

An Exploration of Factors Affecting M-commerce Adoption in India

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Abstract

Purpose: The increasing penetration of mobile phones along with the changing lifestyle of people has given mobile phone the status of a lifestyle device from being a mere tool to connect. This has led to development of numerous mobile applications enabling consumers to transact over mobile devices, giving rise to a new market of mobile commerce popularly known as m-commerce. However, m-commerce is still in its initial stage. Various studies have been conducted around the world to determine the factors that inhibit m-commerce adoption by consumers in different countries but not much has been done in the Indian context. The purpose of this study is to determine and examine the impact of various factors that affect m-commerce adoption intention of Indian consumers.

Methodology: Research model was developed borrowing constructs from the technology acceptance model and TAM2 along with two additional constructs based on review of available literature. An online survey was administered on 170 Indian respondents. Multiple Regression & Factor analysis were then applied to analyze the data.

Findings: The results indicates that m-commerce Adoption Intention by Indian consumers is affected by Perceived Usefulness (p value=.000), Perceived Risk (p value=0.000), Social Influence (p value=0.000) and Variety of Services (p value=0.004), whereas, Perceived Ease of Use (p value=0.905) is found to be statistically insignificant.

Implications: The results will provide service providers & marketers of m-commerce services, a better ground for developing suitable marketing strategies.

Keywords: M-commerce, Perceived Usefulness, Perceived Ease of Use, Perceived Risk, Social Influence and Variety of Services.

1. INTRODUCTION:

The increase in overall penetration of mobile phones along with the changing preferences of people has given mobile phone the status of a lifestyle device from being a mere tool to connect. This has led marketers to develop numerous mobile based applications enabling consumers to enter into transactions using their mobile devices, giving rise to a new market of mobile commerce popularly known as m-commerce. The advancement in the internet technologies (2G, 3G) as well as the mobile communication industry has further

increased its scope. The functionality of mobile phones has gone far beyond the function of merely connecting people to a host of other functions such as internet surfing, entertainment, online shopping and the like [22]. M-commerce includes all such activities that precede and follow the actual commercial transaction. [1,18]

The term "m-commerce" was defined for the first time in 1997 by Kevin Duffey as "the delivery of electronic commerce capabilities directly into the consumer's hand, anywhere, via wireless technology". Since then numerous researchers have defined m-commerce in many ways. Most researchers explained it as any monetary transaction conducted via a mobile telecommunications network. [14, 10, 20]

M-commerce involves a new set of services, business models and related technologies that are quite different from those involved in traditional e-commerce. It may be considered as a step ahead of e-commerce. E-commerce may be described as exchange of good, services, information or any payment made using electronic medium over telecommunication networks. [1, 18] M-commerce offers an additional advantage of mobility in combination with the advantages offered by e-commerce. It provides mobile devices such as smart phones, tablets, laptops and PDAs, the ability to transact i.e. to buy and sell goods online. [3]

The unprecedented growth in the mobile technology and increasing inclination of consumers towards high end mobile devices such as smart phones, has given marketers an entirely new arena to exploit in the form of m-commerce market. Due to easy availability of mobile phones ranging from high priced to low priced models, along with affordable prices of mobile internet connections; m-commerce has the ability to tap the potential of market that was earlier unreached through the existing chains of e-commerce. However, m-commerce is still in its early stage. Numerous studies show that so far m-commerce services have failed in appealing to the hearts and minds of its potential users. Moreover, the development of m-commerce in different countries is significantly different. This difference may be attributed to various social, infrastructural & cultural factors such as varying range of m-commerce services offered, mobile telecommunication infrastructure,

social influence and cultural environment of m-commerce consumers as well as the marketing strategies utilised by service providers.

Previous studies have indicated fair success of m-commerce in developing economies like china, Malaysia, Kenya & Philippines as compared to the developed nations. This may be attributed to the fact that in developing nations mobile phones are more widely penetrated in comparison to financial services such as banking, insurance as well as trading services. India being a developing nation and having mobile phone penetration of almost 76% (tele-density of 76.36 percent, TRAI Data, August 2014), has a great potential for m-commerce services. In order to support m-commerce in India, The Reserve Bank of India has also issued guidelines for mobile banking transactions in October, 2008. However actual adoption is still low. This shows that there exist certain factors hindering its adoption by Indian consumers. The purpose of this study is to identify such factors and examine their impact on the overall m-commerce adoption intention.

This study is conducted in two parts. The first part deals with the identification of important factors affecting m-commerce adoption through reviewing literature available on research related to m-commerce adoption and adoption intention of similar technologies conducted in different parts of the world. The second part includes an empirical study conducted to analyse the impact of the factors identified on the overall m-commerce Adoption Intention (AI) of Indian consumers by applying statistical techniques such as Multiple Regression and Factor Analysis on the data collected. The findings can help marketers and service providers in designing marketing interventions as well as appropriate mobile applications incorporating the aspects of factors affecting adoption intention of their prospective consumers, thereby, increasing their inclination towards adoption and usage of new mobile based services. The results are further helpful to managers in predicting factors that might affect adoption intention of some new related technology introduced in future.

2. LITERATURE REVIEW:

2.1 M-commerce

The term “m-commerce” was used for the first time in 1997, since then numerous researchers have defined m-commerce in many ways. Most researchers define m-commerce to be any monetary transaction (i.e. buying and selling of goods and services) conducted using mobile devices over mobile telecommunication network. [14, 10, 16, 8] Another definition of m-commerce similar to this is “Any transaction, involving the transfer of ownership or rights to use goods and services, which is initiated and/or completed by using mobiles access to computer-mediated networks with the help of mobile devices”[20].

M-commerce from a broader viewpoint can be defined as a wide range of business activities that precede and follow the

actual transaction of sale. [1, 18] It includes all such activities related to a potential commercial transaction conducted over a wireless network via some mobile handheld device such as smart phone, laptop, palmtop or tablet. [19] It involves an emerging set of services and applications accessible by people from their internet enabled mobile devices. [17]

Another view which considers m-commerce to be an extension or a step forward of e-commerce defines m-commerce as “an e-commerce for users on the move” [24]. The real value of m-commerce arises from its ability to enable internet usage on any time and any where basis [24]. M-commerce can be distinguished from e-commerce on the basis of two main dimensions “mobility” and “locatability” on which it has an advantage over e-commerce. [10]

M-Commerce and e-commerce share common fundamental principles of business transaction i.e. transacting via electronic medium. However, the difference exists in the mode of communication (wired Local Area Network in case of E-Commerce & wireless Network in case of M-commerce), the types of Internet access devices (wired devices in case of e-commerce such as desktops, laptops, etc. & wireless devices in case of m-commerce such as mobile phones, PDAs, etc.) the development languages and communication protocols (HTML in case of e-commerce & WML or cHTML in case of m-commerce), as well as technologies supporting each environment. [5]

2.2 Theoretical background and Research Model:

Numerous researchers have developed various models to explain technology adoption intention of consumers from time to time. Technology Adoption Model (TAM) [9] is one of the most widely accepted model. The two major dimensions of this model are Perceived usefulness (PU) and Perceived Ease of Use (PEOU). Many researchers have adapted this model to explain adoption intention of similar technologies. [4, 29, 6, 30, 7] Extension of this model, TAM2 included Social Influence (SI) as an important construct along with PU and PEOU [23]. The Unified Theory of Acceptance and Use of Technology (UTAUT) is another model which explains employee behaviour towards acceptance of organisation information system. [25] From the review of such existing models, few of the most popularly accepted and investigated factors are identified for the purpose of this study.

2.2.1 Perceived usefulness (PU):

It refers to the extent to which a user considers that using a new product or new technology is useful in performing tasks in their daily life. PU is another construct in the Technology Adoption Model [9]. PU is defined as the degree to which a person believes that using a particular system would enhance his or her job performance. [9] Extended models such as TAM2 [23] as well as, TAM3 [26], also consider this factor. PU is also considered by the UTAUT model as a significant factor affecting adoption intention [25]. Other than these

models, various researchers have also considered the positive role of this factor in influencing consumer's adoption intention for m-commerce. [4, 6, 22] Hence, this study hypothesizes that:

H1: Perceived Usefulness (PU) has a positive influence on consumer's M-commerce Adoption Intention (AI)

2.2.2 Perceived ease of use (PEOU):

PEOU refers to the extent to which a new product should be useful and is easy enough to use for consumers to intend to use the product. It is one of the two constructs given in Technology Acceptance Model (TAM) [9]. PEOU is defined as the degree to which a person believes that using a particular system would be free of effort. It is also included in TAM2 model, an extension of TAM [23] as well as TAM3 [26]. The UTAUT model for organisation information system, also consider PEOU as an important factor to be considered. [25] Since 1989 till today numerous researchers have considered PEOU as an important factor having a positive influence on m-commerce adoption intention of the consumers in different countries. [13, 6, 22] Hence, his study hypothesizes that:

H2: Perceived Ease of Use (PEOU) has a positive influence on consumer's M-commerce Adoption Intention (AI).

2.2.3 Perceived risk (PR):

Perceived risk refers to financial, social, physical, psychological, time risk and product associated risks, consumers undertake while making transactions online. [28] Important personal information is usually stored on users' mobile phones, and therefore security and privacy risks involved in m-commerce transactions can be quite high. [7] M-commerce involves undertaking financial transaction over mobile devices, which is perceived to be risky by the users. Numerous researchers such have considered this factor to be significant in explaining m-commerce adoption rate. [13, 12, 30, 22, 6]

The degree of trust consumers have on m-commerce application providers with respect to their reputation, security, and privacy policies followed by them, also influences m-commerce adoption intention. [7] Moreover, lack of face-to-face interactions, clear regulations, and reliable information that can be accessed by the vendors, makes it difficult for users to trust m-commerce sufficiently to subscribe to it. [21, 6] Trust was considered to be a major factor in determining m-commerce adoption intention by other researchers as well. [6, 30, 7] Since Perceived Risk and Trust are closely related to each other, hence for the purpose of this study, Trust factor has also been included while measuring Perceived Risk. The study hypothesizes that:

H3: Perceived Risk (PR) has a negative influence on consumer's M-commerce Adoption Intention (AI).

2.2.4 Variety of services (VOS):

Although m-commerce have many applications, but the variety of services offered by it might not be comparable to

services offered by e-commerce websites. [6] Many previous researchers were of the opinion that the variety of m-commerce services available also affects m-commerce adoption intention. [2, 7] It was found that consumers' interest in services related to m-mailing and routine banking services was remarkably high as compared to other variety of services. [2] and the variety of services offered to the consumers do affect m-commerce adoption in a positive manner. [7] Hence, this study hypothesizes that:

H4: Variety of Services (VOS) has a positive influence on consumer's M-commerce Adoption Intention (AI).

2.2.5 Social influence (SI):

Social influence was defined as the degree to which an individual perceives how important others believe that he or she should use the new system. [25] It relates to the extent to which decision to use a product or service is influenced by the opinions of family, relatives, or friends. [15] This construct has been widely considered by various researchers to determine usage intention of similar technologies related to internet, e-commerce, mobile banking and the like. [13; 27] People exploit online banking is because they are encouraged by people surrounding them to accept and utilize online banking. [22] Existing models explaining usage intention of similar technologies such as TAM2 [23] and UTAUT model also include Social Influence as an important construct of the model. Other researchers have also acknowledged SI to be an important factor having a positive influence in on m-commerce adoption. [11;6] Hence, this study hypothesizes that:

H5: Social Influence (SI) has a positive influence on consumer's M-commerce Adoption Intention (AI)

3. PROPOSED RESEARCH MODEL:

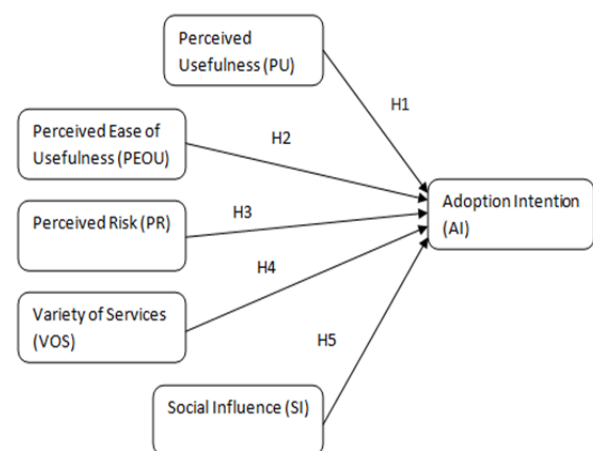


Fig. 1: Proposed Model

4. RESEARCH METHODOLOGY:

4.1. Measures of the construct:

For the purpose of this study a questionnaire was developed comprising of 5 major constructs namely Perceived Usefulness, Perceived Ease of Use, Perceived Risk, Variety of Services and Social Influence. Items selected for each of the constructs were adapted from previous studies to ensure content validity. All the questions related to independent and dependent variables, were surveyed on a Likert Scale ranging from 1 (as strongly disagree) to 5 (as strongly agree).

4.2. Data Collection and Sampling:

A sample of 170 Indian respondents was collected with the help of the developed questionnaire. Questionnaire was circulated online among students as well as working professionals. The demographics of the sample collected may be summarised as follows:

In the sample of 170 respondents almost 71% (120) were less than 30 years of age, 21% (36) were between 30 years to 45 years and the remaining 8%(14) respondents were above the age of 45 years. Almost 79%(134) of them were males and 21%(36) were females. 34%(58) of them were having a family income of less than Rs. 75,000, 30%(51) had a family income ranging from Rs. 75,001 to Rs. 1,50,000 and 36%(61) were having family income above Rs. 1,50,000.

4.3 Data Analysis and Results:

Multiple Regression Techniques were applied on the data collected in order to test the hypothesis proposed in this study.

Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Perceived Risk (PR), Variety of Services (VOS) and Social Influence (SI) were considered to be independent factors affecting the dependent factor which is Adoption Intention (AI) in this case.

The following tables were generated:

Table 1: Mean and Standard Deviation of PU, PEOU, PR, VOS & SI Descriptive Statistics

	Mean	Std. Deviation	N
What is your intention to adopt Mobile Commerce?	3.66	.986	170
PEOUavg	4.02	.800	170
PUavg	3.75	.897	170
PRavg	3.53	.960	170
VOSavg	3.71	.895	170
SIavg	2.75	1.138	170

Table 2: R square & Adjusted R square Values Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.784a	.614	.603	.621

a. Predictors: (Constant), SIavg, PEOUavg, PRavg, PUavg, VOSavg

The coefficient of R2 is 0.614 in the above table, which indicates that all the independent variables i.e. PU, PEOU, PR, VOS & SI account for 61.4% of the variance in m-commerce Adoption Intention (AI).

Table 3: ANOVAa

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	100.898	5	20.180	52.270	.000b
	Residual	63.314	164	.386		
	Total	164.212	169			

a. Dependent Variable: What is your intention to adopt Mobile Commerce?

b. Predictors: (Constant), SIavg, PEOUavg, PRavg, PUavg, VOSavg

Table 4: p-values for PU, PEOU, PR, VOS & SI Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.044	.264		.166	.868		
	PEOU	-.009	.080	-.008	-.119	.905	.562	1.780
	PU	.314	.076	.286	4.159	.000	.497	2.012
	PR	.304	.068	.296	4.484	.000	.539	1.855
	VOS	.244	.084	.222	2.892	.004	.401	2.497
	SI	.180	.045	.208	4.012	.000	.874	1.144

a. Dependent Variable: What is your intention to adopt Mobile Commerce?

By observing the values of VIF from the above table we can conclude that there is no evidence of multicollinearity because the VIFs are within acceptable levels. Moreover, by observing the p-values of each factor in the sig. column, we can conclude

that Perceived Usefulness (PU), Perceived Risk (PR), Variety of Services (VOS) as well as Social Influence (SI) are significant in explaining dependent variable i.e. Adoption Intention (AI) since p-value for these factors is less than 0.05.

This result supports hypothesis H2, H3, H4 & H5. The above table also shows that the p-value for Perceived Ease of Use (PEOU) is greater than 0.05, suggesting that PEOU is insignificant in explaining m-commerce Adoption Intention (AI) ruling out hypothesis H1.

5. DISCUSSIONS AND IMPLICATIONS:

The study indicates that factors such as Perceived Usefulness (PU) (p-value- 0.000), Variety of Services (VOS) (p-value-0.004) and Social Influence (SI) (p-value-0.000) have a positive influence on the m-commerce Adoption Intention of Indian consumers. Whereas, Perceived Risk (PR) (p-value-0.000) has a negative influence on the Adoption Intention and Perceived Ease of Use (PEOU) (p-value- 0.905) is found to be insignificant. The above findings can help marketers and service providers in designing marketing interventions as well as appropriate mobile applications incorporating the aspects of these factors affecting adoption intention of their prospective consumers. Hence, providing marketers with a way by which they can increase their consumer's inclination towards adoption and usage of new mobile based services. The study can be further extended by future researchers to include other important factors to the model used in this study and can be adapted to study adoption intention of other related technologies as well. Marketers can use the results as a basis for predicting factors that might influence adoption intention of some new future technology and can plan their entry strategies accordingly.

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