The Role of Moderating Factors of 3G User Acceptance Technology in Shimla

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Abstract—3G user Acceptance is an important field of study in predicting the use of the mobiles and computer technology. Technology Acceptance Model (TAM) is current model that has attracted the attention of researchers in predicting usage of mobiles & computer systems for present world and future technologies. This study was conducted only in Shimla (India) and does not cover all country or other world. Behavior Intension and Perceived Quality can only increase by increasing user acceptance of mobile and computer systems. The research focuses on user acceptance of 3G technology used in organizations or communities by adding some new moderators like gender, age, educational level, experience, individual impacts and organizational impacts to TAM models. The findings of study tells about the relation between the moderators and core determinants of TAM like Behavior Intension, Perceived Quality, Perceive Enjoyment, Easy of Use, Perceive Usefulness and Price Level. In this research, a total of 100 students of different colleges of Shimla were included and 3G Services were analyzed. The results of study tells that Behavior Intension, Perceived Quality, Perceive Enjoyment, Easy of Use, Perceive Usefulness, Price Level using Social Influence and facilitating conditions are the important constructs which are useful to predict 3G use. The Cronbach's Alpha test shows that all the variables and moderators are reliable and valid for present and further research processes. The correlation analysis tells that gender, age, educational qualification, experience, individual impacts and organizational impacts has significant influence of different construct of TAM model. This paper provides the knowledge of user to understanding of user acceptance of 3G mobile communication services.

Keywords: 3G service, mobile service, User acceptance, End users and Technology acceptance model.

I. INTRODUCTION

In the area of mobility management in wireless networks, fast and seamless handover is a major goal. Not a few techniques have been proposed to achieve this goal including handover preparation based on cross-layer optimization and mobility prediction [1]. 3G is a generic name used to describe the development of mobile communications in terms of "generations" (ITU, 2003). It refers to high-tech infrastructure networks, handsets and other equipment to provide mobile consumers with high speed Internet access video telephony messaging and streaming capability [2]. 3G include some applications include mobile TV, Video conferencing, Tale-medicine; Location based service, video on demand etc. These applications are mainly made possible due to the enhanced data rates as a result of the 2-8MBPS bandwidth availabilities. Some of the applications are: Mobile TV, Video Conferencing, Tele-medicine, Location Based Services and Video on Demand etc. [3].

II. USER ACCPTENCE

It is important to understand the reasons why people accept information technologies, as this can help to improve design, evaluation and prediction how users will respond to a new technology [4]. The TAM, proposed by Davis in 1989, has been a widely used model for predicting and explaining user behavior based on internal beliefs, attitudes, and intentions. Since 1990, a number of studies have proposed the modified TAM for research in the IT/IS adoption. Attitude included in original model construct, especially in the IT literature, are omitted [10].The performances of information systems depend on user acceptance or rejection. These days, information is universally regarded as a very important tool in improving the competitiveness of economy. It is said that technology impacts a significant effects on the productivity of organizations.

III. FACTOR

1) Perceive Enjoyment: This emphasize on enjoyment. Perceive enjoyment expect weather the user using this service for enjoyment or not e.g. watching movie, playing online game.

2) Perceive quality: The degree of at which describe the quality of service include advantages and merits.

3) Price level: In the price level weather user accepts or rejects the price level. It include weather user satisfy price level or not and how much money he expect to give for the service.

4) Perceive usefulness: It includes how user enjoys the benefits of the service. How they are useful for the user. Weather he/she can finish their work frequently with the help of this.

5) Ease of use: user feeling convenient or not while using this system.

6) Behavioral Intention: Positive and negative intention or feelings to use a service.

1V. Technology Acceptance Model (TAM)

The Technology Acceptance Model is a highly validated model and was tested by many researchers in their study. This model, proposed by Davis (1989), is based on construct and relationships in the Theory of Reasoned Action (TRA) [6]. The goal of TAM is "to provide an explanation of the determinants of computer acceptance that is generally capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified" [9]. The technology acceptance model is the model that has best suitable model of showing the acceptance of 3G mobile service.
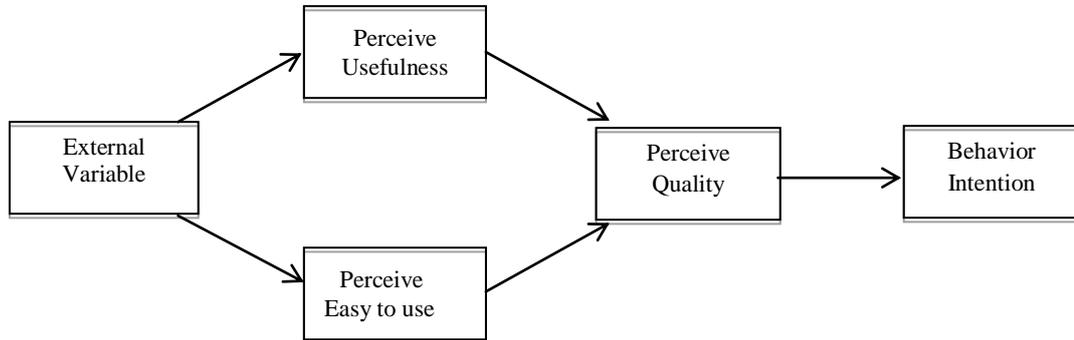

Fig. 1 Technology Acceptance Model (Davis et al., 1989)

V. Methodology

a. Research Instrument

At first data were collected from a city by means of a questionnaire that was especially developed for this study. Questionnaire was developed in terms of validity, accuracy and logic. The questionnaire consisted of two parts. In the first part of the questionnaire was designed to identify the information of the respondents such as gender, age and qualification. Here also design the information about organization and area of specialization. In this survey the data has taken from Shimla city of himachal Pradesh (India). And also developed information about 7 point likert scale used in psychometric studies. Such as how the respondents have to give response back. In the second part contains a series of factor about the perceived usefulness (PU), perceived ease of use (PEOU), perceived enjoyment (PE), perceived quality (PQ), behavioral intention (BI) and price level(PL). . For ratings, 7- point liker scale was used as suggested by Ajzen and Fishbein,

Strongly disagree			Neutral		Strongly agree	
1	2	3	4	5	6	7

Fig.2 Seven point likert scale (Ajzen and Fishbein)

The questionnaire was distributed to the students having previous experience with the technology of 2G, 3G and 4G. For ratings, 7- point likert scale was used as suggested by Ajzen and Fishbein, where 1- completely disagree, 2- moderately disagree, 3- somewhat disagree, 4- neutral, 5- somewhat agree, 6- moderately agree and 7- completely agree. After getting the questionnaire, data was fed into SPSS tool, which is software for analyses of sampled data, gathered in a survey.

b. Respondents

A total number of 125 survey questionnaires was developed and distributed to student's deployment located in Shimla area. Questionnaires are distributed via a drop-off-method, via this method the hand delivery of self-administered questionnaires, followed by personal collection. The respondents were also given the choice to take away the questionnaire and complete it in their own time and space. Considering the literature review of different factor affecting 3G technologies (that representing of the study) but approximately 100 valid responses returned back.

c. Result

1) Reliability Analysis

The reliability of scale indicates that the study is free from random error. Internal consistency is measured in this research using Cronbach's coefficient alpha, (α). The statistic provides an indication of the average correlation among all of the items that make up the scale [5].The reliability analysis shows that the study is free from random error. Internal consistency is measured in this research using Cronbach's coefficient alpha. Values range from 0 to 1 with higher values indication greater reliability. Table indicates all value is more than 0.7. Hence, the survey instrument (questionnaire) can be a reliable tool to measure all constructs consistently. Moreover, all of the measures of constructs had been used in past studies, and have thus been validated [6]. In the reliability test Cronbach's Alpha value is considered in this table price

level have negative influence and if the price level is high the person are not recommend its price level for acceptance. Generally an alpha is higher than 0.800 is expectable, but if in any circumstances an alpha will be 0.700 is also acceptable. Here all the variables have value of greater than 0.700 are supportable and variable price level is non-supportable.

TABLE 1: Reliability Analysis for variables (factors)

Variables	Cronbach's Alpha
Perceived Usefulness	0.734
Perceived Ease of Use	0.700
Behavior Intention	0.707
Perceived Enjoyment	0.728
Price level	-0.021
Perceive Quality	0.736

2) Regression analysis

This analysis is used to interpret the findings of research.it is used to determine how much affect each determinant has on behavioral intention. From regression analyses it is clear that "perceive enjoyment", "perceive quality", "ease of use" and "perceive usefulness" is having more positive influence on behavioral intention, whereas "price level" having negative influence on behavioral intention.

TABLE 2: Regression analysis

PERCEIVE ENJOYMENT		0.31
PERCEIVE QUALITY		0.01
PRICE LEVEL	BEHAVIOUR INTENSION	0.04
EASY OF USE		0.I9
PERCIVE USEFULNESS		0.30

3) Correlation analysis:

Correlation can be used to examine the relationships between two or more variables. If two phenomena are related in a systematic way they are said to be correlated. Correlation can be measured by means of the correlation coefficient [7].Correlations were calculated to identify the correlations among the variables. It is also used to describe the relationship of the dependent variable and the outcome. All the major variables were correlated together using the correlation test [8]. It is also determine the relation between variables like perceive usefulness, perceive quality, perceive enjoyment, easy of use, price level and moderators like gender, age, experience, educational level, individual impacts and memorability is associated with behavioral intention.

From correlation analyses "gender" is considered as moderator for "perceive usefulness" (0.62) and "perceive quality (0.51)". "Age" is considered as moderator for "perceive usefulness (0.14)" and "perceive quality (0.15)". Because more positive responses given by 18-25 years students. "Education" is considered a moderator for "perceive enjoyment" (0.88) and "ease of use" (0.98). In this positive responses given by the higher level, just as management and technical students. "Experience" is a moderator for "perceive usefulness" (0.95) and "perceive quality" (0.98). "Organizational Impacts" is a moderator for "perceive enjoyment" (0.91), if performance and expectancy of work is good organization supports and user give support the use of this service.

TABLE 3: Correlation analysis

CORR.	BI	GEN	AGE	EDU	IM	EX	OI
PE	0.64	0.31	0.07	0.88	0.24	0.78	0.91
PL	0.08	0.39	0.09	0.71	0.18	0.60	0.71
PQ	0.57	0.51	0.15	0.85	0.41	0.98	0.49
EOU	0.58	0.41	0.12	0.98	0.08	0.28	0.43
PU	0.64	0.62	0.14	0.80	0.25	0.95	0.45

This model shows the correlation between variables and moderators in the Fig. 2. In this highest value are written in this model that shows correlation between the factors and moderators. And also shows that how much each variable is dependent on other one. TAM is the model that defines the dependencies of different variables on one another. In this model gender, age, educational qualification, experience, individual impacts and organizational impacts has significant influence of different construct of TAM model. In this price level does not accept and support 3G acceptance because if the price level is much in Shimla user of the service are desirable less. So all factor support 3G user acceptance beside price level in some extend.
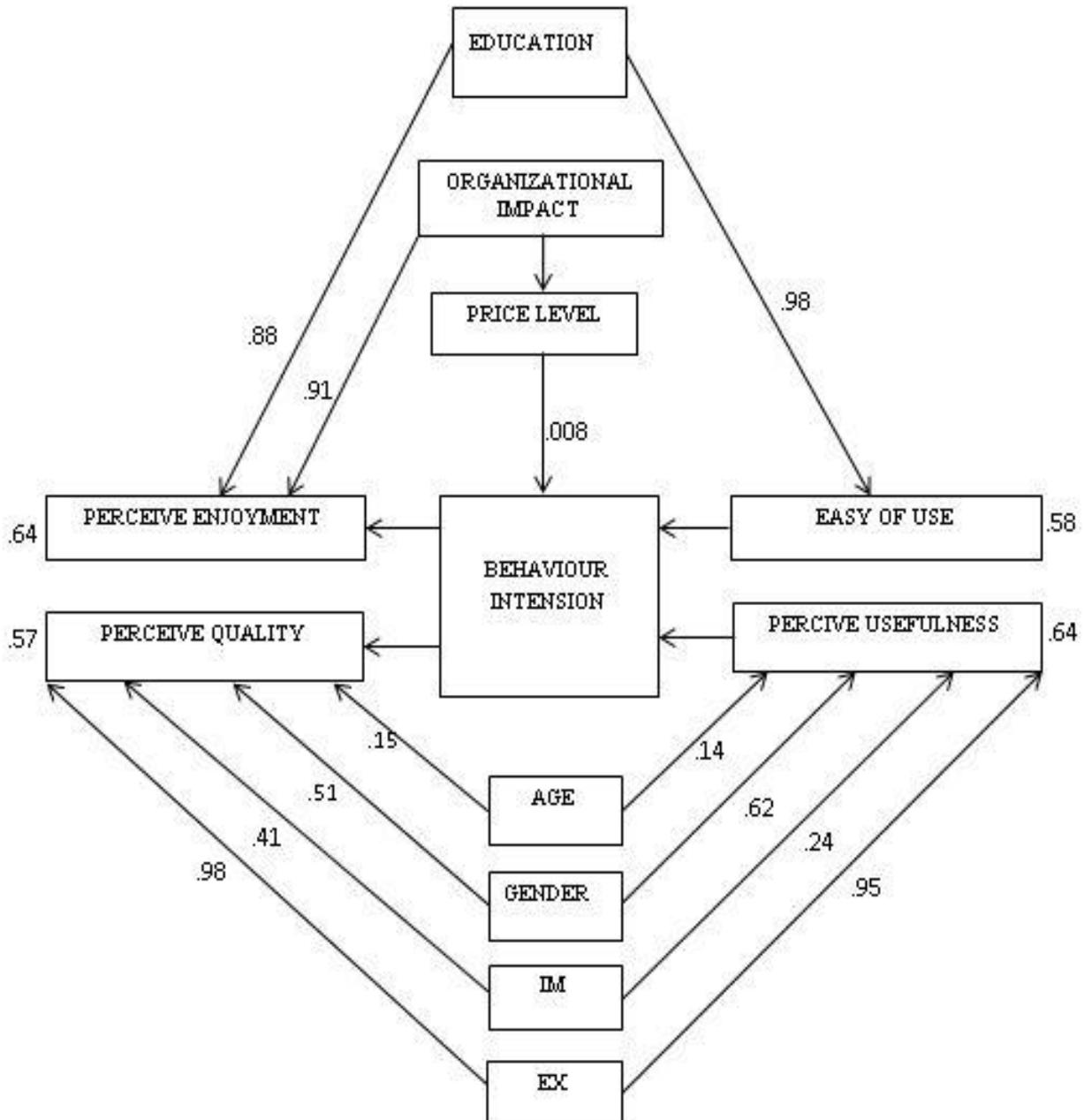
Fig.3: Correlation between factor and moderators in Technology acceptance model (TAM)

VI. CONCLUSION AND FUTURE SCOPE

The experimental study concludes that there is strong relationship between the different constructs of TAM model. These different constructs are Behavior intension, price level, perceive quality, Perceive usefulness, perceived enjoyment, easy of use. We construct the simple correlation between all of these variables along with Age, Gender, Education, Experience, Impact parameters, Organizational Impacts etc. and Behavior Intension itself. The tests used are Cronbach's Alpha test for reliability and correlation test for validity. Our results show that our assumptions are correct on the basis of these tests. And on the basis of these results, we evaluated this 3G TAM user acceptance for 4G TAM user acceptance prediction by suitable algorithms. This analysis is very useful for future hypothesis and experiments on 4G TAM acceptance models.

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