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## **Adoption of M-commerce in India: Applying Theory of Planned Behaviour Model**

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### **Abstract**

Today, with the development in wireless and mobile technologies, Mobile Commerce (m-commerce) is expected to make substantial impact on the business landscape. The mobile cellular market is the fastest growing telecommunication market in terms of subscriber numbers and popularity in India. Mobile Commerce market in India is expected to grow at a CAGR of 71.06 percent by the year 2016. The substantial increase of the mobile users is linked with greater adoption for mobile-commerce in India. At present, Indian users indulge in mobile purchases for low value transactions such as entertainment services, games, and music downloads. Mobile commerce is quite popular in the developed countries but in India it is in nascent stage and yet to take off. This study captures users' acceptance behaviour towards M-commerce by applying theory of planned behaviour (TPB) model developed by Ajzen (1991). Results indicate that attitude and perceived behavioural control have positive and significant impact on individual's intention while subjective norm has a positive but not significant impact on intention. Further, intention is found to be significantly and positively related with behaviour.

**Keywords: M-commerce, Theory of planned behaviour, attitude, intention, perceived behavioural control, empirical study, India**

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## **INTRODUCTION**

Worldwide in last two decades, the electronic commerce has made tremendous changes in the business community and industry. Today, with the development in wireless and mobile technologies, Mobile Commerce (m-commerce) is expected to make comparable, if not even larger, impact on the business landscape. Today, the number of mobile phone subscribers is surpassing the number of internet users in several countries, consequently telecommunications companies have recognized the vast growth potential of m-commerce and made significant investment in its development (Xie, 2009).

Keeping in mind subscriber numbers and popularity of mobile phones in India, it is regarded as the fastest growing telecommunication market. Mobile commerce is quite prevalent in many developed countries but in India it is in nascent stage and yet to take off. According to TechNavio's analysts the Mobile Commerce market in India is expected to grow at a CAGR of 71.06 percent over the period 2012-2016 (Research and Market report, 2012). At present, Indian users indulge in mobile purchases for low value transactions such as entertainment services, games, and music downloads. In India, there is significant increase in numbers of the mobile users in last decade as a result analysts are expecting huge potential for mobile-commerce. The reach and penetration of mobile phones is major feature to deliver large number of services in fast, cost effective and seamless manner. Telecom Regulator Authority of India (TRAI) brought out with guidelines and tariff on unstructured supplementary service data (USSD) based mobile banking services for encouraging use of mobile banking services across India. In the coming years, due to enhanced reach, mobile value added services (MVAS) and diverse features of mobiles, m-commerce is expected a huge potential for adoption across India.

M-commerce, an emerging arena in business landscape, refers to the usage of a mobile devices for making transactions wirelessly. Chaffey (2009, p.6) defines Mobile commerce as "electronic transactions and communications conducted using mobile devices such as laptops, PDAs, and mobile phones, and typically with a wireless connection". Tsalgatidou & Pitoura (2001) indicated "mobile electronic commerce (MEC) operates partially in a different environment than Internet e-commerce due to the special characteristics and constraints of mobile terminals and wireless networks and the context, situations and circumstances in which people use their hand-held terminals". Mobile commerce not only opens up the prospects for B2C, but it also permits business-to-business (B2B) commerce to be carried out without wires to achieve greater efficiency. M-commerce is creating the beginning of another new era in business and it will continue to broaden the way organizations carry out business. M-commerce has potential to change the relationships between companies and their stakeholders (Keen and Macintosh, 2001). Shankar et al. (2010) described m-commerce to create a shift in the sales paradigm where instead of consumers arriving in the company's sales environment it is the seller who influences the consumer's environment without any

limitations of time and place through mobile devices. M-commerce is considered as new platform where economic drive for growth is continuously at odd with the concerns and needs for individual privacy. Consequently, the advantages of m-commerce must be weighed against the potential for privacy violations (Milne, 2003).

Researchers have varied opinion regarding association between e-commerce and m-commerce. Abdelkarim and Nasereddin (2010) contemplated m-commerce to be a subset of e-commerce where sellers carry out business with the usage of mobile devices. However, Vrechopoulos et al. (2003) consider m-commerce as an extended concept of e-commerce based on internet technology that offers service and product through mobile network and device. While Feng et al. (2006) contended that m-commerce is much more than simply an extension of e-commerce. They argued that m-commerce has diverse interfaces with users, usage patterns, and value chain, in comparison to e-commerce. Qingfei et al. (2008) mentioned "user acceptance is one of the key fundamentals for the development and success of M-commerce". With this, marketers can reduce time by easily accessing information in a real time environment and can cultivate new business opportunities. Chaffey (2009) discussed five advantages that this wireless m-commerce provide to users viz. ubiquity, reachability, convenience, security and instant access. Due to wide spread, speed and acceptance of mobile phones, m-commerce services are poised to have a thriving future.

M-commerce adoption decisions are relatively complex and different from technology adoption decisions because in m-commerce users not only choose to adopt a technology per se, but rather a new instrument of doing business. Apart from this, it incorporates both transactional and non-transactional dimensions, which means that consumers' intentions to perform should be regarded as multi-dimensional behavioural intentions (Pavlou, 2002). Jarvenpaa et al. (2003) mentioned that "the success of m-commerce services is likely to depend on how flexible and malleable the technology is to allow users to shape it to their individual and group needs in various social and business contexts". Though Barnes (2002) posited that the internet is assimilating with personal computers and mobile devices as a result the capabilities of e-commerce are now becoming conveniently available on mobile devices. Thus, it is very possible that individuals who adopt and use the Internet are also likely to use mobile phones for m-commerce transactions.

Several researchers studied antecedents and determinants for m-commerce (Langendoerfer, 2002; Martin, 2012; Jaradat & Rababaa; 2013). Carlsson and Walden, (2002) specified the slow speed of service and the limited screen size of mobile devices as the main hindrance for adoption of m-commerce expansion. The difficulties because of constraints of mobile devices diminish the potential uses of mobile commerce. The users of mobile commerce receive partial and inadequate information due to the mobile terminals restrictions (Wu and Wang, 2005). However, Langendoerfer (2002) postulated that psychological factors mainly related to privacy issues are responsible for not taking off m-commerce rather than technological issues. Martin (2012) contended that how a firm is perceived to perform in m-commerce is contingent on the extent to which its activity fits mobile business, technological competence and customer value for the firm.

Although m-commerce is a nascent business model in developing countries, yet in the last two decades, a significant body of academic and business research from developed countries has highlighted the determinants that are likely to make an impact on diffusion of mobile commerce in the business-to-consumer marketplace. "The m-commerce wave is quickly catching on in other markets across the region, and will play a key role in shaping the future of retail in Asia" (Nielson report, 2013). However, in comparison to e-commerce, there is limited academic research available on m-commerce. Academic studies in developing countries, especially in India are limited because m-commerce is still in emergent stage and most consumers have not had the chance to use or adopt this technology in their routine life. Giaglis et al. (2002) postulated that it is vital to understand m-commerce market adoption and value network created by this new business platform. Although m-commerce, as a mechanism of commerce, appears to have huge potential in India but there is scarcity of research about the consumers' willingness to adopt this new wireless electronic platform. Therefore, this study attempts to explore users' acceptance behaviour towards m-commerce by applying theory of planned behaviour model developed by Ajzen (1991).

## LITERATURE REVIEW

### **Studies related to consumer behaviour in context of m-commerce**

Je and Myeong-Cheol (2005) studied mobile internet acceptance in Korea by developing an extended version of TAM to better reflect M-internet context. They found that attitude toward mobile internet is the most significant determinant followed by the perceived playfulness and the usefulness to use M-Internet. Further, they established the positive role of the perceived playfulness and the negative role of perceived price level in developing the attitude as well as the intention. Nor Shahriza et al. (2006) in their study explored the utilization of mobile phone services in the educational environment and found positive perceptions towards the application of wireless hand services in the context of library and information services that led to the extensive usage of mobile phones applications among Malaysian students.

Vrechopoulos et al. (2002) compared adoption rates and consumer behavior toward m-commerce among Finland, Germany and Greece and found significant difference among consumers in three countries. The study indicated European consumers' were high in adoption and diffusion due to better quality mobile devices, user-friendly shopping interfaces, more useful applications and services, lower prices, better security, better coverage and higher speed. In a similar study in Thailand, Kini and Bandyopadhyay (2006) found "good pricing", "quality of service" and ubiquity of mobile device as critical success for higher usage for mobile commerce. While Park et al. (2007) found performance expectancy, effort expectancy, social influence, and facilitating condition as major factors that influenced the adoption of M-commerce in China. Researchers used the unified theory of acceptance and use of technology (UTAUT model) to m-commerce adoption. However, Kini (2009) conducted a study among MBA students in Chile and found that despite this community an extensive user of electronic commerce, they are not contented using mobile commerce owing to mobile access speed, service quality and price factors. Thakur & Srivastava (2013) in their study in India investigated the factors influencing the adoption intention of mobile commerce based on constructs from the technology acceptance model and innovation resistance theory.

Results of the study indicated perceived usefulness, perceived ease of use and social influence as significant determinants for adopting this new technology platform for conducting business. The results also indicated security and privacy risks negatively related with usage of mobile commerce.

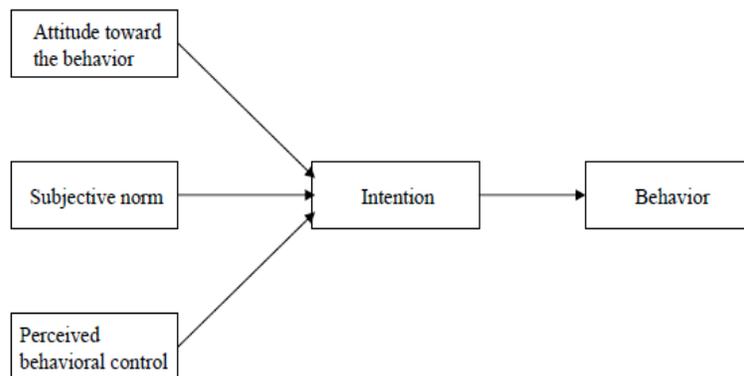
Alkhunaizan and Love (2013) in their research analyzed effect of demographical factors (gender, age, education level) influence on mobile commerce usage in Saudi Arabia. Findings of the study indicated that age affect statistically significant on the actual usage while gender and education level do not have impact on the mobile commerce actual usage. In contrast, Park et al. (2007) found moderating factors such as gender and education level to have a significant influence but interestingly, internet usage experience found to have no significant effect on m-commerce adoption.

Jih (2007) examined the relationship between perceived convenience and shopping intention of college students in Taiwan and established a significant relationship between the two constructs, and a positive effect of convenience perception on shopping intention.

**Studies related to theory of planned behavior**

In order to explore Indian consumers’ behaviour to adopt and use m-commerce, this study used theory of planned behavior (Ajzen, 1991).The theory of planned behavior (Ajzen, 1991) is an extension of theory of reasoned action (TRA) and was established to overcome the limitation in the theory of reasoned action (Ajzen and Fishbein, 1975,1980). Theory of planned behavior comprises of attitude towards the behavior, subjective norm (SN) and perceived behavioural control (PBC) (Ajzen, 1985, 1991). Theory of planned behaviour model developed by Ajzen (1991) is shown in exhibit 1. According to the theory, attitude toward behavior, subjective norms, and perceived behavioral control, together lead to individual's behavioural intention and behaviour. Theory of planned behavior, have been applied to various studies in varied sectors to study consumer behaviour such as e-coupon usage (Kang et al 2006), green consumption (Sparks et al 1992), smoking (Godin et al., 1992) , e-commerce services (Bhattacharjee ,2000), Tonglet et al. (2004), etc. Various Cross- cultural studies have been conducted to show that theory of planned behaviour can be applied to explain behavior intentions in both Eastern and Western cultures. In Indian context, some of the researchers adopted this TPB model to study environmentally sustainable products (Kumar, 2012), pesticides (Bond et al.,2009) etc.

**Exhibit: 1 Theory of Planned Behaviour**



Source: Ajzen, 1991

Attitude is defined as degree of favourableness or unfavourableness of a person's evaluation of a behavior. Attitude takes into consideration the beliefs about the consequences of performing the behaviour and of the evaluation of these consequences. Purchase intention refers to the possibility of consumers' willingness to buy a product (Zeithaml, 1988). If consumers have a good impression and attitude toward a brand or a product, they will have purchase intentions. Several studies have confirmed the significant effect of attitude towards intention (Korzaan, 2003; May, 2005; Taylor and Todd, 1995; Kelly et al., 2006).

On the basis of literature survey, following hypotheses is formulated in context of India:

Hypothesis 1 (H1): Attitude toward m-commerce will have positive and significant effect on individuals' intention to adopt m-commerce.

Subjective norm is defined as an individual's perception regarding approval or disapproval of his behaviour by significant others (Fishbein and Ajzen, 1975; Ajzen, 1991). The different influencers involved in the subjective norms may be any group viz. family, friends, and colleagues. As part of the group, consumers will make effort to fit in with the group norm. In case group members think positively about m-commerce transactions, then practically group is likely to have no objection toward using m-commerce. In a country like India, being a collectivistic culture, social norm is considered as a significant mean of viewing the life for people. Consequently, people assign more importance to the emotional aspect of the decision making in comparison to the rational cost-benefit analysis in a relationship (Sinha et al., 2001). Subjective norms are determined by normative beliefs and motivation to comply with the beliefs. Subjective norm is considered as a direct determinant of behavioral intention in theory of reasoned action (Fishbein and Ajzen, 1975) and theory of planned behaviour (Ajzen, 1991; Hagger et al., 2002; Venkatesh & Davis, 2000). Though, few studies (Davis et al., 1989; Mathieson, 1991) have also indicated no support for a direct relationship between subjective norm and intention to use. The literature survey in this part forms the basis for the second hypotheses:

Hypothesis 2 (H2): Subjective norms will have a positive and significant effect on individuals' intention to adopt m-commerce.

Perceived behavioural control is defined as, an individual's perception of the ease or difficulty in performing the behavior of interest, given the presence or absence of requisite resources and opportunities (Ajzen, 1991). Increase in the resources (time, money) will result in greater perceived control of the particular behaviour (Ajzen, 1991). Perceived behavioural control is evaluated by total set of control beliefs, that is, beliefs about presence of factors that may promote or hinder performance of behaviour. Researches have concluded that there is a positive relationship between Perceived behavioural control and intention (Downs & Hausenblas, 2005; Taylor and Todd, 1995). Thus, with the given resources, the higher is the individual's confidence in his/her ability and it is more likely that an individual will have positive effect towards using m-commerce for purchasing. On this basis, third hypotheses is formulated.

Hypothesis 3 (H3): Perceived Behavioural control will have a positive and significant effect on individuals' intention to adopt m-commerce.

Behavioral intention is defined as the perception of an individual towards performance of a particular behavior (Fishbein and Ajzen, 1975). Theory of planned behaviour suggests, more positive the attitude toward a behavior and subjective norm, and greater the perceived behavioral control, the stronger will be an individual's intention to perform the behaviour of interest (Ajzen, 2002). Purchase intention is considered as most apposite item to predict shoppers' behavior (Morwitz & Schmittlein, 1992). This part of literature survey helped to formulate fourth hypotheses.

Hypothesis 4 (H4): Intention to adopt m-commerce will have a positive and significant effect on individuals' usage of m-commerce.

## **RESEARCH METHODOLOGY**

### **Sample and data collection**

In order to assess Indian respondents' attitudes and their intention to use m-commerce technology, a survey was administered online with a free survey conducting portal [www.google.com](http://www.google.com). This was done in order to obtain a larger and more diversified sample. On the basis of literature review, the questionnaire for the study was designed and pilot testing was done with a sample of 26 postgraduate management students. Few modifications in terminology of statements and clarity were carried out after pilot survey.

The questionnaire provided a brief description of m-commerce so that respondents are informed about this concept. The questionnaire was divided into two sections; in the first section respondents were asked to provide demographic details while second section looked for responses towards various statements related to attitude, subjective norms, perceived behaviour control, intention and usage behaviour. Total 21 statements drawn from the relevant literature (Mathieson, 1991; Taylor and Todd, 1995; Ajzen, 2002) were considered in this section.

To access attitude of respondents towards using m-commerce, five statements were provided with a series of bi-polar adjectives based on literature. Respondents were asked to encircle a number between one and five between these adjectives to indicate which endpoint better described them and to what extent. To measure subjective norm, perceived behaviour control, intention and usage behaviour four statements were given related to each variable. Subjective norm statements comprised of both normative belief and motivation to comply statements. These statements were measured by five point Likert scales of agreement, running from strongly disagree (1) to strongly agree (5). These statements were subjected to a factor analysis for identification of the key factors. Preliminary data screening was carried out for missing values and outliers, and the normality of the dataset was also tested. Data was analysed with SPSS 18.0 and AMOS 18.0. Structural equation modelling (SEM) was used as main analytical tool to analyze the cause and effect relation of the research model constructs. In all 255 responses were obtained but 21 responses were discarded because of incompleteness or some other reason. Finally, 234 complete responses were considered for the study.

Demographic characteristics of respondents were examined. The sample comprised of 176 male and 58 females while on the basis of age 153, 43 and 38 respondents were belonging to an age group of 18 and 35, from more than 35 to 45 years and more than 45 years categories, respectively.

## FINDINGS AND DISCUSSIONS

### Factors influencing intention to use m-commerce

In order to analyze factors affecting intention, principle component analysis (PCA) with varimax rotation was done on 21 measurement items to screen them and identify the underlying dimensions of consumers' adoption of m-commerce. The rule of minimum eigen value of 1.0 was applied. The study selected only those items whose factor loadings were at least .50 in PCA. On the basis of this 4 items were dropped, as they were not appropriately loaded on any factor. The PCA produced five factors as expected in TPB model: attitude with eigen value 3.4, subjective norm with eigen value 1.03, perceived behavioural control with eigen value 2.01, intention and behaviour with eigen value 1.8 and 1.4 respectively. These final identified factors explained 74.325 of the total variance.

Table 1 depicts the KMO and overall significance of correlation matrices with the help of Bartlett's test of sphericity, which supported the application of factor analysis. Table 2 indicates the factors underlying the individual's adoption behaviour related to m-commerce with factor loadings and Cronbach's  $\alpha$  (reliability). Reliability of the constructs for 21 items is .816 that demonstrates good internal consistency of the constructs. As value of Cronbach's  $\alpha$  exceeded 0.7 for each construct, this means that factor analysis is appropriate for the data set (Nunnally and Bernstein (1994).

**Table 1: KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.827
Bartlett's Test of Sphericity Approx. Chi-Square	461.293
df	55
Sig.	.000

**Table 2 Constructs and Factor loading**

Constructs	Indicator	Factor Loading	Cronbach's $\alpha$
Attitude	A1	.847	.806
	A2	.754	
	A3	.803	
	A4	.719	
	A5	.763	
Subjective Norms	SN1	.732	.712
	SN2	.693	
	SN3	.624	
	SN4	.590	
Perceived Behavioural	PBC1	.783	.873
	PBC2	.713	
	PBC3	.651	

Control	PBC4	.694	
Intention*	I2	.738	.784
	I4	.727	
Behaviour*	B1	.860	.806
	B3	.649	

\*Two items were dropped from each factors because of low loading.

Items obtained after factor analysis were subsequently subjected to confirmatory factor analysis (CFA) to examine the proposed hypothesis and measure the relationship amongst the constructs taken. A completely standardized solution produced by Amos 18.0 using maximum likelihood method was taken. This confirmed the uni-dimensionality of the constructs and provided strong empirical verification of their validity.

Table 3 indicates the measurements of various parameters for Goodness of fit. Validity in the study is examined through convergent and discriminant validity. Average Variance Extracted (AVE) indicates the amount of variance of the measurement items can be accounted for by the construct. Average variance extracted (AVE) was also calculated for each construct, all values of AVE were more than 0.5 as suggested by Fornell and Larcker (1981). Composite reliability (CR) signifies the shared variance among a set of observed variables measuring an underlying construct (Fornell and Larcker, 1981). Convergent validity indicates whether the items that compose a determined scale converge on only one construct. Convergent validity is considered acceptable when the loading on each construct is more than 0.6 and value of  $CR > AVE$  and  $AVE > 0.5$ . As value of CR is more than 0.6 that is desirable (Bagozzi, 1994), thus this requirement is met for all five factors. Discriminant validity indicates if a construct is significantly distinct from other constructs that are not theoretically related to it and can be checked by calculating if the correlations between the variables are lower than the square root of the average variance extracted. On the basis of the criteria mentioned above, Table 3 indicates that the measures in the study provided sufficient evidence of reliability, convergent and discriminant validity.

**Table 3 Factor Validity Test Results**

	<b>CR</b>	<b>AVE</b>	<b>MSV</b>	<b>ASV</b>	<b>Convergent Validity CR&gt;AVE AVE&gt;.5</b>	<b>Discriminant Validity MSV&lt;AVE ASV&lt;AVE</b>
<b>Attitude</b>	0.864	0.691	0.217	0.304	yes	yes
<b>Subjective Norms</b>	0.817	0.603	0.167	0.203	yes	yes
<b>Perceived Beh. control</b>	0.747	0.563	0.236	0.138	yes	yes
<b>Intention</b>	0.759	0.651	0.138	0.275	yes	yes
<b>Behaviour</b>	0.813	0.592	0.083	0.097	yes	yes

**Structural model analysis**

With the objective of testing the proposed hypotheses, a structural equation model was developed.

In order to examine the goodness-fit of the measurement model for m-commerce adoption factors, the study examined various fit indexes. As proposed by Garver and Mentzer (1999) the non-normed fit index (NNFI); the comparative fit index (CFI) and the root mean squared approximation of error (RMSEA) is calculated. The normally applied fit indices are NNFI and CFI which should be more than 0.90 for good fit and RMSEA should be less than 0.08 (Hair et al., 2011). In addition,  $\chi^2$  statistic ( $\chi^2$ / d.f. ratio) should be less than 5 to accept the model (Wheaton et al, 1977).

Table 4 depicts the criteria for acceptance of different indexes and value obtained for the current study. The overall fit of the model is acceptable because the goodness of statistics is satisfactory, with the  $\chi^2$ /df ratio close to 3.2.

**Table 4 Model Fit Summary for Path Model**

Key Goodness of fit Parameters	Criteria	Value
Comparative Fit Index (CFI)	>.9	.932
Tucker-Lewis Index (TLI)	>.9	.917
Normed Fit Index (NFI),	>.9	.914
Goodness of Fit Index (GFI)	>.9	.926
Incremental Fit Index (IFI),	>.9	.901
Root Mean Square Error of Approximation (RMSEA)	<.05	.036

As the values of CFI, TLI, NFI, GFI, IFI should be equal or greater than 0.90 and more specifically, the value of RMSEA should be below 0.05 in order to accept the model. Table 4 indicates that the study meets typical cut-off criteria and model can be accepted. Further, the results of structural equation modelling are shown in Table 5 and in Figure 1, respectively.

**Table 5 Regression Weights: (Group number 1 - Default model)**

	Estimate	S.E.	C.R.	P	Label
Intention <--- Attitude	.671	.088	3.749	***	
Intention <--- Subjective norm	.330	.344	1.948	.051	
Intention <--- perc beh control	.477	.106	4.517	***	
Behaviour <--- Intention	1.128	.279	4.042	***	
VAR00001 <--- Attitude	1.000				
VAR00002 <--- Attitude	1.615	.769	2.099	.036	
VAR00003 <--- Attitude	3.049	1.356	2.249	.025	
VAR00004 <--- Attitude	3.487	1.560	2.235	.025	
VAR00005 <--- Attitude	.379	.380	.998	.318	
VAR00011 <--- Subjective norm	1.000				
VAR00010 <--- Subjective norm	.888	.178	4.985	***	
VAR00009 <--- Subjective norm	.434	.144	3.021	.003	

	Estimate	S.E.	C.R.	P	Label
VAR00008 <--- Subjective norm	.898	.191	4.712	***	
VAR00015 <--- perc beh control	1.000				
VAR00014 <--- perc beh control	1.329	.214	6.214	***	
VAR00013 <--- perc beh control	.196	.110	1.777	.076	
VAR00012 <--- perc beh control	.150	.122	1.230	.219	
VAR00022 <--- Intention	1.000				
VAR00020 <--- Intention	.513	.191	2.689	.007	
VAR00018 <--- Behaviour	1.000				
VAR00016 <--- Behaviour	.924	.169	5.468	***	

\*\*\* p < 0.05

The results of unstandardized regression weights are shown in Table 5. Each unstandardized regression coefficient represents the amount of change in the dependent variable for each one unit change in the variable predicting it. Results indicate that attitude and perceived behavioural control have a positive and significant effect on intention to adopt m-commerce while subjective norm has a positive but not significant impact on intention. Thus, H1 and H3 were completely supported while H2 is supported partially. Thus, together with attitude, PBC is a significant predictor of intention to adopt m-commerce in India. The positive and significant relationship of attitude and intention indicates that the more positive Indian consumers' attitudes toward m-commerce, the more favorable will be their behavioral intentions. Subjective norm though has a positive relationship with intention but it is not significant which means for m-commerce adoption individuals do not consider the much influence of other people/influencers. The results of this study is in line with other studies which reported significant and positive relationship of attitude and PBC with intention.

Standardized regression weights (shown in Table 6) were used to evaluate the relative contributions of each predictor variable to each outcome variable. As shown in Fig 1, the factors having influence on intention were attitude, subjective norm and perceived behavioural control (having value .701, .315 and .593 respectively).

**Table 6 Standardized Regression Weights: (Group number 1 - Default model)**

	Estimate
Intention <--- Attitude	.701
Intention <--- Subjective norm	.315
Intention <--- perc beh control	.593
Behaviour <--- Intention	.599
VAR00001 <--- Attitude	.175
VAR00002 <--- Attitude	.365
VAR00003 <--- Attitude	.699
VAR00004 <--- Attitude	.774
VAR00005 <--- Attitude	.085
VAR00011 <--- Subjective norm	.562
VAR00010 <--- Subjective norm	.599
VAR00009 <--- Subjective norm	.270

	Estimate
VAR00008 <--- Subjective norm	.503
VAR00015 <--- perc beh control	.607
VAR00014 <--- perc beh control	.763
VAR00013 <--- perc beh control	.139
VAR00012 <--- perc beh control	.096
VAR00022 <--- Intention	.047
VAR00020 <--- Intention	.024
VAR00018 <--- Behaviour	.572
VAR00016 <--- Behaviour	.539

## CONCLUSION

The objective of this study is to develop understanding of consumers' adoption behaviour of m-commerce. The foremost contribution of this study is to empirically examine the application of Theory of planned behaviour in context of m-commerce and also to determine the relative strength of these determinants viz. attitude, subjective norm and perceived behavioural control. The entire study was conducted using the framework of the theory of planned behaviour (Ajzen, 1991) in order to understand the impact of various determinants of purchase intention in context of m-commerce which finally concluded to purchase behaviour. Based on this theory, a comprehensive research framework was developed and examined with the help of structural equation modelling.

The results obtained from the structural equation modelling indicate a good fit. The results of the study show that attitude and perceived behavioural control are significantly related with intention. This is in sync with other studies (Taylor and Todd, 1995; Chang, 1998; Kumar, 2012). Indians spend a lot of time with mobile phones and they find it to be a very important device in their day-to-day life, generally they perceive many benefits from mobile phones apart from communication. As a result, they may be showing high value for attitude towards m-commerce too. The relationship of subjective norm with intention is not significant. This is in line with other studies which have also discussed the relatively weaker impact of subjective norm in TPB (Trafimow and Finlay, 1996; Cialdini and Trost, 1998). Though, India is considered to be a collectivist society where generally the impact of group is found to be more as compared to individualistic society. This low and insignificant value of subjective norm may be assigned due to underestimation of this construct measured by questionnaire wherein respondents didn't exhibit their exact self-nature. Further, the results show intention to be significantly and positively related with behaviour. Thus, if marketers are able to create a positive attitude towards m-commerce in consumers' mind it will lead to higher intention and finally adoption behaviour. In addition, results indicate that attitude is the most important determinant of the purchase intention followed by perceived behavioural control. Thus, this present study analyzed users' acceptance behaviour using the theory of planned behaviour within the limits of a single empirical study. Yet, regardless of the promising results mentioned in this study, more research is required in order to elucidate various facets concerning the adoption of m-commerce in India.

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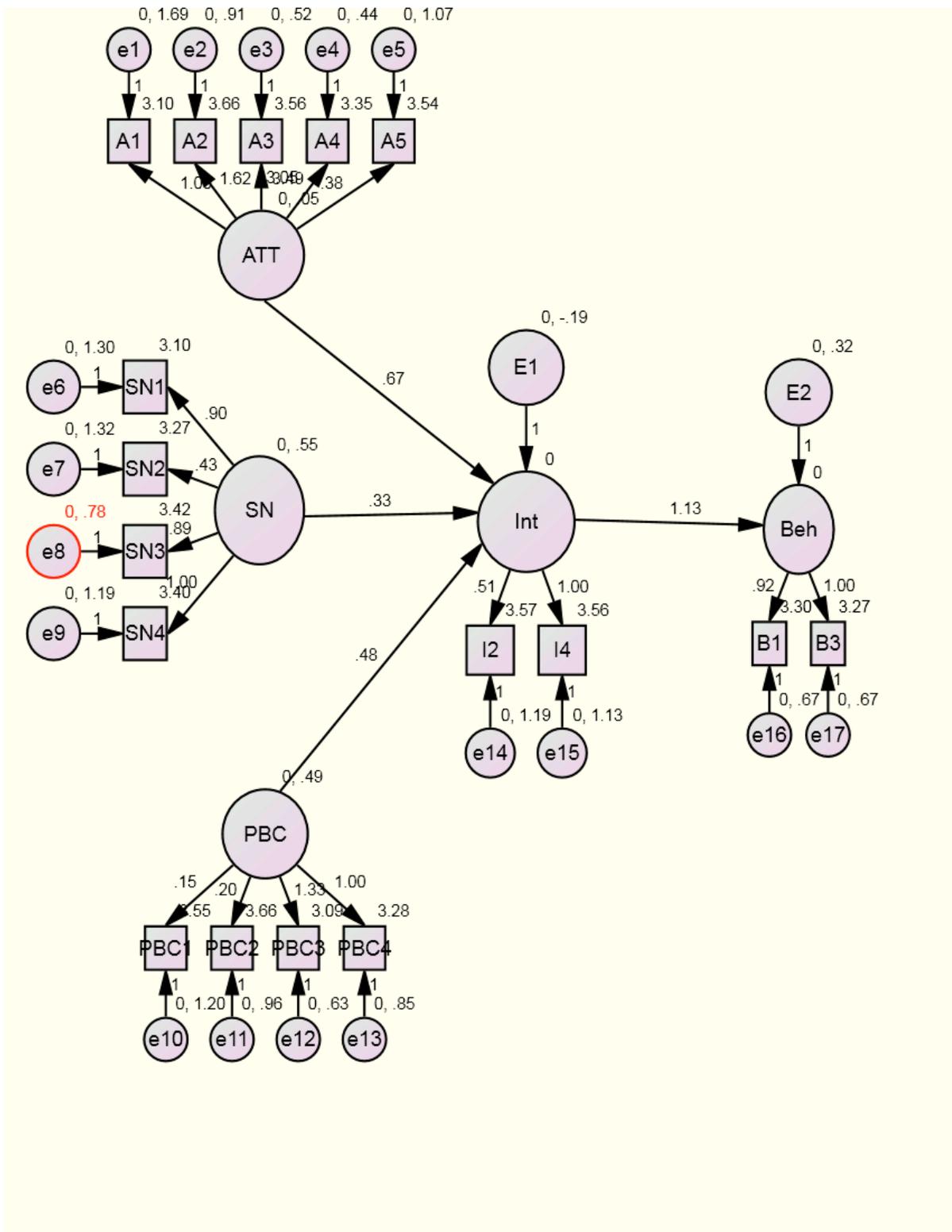


Fig. 1 Relationship of various constructs of TPB model in context of m-commerce