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An Empirical investigation of Mobile Commerce Adoption in Pakistan

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Abstract: Advancement of mobile commerce acceptance, important object is the fulfillment and support of customer. The research model proposed is based on revised "technology acceptance model" that comprises of the different features of mobile commerce acceptance, information technology and information systems domain. From literature design factors has been drives. This work will be helpful for engineers and designers of mobile commerce applications.

Keywords: Information Technology, InterfaceDesign, Information Systems.

I. INTRODUCTION

The usage of mobile commerce increases around the world. In the domain of information and communications technology sectors, the World Wide Web is one of the most characteristic advancements [1]. The World Wide Web has been an easy medium to provide an immense variety of services, not least, the ability to proceed out transactions and improve communications in business [1]. Mobile commerce insinuates to any transaction with administrative value that is executed through mobile or wireless network. The mobile commerce proceeds ahead at greater speed in present world [22] [27]. According to Gartner 2012[9] In the world sales of mobile devices are totalized 1.6 billion in 2010, with increase of 31.8% from the year 2009; and the smart phone users' sales were 72.1% in 2010 total mobile phones sales accounted for 19 %. from market research, sales of advances mobile phone are more than 119.7 million in 2007 to 481.3 million in 2011 and supposed to enhance supplementary sale almost one billion devices in 2016[2][3][8] to a sales volume of almost one billion devices. The advantages and profits and progressive impact of using mobile commerce, efficiency, convenience limited selections, competitive praising, rich information and diversity are well known. As a result, the achievements and advances in mobile commerce [10], including adversity, shopping, investing, banking and other online services [11] [12] (email, information seeking, etc.) have created a diversified and broad field to connect with the mobile commerce in their daily lives. The number of mobile commerce consumers has thus continued to increase. [33] Moreover, not enough consumers or user acceptance has long a hurdle to the successful new information mechanisms the same time mobile technologies and software are rapidly and widely developed for mobile commerce; it is most necessary and important to have a better understand with consumer's acceptance make use of mobile commerce.

Consumer acceptance is one of the most basic characteristics for successful development and dissemination of mobile commerce applications. Mobile commerce has enhanced competition within business organization [27]; such that it has become quite difficult for organizations to survive without introducing new amendments into the way they execute business [32]. This issue is prominently significant as with the enhanced business competition the fame of World Wide Web and mobile devices acceptance and usage. Achieving the loyalty of customers, a significant aim to gain the nature of the competitions in the market. On the other hand, concerned and nearby benefits or advantages to their creative innovative, invented technologies cannot be fully observed until there systems are not fully realized. The revised TAM did not describe what specific crucial factors from mobile commerce information domain and incorporated into model. Understanding the necessities and demands of what confides user's mobile commerce acceptance can provide amazing management insight into progressing effective policies and plans that will allow enterprises to sustain competitive and hold their market[27], due to the distinct characteristics of mobile commerce believe that it is significant to revise the information systems acceptance theories and develop a new theoretical structure and model that are more appropriate for mobile commerce an important

objective throughout is to develop a model capable of providing useful information to mobile commerce practitioners[26]. It will be useful the practitioners to comprehend insights how to promote it to customers. Therefore, we accepted the revised technology acceptance model that includes distinct features for electronic commerce and information systems domains to increase our understanding of mobile commerce acceptance and application. This research is to comprise on study research gap by empirically establishing model to explain the factors influences the acceptance and usage of mobile commerce in Pakistan. Thus, herein we report review on essential factors of mobile commerce acceptance and usage; developing a research model based on literature review.

According to our research and literature survey, following research questions are developed.

1. Why mobile commerce acceptance model developed based on revised technology acceptance model?
2. How access the usefulness of the research model in context of Pakistan economy?

II. RESEARCH BACKGROUND

A. Revised Technology Acceptance Model (TAM2)

Several models have been developed which are an expansion of each other in a series. [4] Revised TAM is a model that was developed to foretell the reasons why, at certain times, the users accept the information system and why, at other times, they do not. It was discovered that the users sometimes were not able to evaluate and conceive the usefulness of a given system. Hence, they tried to come up with a revised version of the model which was believed to be more potential to predict the behavior of the users regarding the acceptance or otherwise of an information system. The new model claimed to focus on the three main themes pertaining to human behavior i.e. Behavioral Intention, perceived usefulness and perceived ease of use [4].

The objective of the new model of revised TAM was to be able to predict the users' behavior about the new information system whether they were going to accept it or reject it.This was to be done in collaboration with the original revised TAM version. The researchers discovered the strong correlation among the above said three behavioral constructs [6]. Are of the opinion that since the three behavioral elements are closely linked with one another, they can be perceived as necessary features of the core design of the revised TAM model. The concepts of PU and PEOU were taken from the revised TAM [4].

This study intends to attempt further expansion of the revised TAM by adding crucial factor i.e. interface design. The addition of these factors will hopefully make the model strong enough to be able to predict the users' pretending towards the use of information system universally.

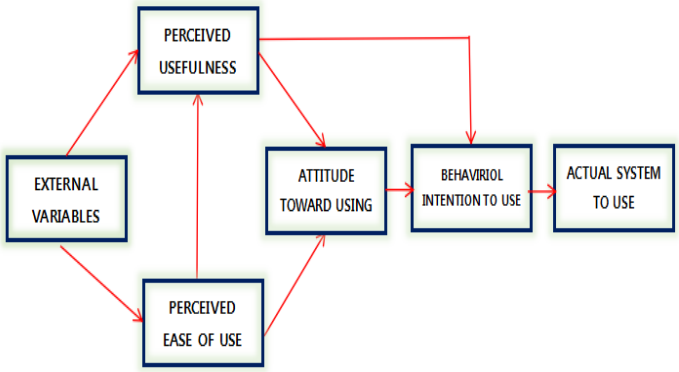

Figure 1. Revised Technology Acceptance Model

Previous research studies to identify the external variable and the explanatory power for the specificity of TAM [24] identified the need to improve. For example [27] order to increase user acceptance is a structural feature of the system is recommended to be considered. Specific data and system settings can increase your system has stressed the need to look at.

III. RESEARCH MODEL & HYPOTHESIS

A. Research Model

This study is designed to comprehend the usage and acceptance of mobile commerce applications. The study is based on the grounded theory of revised TAM. The study includes important factors like PU and PEOU derived from the revised TAM model along with interface design which have already been defined in the literature review section. The design is shown as under:

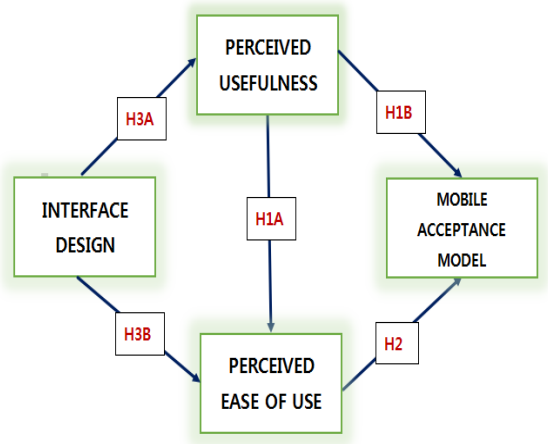

Figure 2. Mobile Acceptance Model

B. *Hypothesis of Proposed Model*

The revised TAM model is believed to be able to predict the usage and acceptance of an application with the help of perceived ease of use and perceived usefulness of the given application. This earlier model depends on only two factors to perform its function i.e. PU and PEOU and in turn PEOU [4] depends upon six factors in order to evaluate the use of any application in terms of "perceived usefulness" and "perceived ease of use". Both PU and PEOU make the performance quicker, effective, understandable and exact. The model hypothesizes that user acceptance of mobile commerce is jointly determined by PU and PEOU. In the light of the recommendations of other researchers [5] where in external factors were suggested to be incorporated in the model to assess their effects on core beliefs of revised TAM, the proposed model integrates the antecedents of PEOU and PU based on earlier research studies that have extended the revised "TAM". External variables being incorporated in the model is interface design. Interface design is proposed to have direct effect on PEOU and PU. The model developed in the study also proposes that PU and PEOU mediate the effects on usage of mobile commerce acceptance and usage. Constructs and their putative hypothesized relationships are presented in Table1.

Table 1: Constructs and Definition

Constructs	Definitions	Hypothesized Relationships
Perceived Usefulness (PU)	"Refers to the rate at which a person believes that using a particular system will improve his work performance."	**PU ->MA**
Perceived Ease Of Use (PEOU)	"It's related to a degree to which a person thinks that using a particular system would be free of efforts"	**PU->MA PU->PEOU**
Interface Design (ID)	"The extent to which the interface is easy to use and easy to learn. The ability of interface to learn each user task properly."	**ID->PU ID->PEOU**

C. *Perceived Usefulness*

PU is elucidated on the criteria of one's performance in the job [4]. The study of PU has been discussed many times studies [25] [26] [27] [28]. Forexample, [30] [26] [27]. [28]Emphasized that the services of mobileare used in rare case that is comprised of ubiquity, personalization, time, area and network. Therefore, PU is elaborated on one's belief on his/her performance in daily exertion.It does not only show the characteristics of mobile services acceptance, but also helps mobile services in order to achieve one's task for example, effect and result [12][27][28]. As a result, the research is processed further as:

H1a: PU has significant effect on "perceived ease of use".

H1b:PU has significant effect on" mobile acceptance".

D. *Perceived Ease of Use*

It is the view of everyone that PU is helpful for he/she who may search that the network is difficult to adopt [4][25].PEOU has been focused in the field of information technologies, for instance[18],3G[16], mobile commerce acceptance[13][14][15] wireless internet [19][20], internet services[21][22]and mobile services[24][26][27] [28].[29], supports the system PU has stopped the innovation it is borrowed [4], PEOU relates to the level to which an individual believes that the usage of mobile commerce acceptance will be free of physical and mental struggles for instance, the person who is using mobile services and its features in order to find data. Therefore, the usage of mobile commerce acceptance will be easy to access.

H2: PEOU has brought good impact on "mobile acceptance"

E. Interface Design

Influential interface design for cellular apparatus eases the mobile users. The user interface style combines a user's communication and user interface devices [6]. Many fresh researchers are also conducted on it however interface design consists of three parts. The screen design system stands for visual presentation that influences a user's performance [7][31]. It has replaced many retrieval mechanisms. It also facilitates the user to search information easily. Second; terminology refers to the language of a system [7][31]. The popularity of mobile commerce applications also depends on its usage of terminology and the user's interaction with it. Lastly; navigation is the easiness of browsing [7][31]. Its smoothest the information searching. Therefore, we propose that interface design will positively affect perceived ease of use of the mobile commerce acceptance.

H3a: Interface design will significantly impact on "perceived usefulness".

H3b: Interface design wills significantly "perceived ease of use".

IV. RESEARCH METHODS

This research will be used a method to collect quantitative data collected from the questionnaire will be analyzed using SPSS 22.0. A qualitative study is first performed for exploration purposes, followed by a quantitative study based on the results of the early quantities study based on the results of the early quantities phase of the study. This exploratory hybrid approach design is often used to delve into research questions.In this paper, questionnaires based on qualitative research results are used to obtain more information, especially regarding the relative advantages of these factors. Typically, the sample selection criteria that respondents must be mobile commerce users at the time of the survey or used mobile commerce in the past. In this research survey was carried out About 300 paper copies of the questionnaire forms were distributed in Pakistan (the most populated city Karachi), Islamabad (the capital of Pakistan), Hyderabad (The second largest city of Pakistan) and in Lahore one of the wealthiest city of Pakistan. Structural Equation modeling using Partial Least Square v.22.0, be used. This study will be applied a two-step Structural Equation Modeling analysis of this study. In the first step, the measurement model will be evaluated by examining the one dimensional, effectiveness, and reliability of the potential construct using Partial Least Square. In next step, the structural model will be tested the hypothetical relationship between the potential structures of the proposed study model.

V. MEASUREMENT DEVELOPMENT

Measurement items for study will be operationalized and validated items from previous research in acceptance and usage of mobile commerce acceptance. Six items of "perceived usefulness" and six items of "perceived ease of use" will be adopted from study of Venkatesh 2000 [5]. Four items of interface design will be adapted from study of [19], and finally five items of mobile commerce acceptance will be adapted. Measurement items validity and reliability will be tested using Cronbach's alpha. All items will be measured on seven-point Likert scale anchored by (1) strongly disagree to (7) strongly agree. Excepts of demographics which will be calculated on nominal scale. The demographic characteristics of respondent will include gender, age, educational level and income.

Given the practical approach of the research topic, the approved questionnaires are the first approved by experts/specialists in order to prevent ambiguities encountered by respondents. Prior to the final poll, another pilot figure will also use the selected group of at least 30 Pakistani respondents. As in any experimental study, it provides an opportunity to measure the reliability and validity of the questionnaire. Based on the recommendation, we suggest that the suggestions and comments of the pilot studies in creating and optimizing the questionnaire in order to achieve the desired results of this research. The research is useful in collecting at least 300 valid responses.

VI. TECHNIQUES OF DATA ANALYSIS

This research will be used a method to collect quantitative data collected from the questionnaire will analyzed using SPSS 22.0. We will have used a partial least squares structural equation modeling version 22.0 to draw a research model of its capabilities. Partial least squares structural equation modeling has proven to be able to handle complex, large and simple models. Partial least squares structural equation modeling is regarded as modern business research tools based on variance to maximize the described variance of dependent factors [22] This study will apply a two-step structural equation modeling analysis of this study. In the first step, the measurement model will be evaluated by examining the one dimensional, effectiveness, and reliability of the potential construct using Partial Least Square. In next step, the structural model will be tested to test the hypothetical relationship between the potential structures of the proposed study model.

VII. CONCLUSION

The study has provided the theoretical frame work utilized in previous prominent theories and models in the technology acceptance and usage research of domain called Revised Technology acceptance model. The study suggests that theoretical model leads to factors which are affecting mobile commerce acceptance. The factor is interface design. This study also suggested two further unique factors in Revised technology acceptance modelaccording to the results literature relevant. These unique features are perceived usefulness and perceived ease of use such parameters suggest that the past studies could also confirm the present work. The proposed model in this article will be useful in understanding the acceptance and use of mobile commerce acceptance. The proposed model is still in theoretical phase and can be evaluated in future work. This research work is unique and has never been studied before.

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