



## Understanding the intention to use mobile shopping applications and its influence on price sensitivity



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### ABSTRACT

This study employs an extended technology acceptance model (TAM) and the theory of diffusion of innovations (DOI) to understand the intention to use mobile commerce applications for shopping purposes. The variables—perceived enjoyment, perceived risk and personal innovativeness—were added to the original model. The price sensitivity criterion was predicted using the variables—perceived risk, personal innovativeness, satisfaction and the intention to use. An online questionnaire was circulated nationwide through email to verified e-commerce users and a sample of 675 respondents was taken for analysis through structural equation modeling approach. Gender, experience and frequency of using mobile shopping applications were used as moderators for all relationships. Findings of this study reveal that personal innovativeness and perceived risk play a major role in deciding the intention to use mobile shopping applications. Users who are highly innovative and with a higher intention to use mobile shopping applications are less sensitive to price. Various managerial implications including applications to differential pricing, improving adoption pace and segmenting consumers to design marketing strategies are discussed.

### 1. Introduction

The internet and e-commerce have caused a revolution in the past decade, especially in the B2C retail business. With the increase in smartphones at the disposal of the people and high-speed internet connections, companies are focusing on “marketing strategies and selling through mobile devices” called mobile commerce (*m-commerce*) (Musa et al., 2016). Mobile retail commerce has grown globally from a market of \$133 billion in 2013 to \$298 billion by the end of 2015 of which the Indian mobile commerce revenue was \$7.78 billion (eMarketer, 2016). The estimated global growth of the market by the end of 2018 will be \$626 billion, accounting for 20.99% of the total market of digital commerce (GSMA, 2016). According to a study by EY (2016), India had over 351 million internet subscribers and 167 million smartphone users at the end of 2015. By the end of 2017, it is expected that India will have over 350 million smartphone users. India's primary earning population (age > 25) is expected to grow from 40% in 2015 to 60% in 2020. With the increase in the penetration of mobile wallets in India, the growth in the number of transactions through mobile can also increase up to 60 times (EY, 2016). The sales of products and services through mobile in India was 58.5% of the total e-commerce sales by the end of 2015 and were the leaders of the mobile commerce market in the world (eMarketer, 2016). By the end of

the second quarter of 2016, other countries like the US (35%), UK (50.5%), South Korea (48.2%), France (27%) and Australia (42%) had significantly lower sales through mobile (Criteo, 2016). Hence India is more mobilized than most other countries in using mobile internet for shopping purposes.

Mobile shopping applications have been launched in the Indian market and over the past few years, they are highly preferred by customers in various fields like e-commerce, entertainment, home services, classifieds, food delivery, mobile banking etc. The experience of shopping for products through mobile shopping applications is significantly different from shopping on a mobile phone through a browser. Using mobile shopping applications involves various activities like purchasing products, tracking orders, earning rewards and loyalty points, accessing saved coupons, browsing or researching products, comparing products, reading reviews etc (cmb, 2011). Mobile shopping applications allow a more useable and a user-friendly environment for mobile commerce (Tarasewich, 2003). People generally download applications and keep them in their mobile devices thereby giving retailers an open channel for communicating with their customers. Once applications are downloaded to the user's mobile phone, reaching the customers through sending promotional offers, announcement of new products, sending reminders and other marketing efforts by the retailers influence the attitude of the users of the technology. The ease

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of initiating the users to make a purchase through these applications is one of the major advantages to the retailers when customers begin to adopt this technology. Overall, mobile shopping applications offer users a more personalized experience when compared to shopping on mobile phones through browsers. The study by [Criteo \(2016\)](#) shows that new mobile shopping application users are twice as likely to return within 30 days when compared to the mobile web users. A study conducted by [Beaconstac \(2016\)](#) says India alone has over 600 million different e-commerce product shopping related application downloads in the smartphone market. With more than 65% of web traffic coming from mobile phones and mobile devices, India is one of the biggest emerging markets in the world of m-commerce ([Beaconstac, 2016](#)). This value is very much greater than the global average mobile web traffic value of 33.4% in 2015 ([WNN, 2015](#)). India's web traffic through mobile phones is also greater than that of many other countries like the US (22%), Canada (15%), UK (23%), South Korea (25%) and China (30%) ([KPCB, 2015](#)). Hence, for marketers to advertise, increase sales, maximize profits and create more shopping opportunities for their existing and potential new customers, it is necessary to study the attitudinal and behavioral intention of the people. Technology acceptance model (TAM) is one of the theories that can explain the adoption of new information systems ([Davis et al., 1989](#)). Various studies conducted by researchers all across the globe in predicting the behavioral intention of m-commerce users proved that the intention to use smartphones for shopping is significantly dependent on factors like perceived usefulness, perceived ease of use and perceived enjoyment. ([Wu and Wang, 2005](#); [Yang, 2005](#); [Hung et al., 2007](#); [Tsu Wei et al., 2009](#); [Chong et al., 2012](#); [Chong, 2013](#); [Lu, 2014](#); [Agrebi and Jallais, 2015](#); [Faqih and Jaradat, 2015](#); [Wang et al., 2015](#)). Satisfaction in using m-commerce has also been proved to be a vital variable in explaining the usage behavior of the customers ([Agrebi and Jallais, 2015](#)).

This study is an outcome of the future directions of studies conducted by [Agrebi and Jallais \(2015\)](#) and [Wang et al. \(2015\)](#). One of the limitations of the study conducted by [Agrebi and Jallais \(2015\)](#) is that it is limited to the antecedents of TAM. It encourages researchers to extend the model with the variables “perceived risk” and “personal innovativeness”. The construct perceived risk has been widely researched in the context of e-commerce and online banking ([Park and Jun, 2003](#); [Johnson et al., 2008](#); [Kim et al., 2008](#); [Aldás-Manzano et al., 2009a](#)). But the resources relating perceived risk to intention to use mobile shopping applications are limited. Personal innovativeness is another important construct that explains the usage intention of e-commerce users. It has also been proven to be a significant variable in explaining the behavioral intention in various fields like mobile payments, online banking and even in traditional retail ([Goldsmith and Newell, 1997](#); [Aldás-Manzano et al., 2009a](#); [Park and Noh, 2012](#); [Thakur and Srivastava, 2014](#)). But there are limited studies that use the construct personal innovativeness specific to mobile shopping applications. Most of the studies on personal innovativeness in the literature relating to technology acceptance used student data sets. Such data sets are highly prone to have similar standards to each other and will have relatively high numbers of early adopters and innovators. Hence generalizability of the study becomes an issue in most cases. In order to make this study realistic and more generalizable, a dataset that is a representative of the entire Indian e-commerce consumers with respect to age, education, income and location will be used for analysis.

The study conducted by [Wang et al. \(2015\)](#) compares the user behavior prior to and post implementation of a mobile commerce website by an online grocer. The findings of the study predict that consumers may become less price-sensitive with the adoption of mobile commerce. However, there is no empirical evidence that supports the claims of the study. In general, limited studies have researched the effects of intention to use any technology with price sensitivity. But this relationship may not be applicable for all technol-

ogy acceptance studies. However, since online and mobile shopping involve transactions between the retailer and the customer, the relationship between the intention to use technology and price sensitivity can be a promising area of study. By building on these gaps in research, the study was conducted in the fast-growing Indian market of mobile commerce.

This study acknowledges that mobile shopping applications is a new and emerging paradigm and has a huge potential in the world of business which has already started giving novel perspectives. Understanding the nature of the user adoption of mobile shopping applications, especially in a developing country like India that is highly price-sensitive will aid in suggesting new ways to attract customers, to develop marketing strategies and differential pricing strategy and at the same time to improve customer experience. The remaining paper is organized as follows. [Section 2](#) deals with the theory and model development. [Section 3](#) focusses on data collection and analysis of the study. [Section 4](#) shows the results and discussion of the findings, contributions and implications of the study. [Section 5](#) throws light on the limitations and future research directions.

## 2. Theory and research model development

### 2.1. Technology acceptance model (TAM)

Technology acceptance model (TAM) by [Davis et al. \(1989\)](#) is one of the widely used models in research to explain the acceptance and intention to use information systems. This model is considered to be a robust, flexible and strong model related to any information technology. TAM provides a relationship between the acceptance of any new technology and the behavior of the user of the technology. This model says that the actual use of an information system depends on the intention to use it, which in turn depends upon the attitude towards it. Attitude is composed of two core variables, namely “perceived ease of use (PEU)” and “perceived usefulness (PU)” of any technology. However, various literature discuss the use of the “attitude” variable as a mediator between these variables and the intention to use a wireless technology. The study by [Wu et al. \(2011\)](#) shows that the non-attitude model explains as much variation as the attitude model in the field of wireless technologies like mobile commerce. Besides the field of wireless technologies, the studies by [Teo et al. \(2011\)](#), [Nistor and Heymann \(2010\)](#) and [Teo \(2009\)](#) prove that when analyzing the usage intention of a technology, the attitude variable either partially mediated or did not mediate the relationships described in the original TAM model and there was not much difference between the variance explained by an attitude model and a non-attitude model. Hence, for our study, the non-attitude model of TAM was used for the sake of simplicity and clarity. The study on m-commerce websites by [Agrebi and Jallais \(2015\)](#) uses an extended non-attitude model of TAM. The original non-attitude model of TAM consists of three basic relationships namely, perceived ease of use leading to perceived usefulness, perceived ease of use leading to the intention to use and perceived usefulness leading to the intention to use. These three linkages have been proved to be highly consistent and valid in explaining the adoption and acceptance intention of several technology related products and services ([López-Nicolás et al., 2008](#)). Other technology acceptance theories like TAM2 by [Venkatesh and Davis \(2000\)](#) and unified theory of acceptance and use of technology (UTAUT) are excellent for explaining the intention to use. Both these generic models are good in explaining the general acceptance of a technology. But when it comes to exploring the adoption of a specific system like mobile shopping applications, these models are not as flexible as TAM mainly because TAM offers opportunities to easily extend theory by adding new variables specific to particular technologies ([Kim et al., 2010](#)). Hence, building on the model developed by [Agrebi and Jallais \(2015\)](#), constructs were added to address the research gaps in the literature.

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