

RESEARCH ARTICLE

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**Analysis of Mobile-Commerce in Indian Market: An Approach
for Upliftment for Indian Economy**

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Abstract:

The study reports on a national consumer survey conducted to investigate the Indian consumers' willingness to use a number of initial mobile services, and to explore whether consumers recognize the value proposition of these applications. Besides offering theoretical and empirical insights relating to the value-creating features of m-commerce from a consumer's point of view, the study presents results indicating a rather low willingness to use mobile services in general, but an exceptionally high willingness to use some applications. The results do not, however, support the supposition that m-commerce is likely to increase the overall volume of e-commerce significantly by penetrating into untapped markets (non-PC users). In recent years, the use of new Information and Communication Technologies like mobile telephony has experienced unprecedented growth, providing consumers with new ways of relating and more agile, personalized communication. The mobile's complementary nature and synergy with other direct sales systems such as Internet and television have made it an excellent Interactive Marketing tool which helps companies to complement their communication and sales actions in other media.

KEYWORDS: Mobile Commerce, E-Commerce, Economy, Internet, Cloud Computing.

INTRODUCTION

Mobile commerce is really, the extension of and the evolution of e-commerce. Thus, some definition may define both e-commerce and mobile commerce; especially on its features. M-commerce adds mobility and convenience to the Internet and creates a whole new set of opportunities. The portability of mobile devices offers new business applications outside the scope of fixed, desktop-based Internet offerings. Nevertheless, as m-commerce is still in its infancy, mobile applications are still not widely implemented or adopted by mobile users. This study is set out to investigate and explore consumers' perception of various mobile applications and study various success factors for effectiveness of M-Commerce in India. Our goals are to understand how to better design and target appropriate applications for mobile users. Before going further into mobile commerce, it is better to understand what mobile commerce really is in terms of definition and its features. There are various definitions of mobile commerce. A simple definition would be the conduct of business with the support of wireless technology.

There are different driving factors that encourage

businesses to make advances towards the m-commerce market. Firstly, m-commerce holds a promising future due to the penetration of the mobile phone market. Widespread availability of devices can be utilized by suppliers to directly communicate to existing and potential customers. Further, the push from vendors, attractive content, low costs and reasonable prices of the mobile services, substitution possibilities are also promoting substantially the market growth. Secondly; some technology-related factors, such as improvement of bandwidth, development of wireless Internet and software, emergence of new technologies and so on, contribute a great deal to the development of m-commerce market. In addition, some social tendencies, including so-called handset culture and increasing propensity to transact online, can be regarded as another driving force for prosperity of m-commerce.

RESEARCH QUESTIONS

The purpose of the study is to study the effectiveness of m-commerce in India. For this we need to understand characteristics of m-commerce users and examine the factors that influence the intention to use m-commerce. The study would be guided by the following research questions.

- What are the critical success factors for adoption of m-commerce?
- How does the demographic profile of consumers affect m-commerce usage in India?
- What are the particular issues in m-commerce, opportunities and challenges?

RESEARCH OBJECTIVE

The aims of this study the effectiveness of mobile commerce in India and provide better understanding of the readiness level of Indians toward use of the mobile commerce. The study aims to identify distinctive driving forces of emergence of mobile commerce by applying revised Technology Acceptance model and additional variables which will investigate the factors' effect on adoption of mobile commerce in India This thesis is going to help in developing a revised and well suited model to be applicable in mobile commerce context. The motivation for this research lies in understanding the dimensions of consumer behavior for adoption of m-commerce in Indian context.

METHODOLOGY

The approach applied to achieve this purpose is "quantitative" based on distributing questionnaire of related research model, research strategy is "survey" which will be analyzed by statistical analysis and these issues are described later in chapter three. In order to gain a good insight about the research problem, related literature and previous studies have been reviewed and experts have been interviewed to study the problem in existing environment in this thesis. Entirely, 500 questionnaires collected between March 2021 and August 2021.

SAMPLE DESIGN AND SELECTION

The population of this research is Indian mobile subscribers and their *Intention to Adopt Mobile Commerce* is measured. The sampling technique that was used here is "**probability sampling**". Probability sampling is a case which every member of population has a known and equal chance of selection and is most common and usual for survey-based research where researcher needs to estimate the characteristics of the population from the sample. This method of sampling guarantees that the sample is representative of the population. Only probability sample provide estimates of precision. All users were selected randomly and "having a cell phone was the screening question for survey. If they said no they were being removed from the survey and if answered yes

the questionnaire was hand to them. Questionnaires were distributed in person, some were directly emailed and also web links were available to be filled online. 620 out of 1000 were received and nearly 500 were recognized as valid ones after data cleansing.

SAMPLE SIZE

For convenience of analysis we selected 500 Responses.

DATA COLLECTION METHOD

Data collected for this thesis is "primary" because, it's new data collected specifically for thesis research objective and at the time of conducting this research there were no secondary data available. Hence, information gathered through this survey is considered as primary resources.

DATA ANALYSIS

Multivariate analysis of variance (MANOVA) is an ANOVA test with some dependent variables. The overall logic of ANOVA is to obtain two different estimates of the population variance; the first estimate is based on the variance within groups. The second assess of the variance is based on the variance of the means of the groups (between groups). Hence, a multivariate analysis of variance (MANOVA) is used to test this hypothesis with several dependent variables. Instead of using a univariate F value, MANOVA would obtain a multivariate F value (based on a comparison of the error variance/covariance matrix and the effect variance/covariance matrix. In this section, individual qualitative characteristics such as gender, age, specialization effects in individual perception of research variables of mobile commerce adoption are examined. We want to compare research variables regarding to age, gender, and specialization and whether differences are significantly exists. This result can be generated by MANOVA which test significance of the differences of research variables of different age groups, gender (male, female), and specialization. Hypotheses for these MANOVA tests are:

H0: All means of dependent variables are equal regarding to independent variables (age, gender, specialization)

H1: All means of dependent variables are not equal regarding to independent variables (age, gender, specialization)

If significant value are greater than 0.05, H1 is rejected and mean of different group are populations are equal and difference are not significant.

Table 1: MANOVA test according to age, gender, specialization

Source	Dependent Variable	Sum of Squares	D _f	Mean Sum of Squares	F ratio
Gender	PEOU	0.453	1	0.453	1.002
	IN	0.154	1	0.154	0.407
	R	0.451	1	0.451	0.730
	C	0.105	1	0.105	0.178
	Co	0.811	1	0.811	1.931
	PU	4.032	1	4.032	13.856*
	AT	1.591	1	1.591	5.642*
	BI	3.302	1	3.302	9.683*
Age	PEOU	3.481	4	0.8703	1.925
	IN	1.547	4	0.3868	1.023
	R	2.281	4	0.5703	0.923
	C	4.993	4	1.2483	2.112
	Co	1.149	4	0.2873	0.684
	PU	0.418	4	0.1045	0.359
	AT	0.832	4	0.208	0.738
	BI	1.501	4	0.3753	1.100
Specialization	PEOU	0.881	4	0.2203	0.487
	IN	2.172	4	0.543	1.437
	R	2.534	4	0.6335	1.025
	C	4.781	4	1.1953	2.022
	Co	1.092	4	0.273	0.650
	PU	1.011	4	0.2528	0.869
	AT	0.483	4	0.1208	0.428
	BI	0.612	4	0.153	0.449
Error	PEOU	183.96	407	0.452	
	IN	153.85	407	0.378	
	R	251.53	407	0.618	
	C	240.54	407	0.591	
	Co	170.94	407	0.42	
	PU	118.44	407	0.291	
	AT	114.77	407	0.282	
	BI	138.79	407	0.341	

INTERPRETATION:

MANOVA results demonstrate that gender differences are significant which means that research variables differ regarding to respondents gender. Differences are highlighted (* asterisk) in **table 1** perceived usefulness and attitude toward use and behavioral intention to use are distinctive according to gender of the respondent. But there are not significant differences according to age of respondents and specialization (occupation) of the respondents. **Table 1** shows mean of research variables regarding to respondents gender. Based on previous table

results, we can observe that in perceived ease of use, behavioral intention, attitude, female respondents mean are less than male respondents mean; in other words, men have more positive attitude toward mobile commerce than women, which can be considered in marketing issues and segmentation.

RESULTS BASED ON ANALYSIS

1. The no. of responses received from male is higher than females which show Men have more positive and favorable attitude toward mobile commerce than women.

2. Data analysis has highlighted the fact that age is the only demographic variable which can predict M-commerce behavior, Mobile Affinity and future M-commerce intention. A possible explanation for this is that the new technological progress in mobile telephony makes it necessary to bear in mind the individual's capacity to understand the changes and complexities of the new technologies and to develop a positive attitude towards them.
3. It is also found out that students are more technology savvy and hence have more inclination towards m-commerce adoption. The reason being young people use the mobile telephone from a very early age and for them it is a source of communication and entertainment as well as an alternative shopping channel. Young consumers show the most positive attitude towards innovation and change and thus are more willing to accept new services and contents offered by the different mobile phone operators. They are definitely the group with the most favorable attitudes towards the direct shopping channels.
4. It is also worth noting the positive influence of age on length of mobile use. A possible explanation for this is the fact that less than ten years ago the mobile in India was a very expensive item with limited performance mainly used in a professional capacity by a specific segment of the population and was therefore something which young people could not afford. But now every parent buys mobile phones for their children for accessibility and communication.
5. Gender, education and incomes have not turned out to be determinant factors in the M-purchase decision. The possible differences due to gender in M-shoppers (and all virtual environments in general) tend to disappear as a consequence of changes in social habits and in the greater level of introduction and development of the new technologies. Thus, the findings of this study confirm the results of other research which highlights the fact that women are becoming increasingly familiar with virtual environments and that mobile use is becoming more and more widespread.
6. M-commerce previous experience has a positive influence on future M-commerce intention, suggesting that a consumer who has previously purchased through the Mobile is likely to make a purchase in the future. Making Internet purchases does also have a significant influence on the M-commerce decision. These findings are consistent with previous studies using the technology cluster concept that concludes the adoption of new communication technologies is best predicted by the adoption of functionally similar technologies and user perception toward them. Consumers who have purchased a product or service through Internet have broken the barriers to non-store shopping and therefore are more predisposed to M-commerce.
7. Internet shopping experience has also been found to be a positive influence on M-commerce attitude, perhaps due to important complementarities between the two shopping methods, as the mobile is one of the main formats for Internet access. This attitude leads to greater levels of M-purchase and more favorable future behavior intentions.
8. Attitude towards M-commerce predicts actual and future M-commerce behavior. It has been shown that consumers with the best opinion of the system have the strongest current and future M-commerce intention thus confirming that intention to use a given technology is determined by the individual's attitude towards using that technology.
9. Mobile Affinity, frequency of Mobile use and length of mobile use influence M-commerce frequency. Data analysis shows that age, relations with the mobile (frequency, length of mobile use and Mobile affinity); Internet shopping previous experience, attitude towards M-commerce are the main predictors of M-commerce decision.
10. It has been observed that maximum respondents spend 2 to 3 hours using mobile phone and is important part of their daily activity.
11. It is also seen that maximum respondents have spent years with their service providers and are satisfied with them which shows their acceptance in adoption of mobile services if these are provided in secure and simple manner.
12. It has been observed that people have explored the utility of mobile phones other than calling like for knowledge transfer and running other applications.
13. Though we have identified two broad categories of mobile subscribers namely m-shoppers and non m-shoppers we find that both are well aware of m-commerce and because of certain limitations have not adopted it yet. The t-test has confirmed that there is no difference in the demographic profile of m-shoppers and Non m-shoppers.

14. There is impact of Age on m-shoppers as young consumers are more keen and updated of m-commerce technology and have shown greater interest in its adoption.
15. Mobile affinity of m-shoppers is more than Non m-shoppers as the frequency of usage by m-shoppers is more in comparison to non m-shoppers.
16. In case of m-shoppers the attitude towards future intention is clear and only inhibition is security. Most of the m-shoppers are willing to continue their mobile shopping experience in the future. Non m-shoppers have also shown strong attitude to use mobile commerce in future.
17. When usage of various m-commerce applications by m-shoppers was analyzed it was found that there is huge difference in usage of these applications. Maximum people use it for sending and receiving messages, Mobile top-ups, Downloads and Information Services.
18. Results of one sample t-test reveal that the perception of mobile subscribers toward perceived ease of use and perceived usefulness and innovativeness and compatibility and attitude and behavior intention to use mobile commerce application are favorable but most of the respondents thought that mobile commerce transaction are expensive and have potential risk.
19. 92% of respondents have a favorable intention to use mobile commerce. Overall perception toward using mobile commerce are positive which shows Indians think using mobile commerce will enhance their effectiveness of their activities.
20. MANOVA results demonstrate that gender differences are significant which means that research variables differ regarding to respondents gender. Perceived usefulness and attitude toward use and behavioral intention to use are distinctive according to gender of the respondent. But there are no: significant differences according to age of respondents and specialization (occupation) of the respondents.
21. We also observe that in perceived ease of use, behavioral intention, attitude, female respondents mean are less than male respondents mean; in other words, men have more positive attitude toward mobile commerce than women, which can be considered in marketing issues and segmentation.

DISCUSSION

Although little is known about consumers' attitudes towards wireless marketing channels, many organizations are today making considerable investments to take advantage of the new business possibilities offered by wireless technologies - encouraged by optimistic, yet contradictory forecast on the future volume of m-commerce. This study highlights the importance of setting out from a consumer perspective when developing m-commerce strategies, proposing an analytical framework that can be used to assess whether, and in what ways, specific mobile services are likely to offer value for wireless Internet users. Given the generalized use of mobiles and the scarcity of studies which analyze the profile of the users of this system, this work has contributed to the research by providing an understanding of the factors influencing M-commerce adoption. We have analyzed the influence of relations with the mobile, consumer demographic profile, non-store shopping previous experience, the influence of the attitude to M-commerce and affinity with the medium on M-Commerce behavior and we have identified the key drivers of future M-commerce intention. Data analysis shows that age, relations with the mobile (frequency, length of mobile use and Mobile affinity), Internet shopping previous experience, attitude towards M-commerce are the main predictors of M-commerce decision while age, length of mobile use, consumer attitude towards M-commerce, affinity and previous M-commerce experience are the most relevant factors influencing future M-commerce intention. Data analysis has highlighted the fact that age is the only demographic variable which can predict M-commerce behavior, Mobile Affinity and future M-commerce intention. A possible explanation for this is that the new technological progress in mobile telephony makes it necessary to bear in mind the individual's capacity to understand the changes and complexities of the new technologies and to develop a positive attitude towards them. Young people use the mobile telephone from a very early age and for them it is a source of communication and entertainment as well as an alternative shopping channel. Young consumers show the most positive attitude towards innovation and change and thus are more willing to accept new services and contents offered by the different mobile phone operators. They are definitely the group with the most favorable attitudes towards the direct shopping channels. It is also worth noting the positive influence of age on length of mobile use. A possible explanation for this is the fact that less than ten years ago the mobile in India was a very expensive item with limited performance mainly used in a professional capacity by a specific

segment of the population and was therefore something which young people could not afford. Gender, education and incomes have not turned out to be determinant factors in the M-purchase decision. The possible differences due to gender in M-shoppers (and all virtual environments in general) tend to disappear as a consequence of changes in social habits and in the greater level of introduction and development of the new technologies. Thus, the findings of this study confirm the results of other research which highlights the fact that women are becoming increasingly familiar with virtual environments and that mobile use is becoming more and more widespread. M-commerce previous experience has a positive influence on future M-commerce intention, suggesting that a consumer who has previously purchased through the Mobile is likely to make a purchase in the future. Making Internet purchases does also have a significant influence on the M-commerce decision. These findings are consistent with previous studies using the technology cluster concept that concludes “the adoption of new communication technologies is best predicted by the adoption of functionally similar technologies and user perception toward them”. Consumers who have purchased a product or service through Internet have broken the barriers to non-store shopping and therefore are more predisposed to M-commerce. Internet shopping experience has also been found to be a positive influence on M-commerce attitude, perhaps due to important complementarity between the two shopping methods, as the mobile is one of the main formats for Internet access. This attitude leads to greater levels of M-purchase and more favorable future behavior intentions. Attitude towards M-commerce predicts actual and future M-commerce behavior. It has been shown that consumers with the best opinion of the system have the strongest current and future M-commerce intention thus confirming that intention to use a given technology is determined by the individual’s attitude towards using that technology Mobile Affinity, frequency of Mobile use and length of mobile use influence M-commerce frequency. This result is in agreement with that of previous studies which show that the closer an individual’s relationship with a medium, the greater the probability of purchase and those consumers with most exposure to new technologies are those who are more willing to use distance shopping channels Empirical findings demonstrate that gender differences are significant which means that research variables differ regarding to respondents’ gender. Men have more positive and favorable attitude toward mobile commerce than women with little difference, which can be considered in marketing issues and segmentation. But result of MANOVA also demonstrates that when it comes to

consumer adoption decisions, demographic characteristics are not consistent and powerful predictors. By performing sample T test, condition of variable of research is studied. Results demonstrate that respondent have a favorable opinion about intention to adopt m-commerce and answers to a direct question of intending to use m-commerce was positive in 92 percent scale. This thesis has researched in the adoption field of mobile commerce and tried to find out the effectiveness of m-commerce applications by identify the factor affecting adoption of mobile commerce. Also, results reveal that, the applied extended TAM model is a quite good interpreter of Indian mobile subscribers’ perception toward adoption of mobile commerce. This model is a combination of two model of TAM by Wu and Wang (2005), Yang (2005) which has applied in their research done in Taiwan and Singapore. According to the test performed, attitude toward use(ATU) has the strongest effect on behavioral intention (BI) to use and compatibility (CO), perceived usefulness (PU), perceived ease of use(PEOU), innovativeness (In) play the most significant role in mobile commerce adoption in India, correspondingly, except cost(C), which statistical findings revealed that doesn’t have a meaningful effect and relation with attitude toward use in Indian society; this shows that Indian people doesn’t have a clear view of cost of m-commerce since they didn’t experience it majorly. This fact can be caused by m-commerce is in its infancy stage in India or can be caused by customers can afford cost of mobile commerce transaction and transaction fees of mobile commerce are equal to their mobile phone fees and it’s not a critical fee for them to use mobile commerce. Risk (R) has a significant negative effect on attitude toward use. This issue can be a result of “Indian culture” which there is a resistance toward new innovation technologies and product. Privacy and security problems that can be occur in m-commerce and may result in less customer satisfaction is transaction security, personal data merchant information which is logical to lead to a decrease in rate of intention to use. Perceived risk is a predictor and barrier of performing m-commerce transaction.

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