors that might influence users' intention adopt mobile as a payment channel often referred to as mobile or digital wallets such as Paytm, Paypal, Google pay etc. in India. The study is presented in four sections. The first section discusses and review literature available in the domain of user adoption of MPS. The factors affecting its adoption are also identified in this section. The study adds value to the existing literature by including two relatively new factors, i.e., perceived regulatory support (PRS) and promotional benefits (PB) which might have an impact on the user adoption rate of MPS in India. The second section proposes a framework to understand user adoption of MPS and hypothesize the relationship between the proposed variables. The analysis of the data collected along with

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its results is provided in the third section of this study. At last, the final section gives a detailed discussion of results, conclusion, limitations and implications of this study.

2 Literature review and theoretical framework

2.1 Mobile payments

Mobile payment refers to making payment for goods and services purchased via electronically transferring funds from one party to another using mobile devices like tablets, smart-phones, PDA and the like (Zhang and Dodgson, 2007; Chen and Nath, 2008; Dahlberg et al., 2008). Quite often, payments made through mobile are referred to as mobile money, virtual money, digital wallets or mobile wallets (Koenig-Lewis et al., 2015). It can also be explained as “any payment in which a mobile phone is used to initiate, authorise, and confirm a transaction” [Kim et al., (2010), p.310].

It is a process of making purchases, payments or value transfers through mobile devices instead of involving cash exchange or any participating bank (Bitner, 2001; Rao and Troshani, 2007; Zhong, 2009). Mobile payment is further defined as a transaction of economic nature undertaken by a mobile device using a mobile network (Liébana-Cabanillas, 2012). It involves usage of a mobile communication device like smart-phone, tablets, PDA, etc., to initiate, activate, and to confirm the point-of-sale payment (Chandra et al., 2010; Shin, 2010). It also refers to accessing payment services including money transfers, bill payments as well as account inquiries over a mobile device (Yan and Yang, 2015).

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2.2 Technology adoption models

In the recent two decades, information technology has garnered a lot of attention of marketers as well as researchers. With the growing advances in information technology, many researchers have come up with frameworks to explain its adoption among the users. Few of the notable studies in this regard includes theory of reasoned action (TRA) (Fishbein and Ajzen, 1975), theory of planned behaviour (TPB) (Ajzen, 1991), technology acceptance model (TAM) (Davis, 1989), diffusion of innovation (DOI) (Rogers, 1995), unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003) and UTAUT 2 (Venkatesh et al., 2012). Since then, researchers have used these models as a base to identify and analyse factors explaining adoption intention (AI) of users towards IT/IS at both firm as well as individual level (Wu and Wang, 2005; Yang et al., 2012; Chong et al., 2012; Dash and Tech, 2014; Gong et al., 2013; Gao and Bai, 2014; Sharma and Yadav, 2011). Consumer-centric factors including effort expectancy (EE), facilitating conditions (FC), performance expectancy (PE), perceived value (PV), hedonic motivation, perceived risk (PR), social influence (SI), personal innovativeness and the like have been repeatedly observed to affect AI of various new information and mobile technologies (Zhang, 2009; Yang, 2010; Chong, 2013; Thakur and Shrivastava, 2014; Madan and Yadav, 2016; Tiruwa et al., 2016).

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Reference entries:
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Yang, S., Lu, Y., Gupta, S., Cao, Y. and Zhang, R. (2012b) ‘Mobile payment services adoption across time: an empirical study of the effects of behavioural beliefs, social influences, and personal traits’, *Computers in Human Behaviour*, Vol. 28, pp.129–142.

2.3 Factors

- 1 *Performance expectancy*: The users' confidence that a specific technology will improve their performance at job, referred to as PE (Venkatesh et al., 2003) can influence their intentions to adopt that technology. A factor similar to PE was first introduced in TAM (Davis, 1989) by the name perceived usefulness, referring to the

usefulness of new technology in performing a job. MPS offer the advantage of completing a payment transaction on a real-time basis, at any place and at any time. Thus, it renders the performance of daily routine tasks easier. Previous researchers have recognised the relevance of this factor in determining AI of mobile related technologies (Kim et al., 2010; Thakur and Shrivastava, 2014; Teo et al., 2015; Koenig-Lewis et al., 2015; Musa et al., 2015; De Sena Abrahão et al., 2016). Hence, it is proposed:

H1 Users' AI of MPS is positively influenced by the PE.

- 2 *Effort expectancy*: The ease with which a new technology or system can be used, referred to as EE (Venkatesh et al., 2003) can also influence the users' intentions to adopt it. The extent of users' perception about a technology to be easily learned and utilised has a strong affect on its adoption. MPS involving usage of mobile devices for entering into a transaction will be affected by the degree of ease with which users can learn and handle such devices. As a result, studies conducted over the years in mobile payment technology have considered the role of EE in determining its AI (Thakur and Shrivastava, 2014; Teo et al., 2015; Koenig-Lewis et al., 2015; Musa et al., 2015; De Sena Abrahão et al., 2016). Hence, it is proposed:

H2 Users' AI of MPS is positively influenced by the EE.

- 3 *Facilitating conditions*: FC may be explained as the availability and accessibility of required physical as well as environmental resources for effective utilisation and adoption of new technology, service or a product (Cheong et al., 2004; Madan and Yadav, 2016). MPS requires the support of the effective mobile network, trustworthy payment gateway, a mobile device and also knowledge to handle such devices, making FC an important criterion for determining users' AI of it. Previous researchers have observed FC to positively influence users' AI of mobile payment services (Thakur and Shrivastava, 2014; Koenig-Lewis et al., 2015; Teo et al., 2015). Hence it is proposed that:

H3 Users' AI of MPS is positively influenced by the FC.

- 4 *Social influence*: SI is "the extent to which consumers perceive that important others (e.g., family and friends) believe they should use a particular technology" [Venkatesh et al., (2012), p.159 line 64–66]. The opinions of family and friends of an individual have an impact on his decision about using a particular product, service or technology (Riquelme and Rios, 2010). This makes FC another important factor considered in determining users' intention to adopt MPS. Researchers have utilised this factor extensively in determining the mobile payment adoption in the past as well (Schierz et al., 2009; Thakur and Shrivastava, 2014; Musa et al., 2015; De Sena Abrahão et al., 2016). Hence, it is proposed that:

H4 Users' AI of MPS is positively influenced by the SI.

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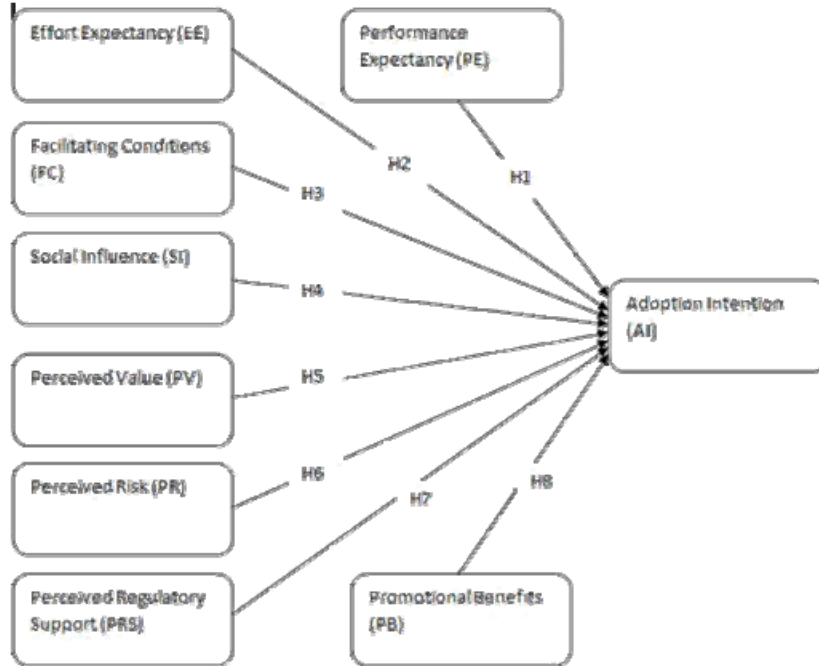
- 5 *Perceived value*: PV refers to the value received as perceived by users for the price paid by them to avail any service or to use any product (Zeithaml, 1988; Keeney, 1999; Madan and Yadav, 2016). Availing mobile payment services requires the users to pay for accessing mobile network, bear a convenience fee and also the cost of purchasing a compatible mobile device. Researchers have observed this factor to significantly influence the adoption of mobile related technologies in the past (Pagani, 2004; Venkatesh et al., 2012; Slade et al., 2015). Hence, it is proposed that:
H5 Users' AI of MPS is positively influenced by the PV.
- 6 *Perceived risk*: PR is the risk that a user perceives he has to undertake in order to complete a transaction online. A consumer faces some kind of financial, physical, social, psychological, time and product related risk while undertaking any online transaction. Such risk may be termed as PR (Wu and Wang, 2005). In the case of MPS transaction, users are required to share their personal accounts information, which they often believe to be risky. Hence, in order to ensure effective adoption of MPS by the users, this element of risk needs to be taken care of. Previous researchers have also reported this factor to be important in determining the users' AI s towards mobile payment services (Thakur and Shrivastava, 2014; Koenig-Lewis et al., 2015; Madan and Yadav, 2016; Phonthanakitithaworn et al., 2016). Hence, it is proposed that:
H6 Users' AI of MPS is negatively influenced by the PR.
- 7 *Perceived regulatory support*: The normative rules prevailing in society are often influenced by the regulatory framework such as the legislature, government agencies governing it, which further is responsible for the behaviour and decision making of organisations as well as individuals (Zhu, 2009). In a typical mobile payment transaction, the parties involved undertaking a transaction in anonymity, have an increased level of suspicion and doubt about the success of the transaction. Thus, the presence of efficient and sound regulatory support is necessary to boost the confidence of the users and to ensure its effective adoption. Providing regulatory safeguards to the users will provide momentum to the MPS industry. Constructs similar to PRS have been considered by previous researchers in understanding consumer behaviour in diverse fields (Haque et al., 2009; Alqahtani et al., 2012; AlGhamdi et al., 2013; Madan and Yadav, 2016). However, there are not many studies in the domain of mobile payment considering this factor. Hence, it is proposed that:
H7 Users' AI of MPS is positively influenced by the PRS.
- 8 *Promotional benefits*: PB refers to various kinds of benefits offered by companies delivering mobile payment services such as cash discounts, coupon codes, app download cash reward, loyalty points and other freebies (Madan and Yadav, 2016). In the case of consumer-based technologies, the importance of this factor increases even more as compared to organizational-based technologies. Such promotional activities enhance the overall experience of consumers (Bigcommerce.com, 2015). A rational consumer is expected to evaluate all the benefits of using any technology including these PB and make an informed decision about its adoption. MPS being a consumer-based technology is likely to follow the same trend when it comes to its adoption by the consumers. Hence it is proposed that:

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H8 Users' AI of MPS is positively influenced by the PB.

2.4 Proposed framework

Figure 1 Proposed framework



3 Research methodology

3.1 Participants

The data for the present study was collected using a Google form and respondents considered were the postgraduate students and working professionals of Delhi NCR. Delhi being a metro city attracts youngsters from across all cities of India which makes its population cosmopolitan in nature (Yadav et al., 2016). Thus, the sample under consideration is believed to be representative of the varied Indian consumers.

3.2 Constructs measurement

The study proposes eight independent variables effecting users' adoption of MPS. Each variable is measured on a multi-item scale consisting of 27 items, which are further rated on a Likert scale of 1 (strongly disagree) to 5 (strongly agree) range. The responses for

the dependent variable, i.e., users' AI of MPS were collected through a yes or no question.

3.3 *Research instrument*

An online questionnaire consisting of two sections was administered to collect data. The first section was aimed at collecting information related to age, education and income level of respondents. The second section comprised of 27 items measuring the independent variable and a question to measure the dependent variable.

3.4 *Sampling*

In the case of researches in social sciences, a proper sampling frame is often missing; thus, this study collected the data using convenience and judgement sampling. Such a practice is in accordance with the recent studies, where in, in the absence of sampling frame, convenience and judgement sampling techniques were used to collect data (Pham and Ho, 2014; Amoroso and Magnier-Watanabe, 2012; Chong et al., 2012).

4 **Data analysis**

Table 1 summarises the respondents' demographic profile. Among the total respondents surveyed 79.8% were males and 20.2% were females. Maximum respondents (79.8%) were below the age of 30 years, 14.9% were of 30–40 years of age and only 4.3% respondents were having an age of more than 40 years. The respondents with family income less than Rs. 2 lacks per annum were 7.7%. Respondents having family income in the range 2–5 lack per annum, 5–8 lack per annum and 8–11 lacks per annum were 18.3%, 24% and 16.8% respectively and those with family income of Rs. 11 lacks per annum or above were 33.2%.

Table 1 Demographic profile

<i>Sample characteristics</i>	<i>Frequency (n = 208)</i>	<i>Percent (%)</i>
Age:		
30 years or less	168	79.8
30–40 years	31	14.9
Above 40 years	9	4.3
Gender:		
Male	166	79.8
Female	42	20.2
Family income per annum:		
Less than Rs. 2 lacks	16	7.7
2–5 Lacks	38	18.3
5–8 Lacks	50	24
8–11 Lacks	35	16.8
More than 11 Lacks	69	33.2

The data collected for this study was analysed using binary logistics technique. The Independent variables, including EE, PE, FC, SI, PR, PV, PRS and PB were measured with the help of a Likert scale of five points, and the response for the users' AI of MPS was taken in the form of yes or no question.

Table 2 Model summary

Step	-2 Log likelihood	Cox & Snell R square	Nagelkerke R square
1	66.303 ^a	.553	.819

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Table 2 depicts two measures of R square, namely Nagelkerke R square and Cox and Snell R square providing values for quasi R square. R square refers to the variation in the values of dependent variable caused due to variations in values of independent variables. The present study used users' AI of MPS as a dependent variable and EE, PE, FC, SI, PR, PV, PRS and PB as independent variables affecting the users' AI of MPS. Table 2 exhibits the values for Nagelkerke R square and Cox and Snell R square as .819 and 0.553 respectively. This means that 81.9% and 55.3% variation in the values obtained for users' AI of MPS is being caused by the independent variables according to Nagelkerke R square and Cox and Snell R square respectively.

Table 3 Variables in the equation

	B	S.E.	Wald	Df	Sig.	Exp(B)
PE	.731	.336	4.741	1	.029	2.076
EE	.386	.322	1.432	1	.231	1.471
FC	.826	.353	5.491	1	.019	2.285
SI	1.039	.370	7.879	1	.005	2.827
PV	-.174	.416	.175	1	.676	.840
PR	.781	.257	9.233	1	.002	2.184
PRS	.340	.360	.891	1	.345	1.405
PB	1.060	.342	9.640	1	.002	2.887
Constant	-19.52	3.757	27.010	1	.000	.000

Note: Variable(s) entered on step 1: PEavg, EEavg, FCavg, SIavg, PVavg, PRavg, PRSavg and PBavg.

The p-values obtained for PE, SI, PR, FC, and PB are less than 0.05 (Table 3). Thus, the results support the proposed hypothesis H1, H3, H4, H6 and H8. However, the p-values for EE, PV and PRS are more than 0.05, hence, rejecting hypothesis H2, H5 and H7.

5 Discussion and conclusions

The present study, reported EE as a factor significantly affecting AI of MPS. Payment through mobile reduces the effort of the users required to perform daily tasks. Such results are consistent with the previous researches (Shin, 2009; Kim et al., 2010; Thakur and Shrivastava, 2014; Yan and Yang, 2015).

EE was proven as insignificant in predicting users' AI of MPS. Earlier researchers have also observed similar results in mobile related technology adoption (Chong, 2013;

Slade et al., 2015; Phonthanukitithaworn et al., 2016). Hence, it is suggested that app developers must direct their efforts in developing payment portal which are user friendly in nature and are easy as well as quick to access.

Further, FC was observed to be significant which is also consistent with the observations of previous researchers (Yang, 2010; Chong, 2013; Thakur and Shrivastava, 2014). Availability of required physical and economic resources along with the knowledge of using smart devices is essential to the success of any new technology. In case of mobile payment services as well, having an internet compatible mobile device, access to uninterrupted network and basic knowledge of handling smart devices is essential to complete the payment transaction successfully.

The study found SI, as another significant factor in determining users' AI of MPS. The importance given by an individual's peer group to the usage of a particular technology strongly affects his adoption decision. Previous researchers have found similar results (Schierz et al., 2010; Yang et al., 2012; Venkatesh et al., 2012; Slade et al., 2015). More the individuals using mobile payment services in one's peer group, stronger will be his intention to adopt it himself.

Surprisingly, PV was reported to be insignificant by the present study. Such a result shows inconsistency with the findings of earlier studies undertaken in the new technology adoption domain (Pagani, 2004; Amoroso and Magnier-Watanabe, 2012; Venkatesh et al., 2012). However, there are a few studies with similar results (Phonthanukitithaworn et al., 2016). The benefits offered by mobile payment services might be considered to over grow the cost needed to be borne by the consumers to avail such services.

The level of risk associated with mobile payment transactions is a significant determinant in its AI. The study supported this view by observing PR as a significant factor (Dahlberg et al. 2003; Shin, 2009; Pham and Ho, 2014). Marketers must strive for providing safer and more secure payment gateways for improved rate mobile payments adoption.

Among the two new factors proposed in this study, PRS was found to be insignificant (Haque et al., 2009; Madan and Yadav, 2016, 2018) and PB was a significant factor in determining users' AI of MPS (Brooks, 2015; Madan and Yadav, 2016, 2018). Cash backs, discount coupons, free bees can be used to motivate consumers to shift to mobile payment services from the traditional modes of payments. However, there is a need to create awareness among the consumers regarding the regulatory safeguards available to them in-case of any act of mistrust undertaken during the process of making a mobile payment.

6 Limitations and future scope

The data for the present study was collected from 208 respondents only using an online questionnaire. The limited sample size restricts the potential of results for generalisation. Moreover, the demographic profile of the respondents is disproportionate, which further might have affected the results of the study. The focus is on eight independent variables, whereas there might be many more important factors affecting users' AI of MPS which needs to be considered for providing a greater degree of robustness to the study.

Comment [w18]: Author: Please confirm if this citation pertains to Yang et al.2012a, 2012b or both. Reference entries:

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