

## Measuring Factors that Influence the Success of App based Mobile Commerce

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### *Abstract*

*The usage of smart phone significantly increased from 2007 onwards after Google and Apple has launched their respective Android and iOS Mobile Operating System. With advancement in the network technology, internet connection speed, slash in the mobile phone connection operator tariff, location based service, user friendly multitouch interface, large screen size multi giga bytes of RAM and storage, and much more the usage of smart phone has been reached to 1176 million in India during end of 2018. The raise in smart phone provides opportunity for Mobile Commerce. With introduction of the Android Play store and the iPhone App Store in mid of 2008, the smart phone users are able to search, download and install applications for games, personal applications and Mobile Commerce. However, the utilization rate of Mobile Commerce has been below the smart phone adoption rate, despite significant progress. This paper helps to identify which are the factors influencing the user towards App based Mobile Commerce. This research uses TAM (Technology Acceptance Model) proposed by Davis (1989). Mobile Commerce uses technology, the usage of TAM model in technology driven market is very much significant. The research design is exploratory in nature. The respondents were selected through Judgmental sampling. Primary data were collected from field through self-administered questionnaire, and 270 usable responses were recorded. The study result supports all the hypotheses. The outcome of this study will be useful to the developers and service providers of Mobile Commerce systems. They can use this study results for developing strategy to motivate the rapid acceptance of their mobile commerce services by mobile users.*

**Keywords:** Mobile Commerce, Behavioural Intention, Technology Acceptance Model, Factors Influence Mobile Commerce

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### **INTRODUCTION**

Since the beginning of industrial revolution, technology has advanced in many ways to make our lives easier and also improve our standard of living. Among the many technologies developed to date, communication technologies have had a tremendous impact in altering our lifestyles. From among the communication technologies, mobile phones or smart phones have had the most significant impact on our lives. The beauty of advancements in mobile phone technologies is that even after 70 years of tremendous progress, we are just beginning to unleash their true potential. The phenomenal growth in mobile phones has been twofold –

the pace of technological advancements and the pace of usage adoption. For example in 2007 there were 122 million mobile users in the world; 10 years later in 2017 the world had more than 1.5 billion users – more than a tenfold increase in a matter of 10 years. In spite of this remarkable growth, mobile phones have been accessible to only one-fifths of the world population [1].

This shows the potential for growth, and coupled with the growth in technological advancements, the opportunities are limitless.

The rapid growth of mobile phones has unsurprisingly led to a corresponding growth

in the number and variety of services accessed through mobile phones.

Table 1 shows the results of particular devices to reach 50 million users. Telephones and Radio took 75 years and 38 years, respectively. But due to the beauty of advancements in mobile phone technologies Twitter, Angry Birds and Pokémon Go achieved 50 million users in 9 months, 35 days and 19 days, respectively.

**Table1:** How long to reach 50 million Users? [2]

| Items       | Time period |
|-------------|-------------|
| Telephones  | 75 Years    |
| Radio       | 38 Years    |
| Televisions | 13 Years    |
| Internet    | 4 Years     |
| Face book   | 2 Years     |
| Instagram   | 19 Months   |
| You Tube    | 10 Months   |
| Twitter     | 9 Months    |
| Angry Birds | 35 Days     |
| Pokemon Go  | 19 Days     |

## MOBILE APPLICATIONS AND THEIR TYPES

Mobile Applications, more popularly known as Apps have become the most popular way of accessing the plethora of services offered through mobile phones. The most popular services among users – based on App download are:

### 1. Social

Online platforms through which people exchange information and opinions.

e.g., Facebook, LinkedIn, Instagram

### 2. Shopping

Online marketplaces through which people can buy and sell products and services.

e.g., Amazon, Flipkart

### 3. Entertainment

Online platforms offering providing services for amusement and enjoyment.

e.g., Airtel TV, Jio TV, Amazon Prime, Netflix

e.g., CM Launcher, Ace Browser

### 4. Communication

Sharing of information through audio, video and text.

e.g., WhatsApp, Facebook Messenger

### 5. Maps, Navigation and Travel

Provides route map, direction and taxi booking services.

e.g., Google Maps, Uber, Ola

### 6. Finance

The applications which provides money transfer, banking and payment service.

e.g., Google Pay, Paytm, PhonePe

### 7. Food and Drink

Ordering food, drink and restaurant booking application.

e.g., Swiggy, Zomato, Food Panda

### 8. Games

video game Apps.

e.g., Moto Rider Go, Ludo King

This study focuses on examining the key factors that influence usage of M-Commerce among online shoppers in Bangalore. It seeks to predict the behavioural intentions of users of M-Commerce Services, with the aim to improve the accuracy of reaching the right products and services to the right customers.

A recent study by NASSCOM (2017) on online retail customers in India revealed that among the major cities in India, Bangaloreans showed the greatest preference for shopping online. Bangalore is also the fastest growing market for online shopping in India. Hence Bangalore has been selected for studying the behavioral patterns of customers.

## RESEARCH QUESTION

In today's marketplace, customers are well informed, smart and savvy, they are demanding and dynamic. Their needs are becoming increasingly complex and the bar on expectations is being constantly raised. They do not mind pledging their loyalty to a company or brand if they feel the company or brand is truly worth it, but only a handful companies have been able to earn the loyalty of customers [3].

So how do companies tackle the tremendous complexities of the marketplace and ensure that they give the best to the customers at the right place and right time?

This study seeks answers to this critical question by seeking to identify the key factors that influence the behavior of customers when they shop online.

Through this endeavor, the researcher seeks to improve the accuracy of reaching right products to the right customers at the right time, thus creating a win-win situation for customers and companies.

### OBJECTIVE(S)

The objectives of the study are focused on seeking answers to the research question in a systematic way. They are outlined below:

1. To identify key factors influencing the use of M-Commerce among mobile phone users.
2. To study the relation between the key factors and 'perceived ease', 'perceived usefulness' and perceived risk'.
3. To evaluate the role of key factors, 'perceived ease, 'perceived usefulness' and 'perceived risk' on 'behavioural intentions of M-Commerce shoppers'.

### LITERATURE REVIEW

Davis proposed TAM model in the year 1989. The TAM model explains the way users accept the new technology and use the technology. The TAM model put forward that when users are actively presented with the new technology many key factors influence their judgment about how and when they will use it. Those key factors are perceived ease of use (PU), perceived usefulness (PEOU), behavioural intention to use (BI) and actual system usage [4].

Davis proposed TAM model consists of following variables such as perceived usefulness, perceived ease of use, attitude towards use, behavioral intention to use and actual use. This particular part discuss about various opinion on above mention variables of different researchers.

### CONCEPTUAL AND OPERATIONAL DEFINITION OF CONSTRUCTS

**Factors influencing the usage of M-Commerce:** The following factors have been identified based on their importance in influencing mobile shopping behaviour of consumers-shopping convenience, product choice, online payment, shopping travel time and shipping errors.

**Perceived usefulness:** It is "the degree to which a person believes that using a particular system would enhance his/her job performance", Davis (1989).

**Perceived ease to use:** It is defined as how easy it is to use a technology and the perception that the use of the technology does not require any additional effort.

**Perceived Risk:** It refers to the distant and impersonal nature of the online shopping and the implicit uncertainty of using a global open infrastructure for online transactions [5].

### VARIABLES USED IN THE STUDY

Independent variables included in the study are: "Factors Influencing usage of M-Commerce"-shopping convenience, product choice, online payment shopping travel time, and shipping errors; Mediating variables are: perceived ease of use, perceived usefulness and perceived risk; and dependent variable is-Behavioural intentions to use M-Commerce (Figure 1).

### HYPOTHESES

The study focus on finding the relationship between five identified factors: shopping convenience, product choices, online payment, shopping travel time and shipping error and three variables-perceived ease of use, perceived usefulness and perceived risk.

#### Hypothesis 1:

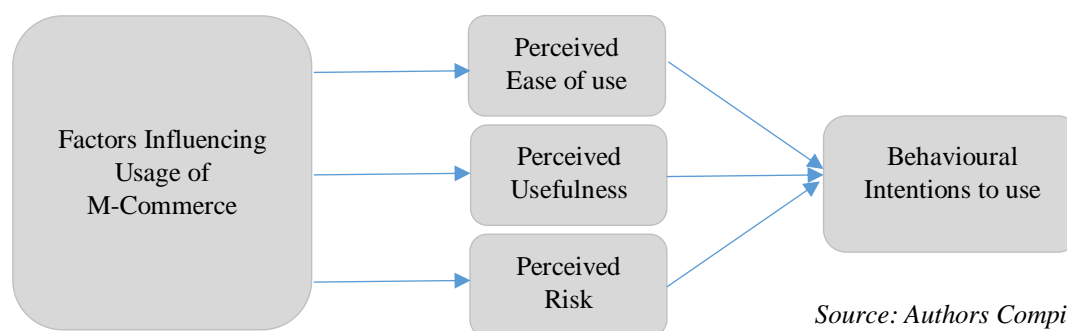
H1: Factors influencing M-Commerce and 'perceived ease of use' are significantly related

#### Hypothesis 2:

H2: Factors influencing M-Commerce and 'perceived usefulness' are significantly related

#### Hypothesis 3:

H3: Factors influencing M-Commerce and 'perceived risk' are significantly related. The focal point of this study is assessing the influence of 'perceived ease of use', 'perceived usefulness', and 'perceived risk' which can act as predictors on behavioural intentions to use M-Commerce.



Source: Authors Compilation

Fig. 1: Frame Work of Factors Influencing Usage of M-Commerce.

**Hypothesis 4:**

H4: Higher ‘perceived ease of use’ has a significant influence on higher behavioural intentions to use M-Commerce

**Hypothesis 5:**

H5: Higher ‘perceived usefulness’ has a significant influence on higher behavioural intentions to use M-Commerce

**Hypothesis 6:**

H6: Higher ‘perceived risk’ has a significant influence on lower behavioural intentions to use M-Commerce

besides this, to prove the model, nomological validity is used.

Table 2: Basic Statistics of Demographic Distribution.

| Basic Statistics of Demographic Distribution | Count | Percentage |
|--|-------|------------|
| Gender. Female                               | 89    | 32.96      |
| Gender. Male                                 | 181   | 67.04      |
| Age. 18 to 25                                | 81    | 30         |
| Age. 26 to 35                                | 135   | 50         |
| Age. 36 to 45                                | 54    | 20         |
| Education. Diploma                           | 30    | 11.11      |
| Education. Others                            | 11    | 4.07       |
| Education. PG                                | 84    | 31.11      |
| Education. UG                                | 145   | 53.7       |
| Marital_Status. Married                      | 153   | 56.67      |
| Marital_Status. Not Married                  | 117   | 43.33      |
| Occupation. Employed                         | 211   | 78.15      |
| Occupation. Others                           | 12    | 4.44       |
| Occupation. Professional                     | 47    | 17.41      |
| Sector. IT                                   | 237   | 87.78      |
| Sector. Others                               | 33    | 12.22      |

**RESEARCH METHODOLOGY**

The research design is exploratory in nature. The respondents were selected through Judgmental sampling. Primary data were collected from field through self-administered questionnaire, and 270 usable responses were recorded.

**Type of Analysis used**

Study used both bivariate and multivariate techniques to prove the above said hypothesis; all the variables are examined using descriptive statistics like frequency distribution, mean, stdev, etc.

Relations among all the constructs are explored through bivariate correlations and also within dimension wise relation are established.

To prove the significant difference, t test and one way Anova are used across various demographic variables. Measurement error is taken care with help of reliability and validity test, in terms of reliability cronbach alpha is used, in terms of validity, face validity is used,

**ANALYSIS**

On the analysis of the above Table 2 with reference to basic statistics of demographic distribution, on the analysis of gender group, male respondents achieved the highest score of 67.04% while female respondents achieved the lowest score of 32.96%. On the analysis of age group, 26 to 35yrs respondents achieved the highest score of 50%, 18 to 25yrs respondents achieved the score of 30% while 36 to 45yrs achieved the lowest score of 20%. On the analysis of education, UG respondents achieved the highest score of 53.7%, PG respondents achieved the score of 31.11%, Diploma respondents achieved the score of 11.11% while other respondents achieved the lowest score of 4.07%. On the analysis of marital status, married respondents achieved the highest score of 56.67% while rest 43.33% of them were not married respondents.

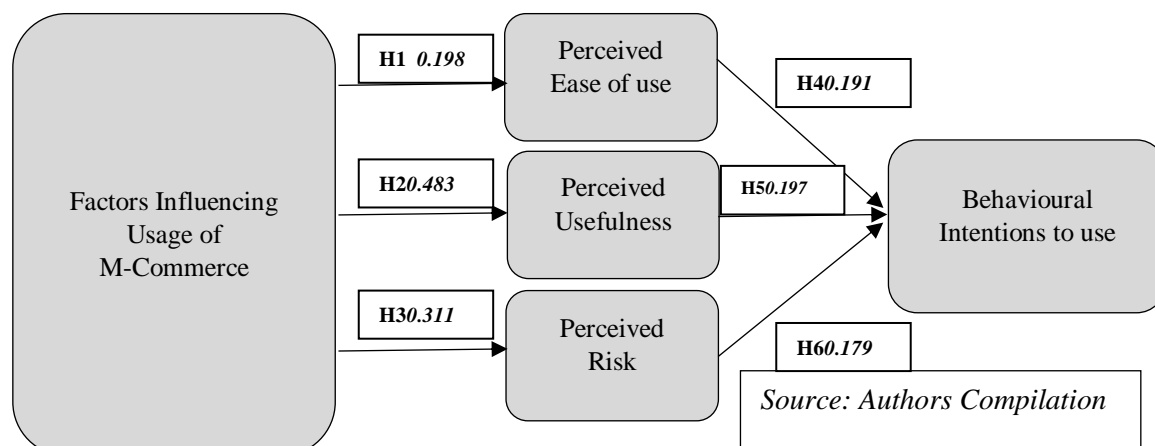


Fig.2: Regression Value of Constructs.

Table 3: Results of PLS SEM.

| Hyp. | Hypothesis  | p-Value | Beta  | Result    |
|------|---|---------|-------|-----------|
| H1   | Factors influencing M-Commerce and 'perceived ease of use' are significantly related                          | 0.000   | 0.198 | Supported |
| H2   | Factors influencing M-Commerce and 'perceived usefulness' are significantly related                           | 0.000   | 0.483 | Supported |
| H3   | Factors influencing M-Commerce and 'perceived risk' are significantly related                                 | 0.000   | 0.311 | Supported |
| H4   | Higher 'perceived ease of use' has a significant influence on higher behavioural intentions to use M-Commerce | 0.000   | 0.191 | Supported |
| H5   | Higher 'perceived usefulness' has a significant influence on higher behavioural intentions to use M-Commerce  | 0.000   | 0.197 | Supported |
| H6   | Higher 'perceived risk' has a significant influence on higher behavioural intentions to use M-Commerce        | 0.000   | 0.179 | Supported |

Source: Authors Compilation

On the analysis of occupation, 78.15% of them were employed, 17.41% of them were professional while rest 4.44% of them were others. On the analysis of the above table with reference to sector, IT achieved the highest score of 87.78% while others achieved the lowest score of 12.22%.

### Structure Assessment

The outer model provided acceptable results for reliability and validity. The inner model was examined to assess the relationship between variables by testing hypothesis. The analysis of internal structure supported all six hypotheses as shown in Table 3 and Figure 2.

The strongest relationship was found between factors influencing the usage of M-Commerce and perceived usefulness ( $\beta = 0.483$ ,  $p = 0.000$ ). This means that the consumer finds the M-Commerce is useful. The second strongest relationship was factors influencing the usage of M-Commerce and perceived risk ( $\beta = 0.311$ ,  $p = 0.000$ ). This means that the risk in usage of M-Commerce has come down.

### CONCLUSIONS AND IMPLICATIONS

Results of the study demonstrate the application of TAM in assessment of factors influencing the usage of M-Commerce. The result shows that all the factors-Shopping convenience, Product choice, Online payment, Shopping travel time and Shipping errors are influencing the behavioural intention to use M-Commerce. This study will enrich the literature in the field of M-Commerce. The contribution of research can be summarized as a validation of the TAM given by Davis in 1989, in a completely new empirical context in terms of city (Bangalore), population (sample is a mix of salaried, professional and business), area (mobile commerce) and Technology used (mobile).

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