

ACCEPTANCE OF TABLET APPS FOR E-LEARNING BY SENIOR USERS: A Test of Unified Theory of Acceptance and Use of Technology

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Abstract

Learning is a continuous process. The contemporary environment emphasizes also on de-learning and re-learning. This prompts the need to acquire knowledge and develop skills throughout the life cycle. Employees belonging to different sectors and hierarchical levels can now continue education through e-learning. Particularly considering the senior students (50+ years of age), they are more reluctant to accept technological resources. This study mainly examines the acceptance of Tablet PC (TPC) apps as a learning tool among senior users and what factors may accelerate TPCs use. Unified Theory of Acceptance and Use of Technology (UTAUT) was applied with slight modifications and responses of 173 senior users were collected. Results not only unfolded the repulsive behavior of senior students' to use TPCs as learning device but also highlighted the influence of performance expectancy and facilitating conditions if policy makers wish to increase tablet apps use.

Keywords: Acceptance of Tablet Applications, Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Behavior Intentions, UTAUT Model, Senior Users

Introduction

Education plays an important role in the economical development of a country (Ozturk , 2001). It also helps to shape the attitude and behavior of a society (Apple, 2012; Zajda 2001). Realizing these facts, developing world is now allocating substantial budget to educational sector (Worldbank, 2014). Access to education is considered as a basic right of every citizen. People living in urban areas usually have multiple ways to develop themselves according the needs and interests. But individuals belonging to rural and remote areas lack access to even basic education. Even if they have, the quality of education is not encouraging (Seetharamu and Devi, 2007).To cater educational needs of this particular segment, the concept of distance learning was emerged and well received. Due to consistent technological advancements nearly in every field, distance education has been facilitated by information and communication technology (ICT). Distance universities are now taking full advantage of e-learning to provide quality education to widely dispersed students (Riaz, Riaz and Hussain, 2011). Education through e-learning has inherent benefits of cost and time (Broadbent, 2002). E-learning even helped the universities to cross borders and easy penetration in the host market. Despite key advantages, e-learning also has some pitfalls (Broadbent, 2002). According to some experts it cannot be a true substitute of formal education. In developing world, Human development through e-learning is normally conceived for disadvantageous people. For example, females who can't attend classes due to cultural bondages, executive associated with pressing assignments and individuals living in far areas, constitute the target market of e-learning (Riaz et al., 2011).But the realization of e-learning importance forced conventional universities to facilitate students with the advantages of both online and offline learning which is termed as blended learning. Now institutes are amalgamating digital media and other internet resources with

formal classroom teaching as an effective pedagogical tool (Friesen, 2012). E-learning was initially conceived as disseminating knowledge through internet using desktop computers. But due to the advent of laptops, Ipads, Tablets Apps, Smart phones and other technological devices, e-learning has experienced a shift towards modern technological tools. On the other hand, individuals' commonly resist change and avoid accepting the latest equipment especially in technological sphere (Bauer, 1995). The acceptability is even more at stake if the equipment or tool is technically sophisticated (Rogers, 2003). Among latest technological gadgets, Tablet PCs are being used by both instructors and students to learn and serve (Anderson, Schwager and Kerns, 2006). The tablet PC has proved to be a unique and effective tool to learn and serve being comparatively portable and compact. Latest tablet PCs have long battery life and free from hazardous pitfalls (Smith and Pietraszewski, 2004). Particularly considering tablet-PCs, though they offer various benefits but what factors are important to contribute towards their acceptance to use as a tool for e-learning, poses a research question for this study.

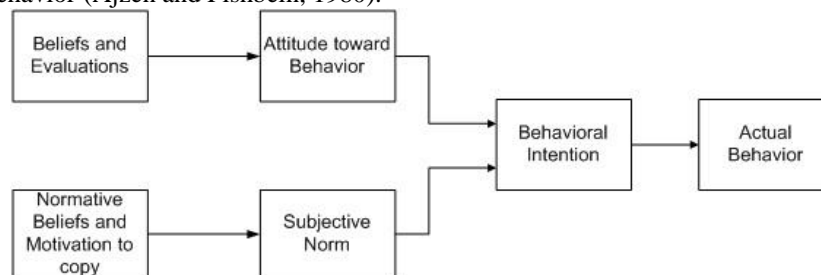
On the other hand, theories and empirical findings categorically suggest that senior citizens and old-aged persons are more averse to learn new practices and particularly accept latest technological tools (Bohlen and Beal, 1957; Mallenius, Rossi and Tuunainen, 2010; Morris and Venkatesh, 2000). The aging population is the concern of nearly every country (Kinsella and Velkoff, 2001). Senior users constitute a substantial market and also a learned segment of the society who can share indigenous practical ideas in learning environment.

Elderly mature people have different set of beliefs and expectations (Mallenius, Rossi and Tuunainen, (2010). With an increase in age, it is hard to consistently concentrate at task-related information and to process complex stimuli (Plude & Hoyer, 1985). This confers a feeling of inability to use technically advanced tools and resources. Normally they start accepting innovation when it has been widely accepted in the society (Morris and Venkatesh, 2000). According to Mallenius, Rossi and Tuunainen (2010), senior users never fully adopt technological resources and falls behind the final adoption phase. To accelerate their adoption certain conditions need to be satisfied (Ryu, Kim and Lee, 2009). In case of tablet-PC it is assumed that senior persons are reluctant to accept tablet-PC as a learning tool and what factors can contribute to increase their acceptability is main purpose of the study.

Though, existing literature shows some empirical findings to figure out the factors necessary for technology acceptance in e-learning and mobile learning environment but the experts emphasize the contextual findings to refine the theory of technology acceptance (Hofstede, 1991; Hofstede and Bond, 1980). Hofstede (1991) argue that theories and research findings should be generalized cautiously due to high cultural dissimilarities among many countries. Since most of the contribution in this domain is from western and developed countries (Anderson, Schwager and Kerns, 2006; El-Gayar, Moran and Hawkes, 2011; Ifenthaler and Schweinbenz, 2013; Smith and Pietraszewski, 2004) therefore this study highlights the Asian perspective in this regard.

Literature Review

Existing literature lacks any specific model to measure individuals' attitude towards learning through tablet PCs and mobile apps. Studies to measure technology adaptation are largely based on Technology Acceptance Model commonly known as TAM (Davis et al. 1989; Dishaw et al. 2002; Mathieson, 1991; Straub et al. 1997). TAM is the extension of Theory of Reasoned Action Model (Ajzen and Fishbein, 1980) which posits that intentions to perform a behavior are largely based on attitude and subject norm (Fig.1). Attitude reflects the general negative or positive feelings about performing a target behavior whereas subjective norm refers to an external influence of close associates to perform behavior (Ajzen and Fishbein, 1980).



**Figure 1. Theory of Reasoned Action (TRA)
(Based on Fishbein & Ajzen 1975)**

Extending TRA, Davis (1989) presented Technology Acceptance Model to explain how individuals' accept and use technology. According to TAM, perceived usefulness and perceived ease of use are the two determinants of attitude

which further lead towards behavior intentions. TAM helps to measure technology acceptance in addition to general attitude (Morris and Dillion, 1997).

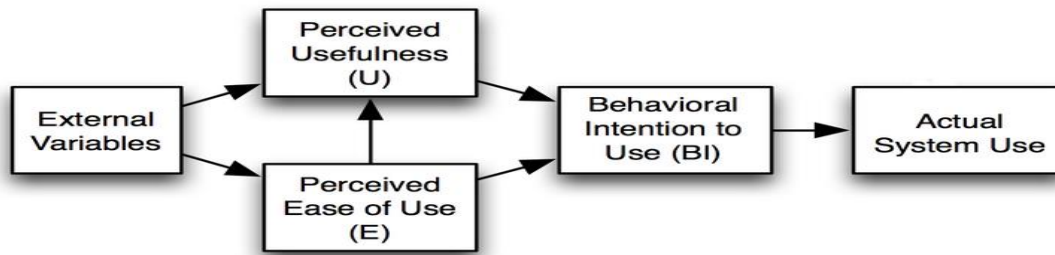


Figure 2. Technology Acceptance Model (TAM)
(Based on Davis *et al.* 1989)

Literature further shows a dominant role of theory of planned behavior TPB (Ajzen, 1991) which also has underpinning from Theory of Reasoned Action. According to TPB, subjective norm, attitude and perceived behavior control are the predictors towards behavior intentions that helps to explain actual behavior. Perceived behavior control is defined as an individual's perceived ease of performing the particular behavior.

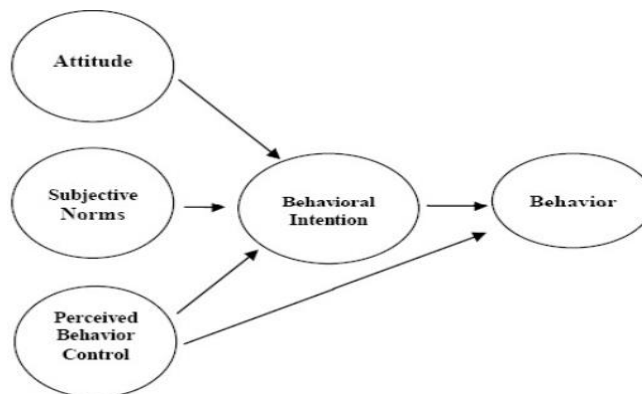


Figure 3. Theory of Planned Behavior (TPB)
(Based on Ajzen, 1991)

Both TAM and TPB have been used in various settings to predict behavior and actual use. Literature shows some other theoretical frameworks which may also help to explain attitude towards technology acceptance because conventional technology acceptance theories cannot thoroughly predict human behavior when human-computer interaction is involved especially in case of mobile devices (Nikou and Bouwman, 2014). In this regard, the most influential development was made by Venkatesh, Morris, Davis, & Davis (2003) by presenting Unified Theory of Acceptance and Use of Technology (UTAUT) to explain behavior intentions and actual behavior towards technological resources. UTAUT is perceived significant because of the dimensionalities extracted from various accepted models from the field of information system. Venkatesh *et al.* (2003) combined the elements from the social cognitive theory, the innovation diffusion theory, the model of PC utilization, the theory of reasoned action, the theory of planned behavior, the technology acceptance model, the motivational model and a model combining the technology acceptance model and the theory of planned behavior. The UTAUT model posits that performance expectancy, effort expectancy, and social influence are the main determinants of users' acceptance of technology where performance expectancy, effort expectancy, and social influence are the direct predictors of behavior intentions and indirect predictor to usage behavior through behavior intentions. Behavior intentions and facilitating conditions further helps to explain actual usage behavior. The model further highlights the moderating role of gender, age, voluntariness, and experience on the various hypothesized relationships. According to Venkatesh *et al.* (2003), UTAUT helps to account for 70% variation in explaining behavioral intentions to use technological resources or equipments.

Performance expectancy describes the extent to which individual perceives the technological resources would aid to his performance. Effort expectancy refers to the easiness to use technological resources. Social influence is self explanatory construct, which implies the perception an individual has about people important to him think that he

should use the system. Facilitating conditions refers to individual believes that necessary resources and knowledge is available to use the system (Venkatesh et al., 2003).

UTAUT has been found quite parsimonious in predicting different types of systems and IT resources such as english e-learning websites (Tan, 2013), users' acceptance of online purchase intention in rural tourism (San-Martín & Herrero, 2011), facebook use (Lallmahomed, Ab.Rahim, Ibrahim and Abdul-Rahman, 2013), mobile services and devices (Carlsson et al., 2006) and many others.

However, some authors couldn't find encouraging support to predict technological resources using UTAUT like self-archive in institutional repositories (Singeh, Abrizah and Karim, 2013), mobile learning (Cruz, Boughzala and Assar, 2014; Jairak, Praneetpolgrang and Mekhabunchakij, 2009) etc.

In some settings an augmented UTAUT has been used to predict intentions to use various information systems like virtual human service provision (Hoefnagel, Oerlemans and Goedee, 2012), app-based mobile tour guide (Lai, 2013), mobile Internet continuance usage (Zhou, 2011), online voting system (Powell, Williams, Bock, Doellman and Allen, 2012), online family dispute resolution services (Casey and Wilson-Evered, 2012), eGovernment (Gupta, Dasgupta and Gupta, 2008), acceptance of m-devices/services (Carlsson et al., 2006), online community web log system (Li and Kishore, 2006) and many more.

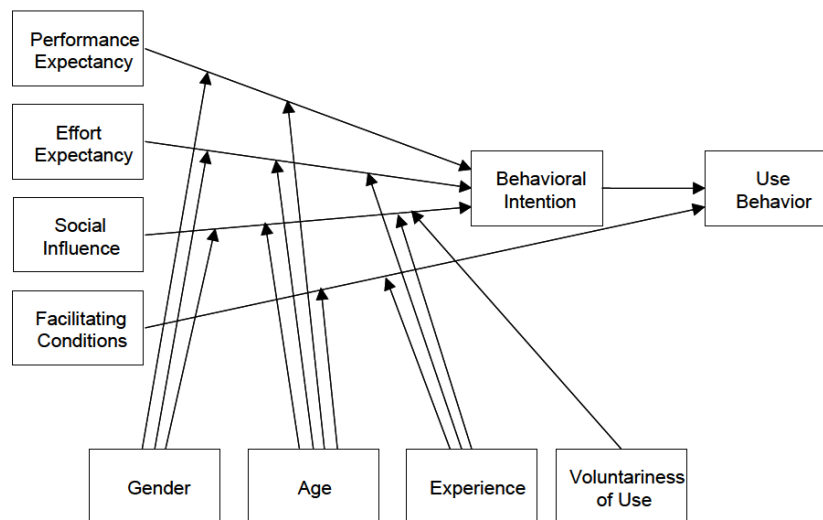


Figure 4. Unified Theory of Acceptance and Use of Technology (UTAUT)
(Venkatesh et al., 2003)

Unified theory in predicting Tablet PCs

The original and extended version of UTAUT has also been used in different settings to predict acceptance of TPCs in e-learning context (Moran, 2006; Anderson et al., 2006; El-Gayar and Moran, 2006). The study of Moran (2006) validated UTAUT model to determine students' acceptance of TPCs. The model helped to explain 55% variation of intention to use tablet PC and 11% of the actual use of the tablet PC. Performance expectancy, effort expectancy, and social influence, contributed 19, 12, and 6% respectively toward behavioral intentions. According to Venkatesh et al. (2003), performance expectancy is the strongest predictor of behavioral intention. This fact has also been endorsed in various studies. The study of Anderson et al., (2006) confirmed the predicting qualities of UTAUT and characterized performance expectancy and voluntariness of use as most striking variables towards the acceptance of TPCs by business faculty in higher education. Moran et al., (2010) also highlighted the significance of UTAUT and characterized performance expectancy and effort expectancy highly significant in predicting intentions to use TPCs. Whereas facilitating conditions emerged as key predictor towards actual use. The study of El-Gayar et al., (2011) found a good fit of UTAUT model in educational setting to predict TPCs acceptance. In his study, performance expectancy and facilitating conditions were the key explanatory factor towards intentions to use TPCs. whereas effort expectancy predicted behavior intentions mediated by attitude. At contrast, Jairak et al., (2009) contended that performance expectancy helped to explain the attitude more thoroughly whereas facilitating conditions was significant predictor towards behavior intentions. Effort expectancy and social factors significantly predicted both attitude and behavior intentions.

The study of Ifenthaler and Schweinbenz (2013) was interesting in nature as the author interviewed some teachers to know their attitude towards using TPCs in association with UTAUT factors. Results showed varying nature of findings as the author could not confirm the absolute prediction and TPCs acceptance. Teachers were found quite skeptical about this particular tool. Teachers who were in favor of technologically advanced tools also had strong reservations.

Nevertheless, the UTAUT is at early stages of validation and needs more examination (Straub, 2009). Therefore, this study incorporated the theoretical framework followed by Anderson et al., (2006) and assumed performance expectancy, effort expectancy, social influence and facilitating conditions as direct predictors of use behavior. All the assumed relationships were further contingent upon four moderators i.e. gender, age, voluntariness, and experience (Fig.4). Hypotheses in this regard were as follows;

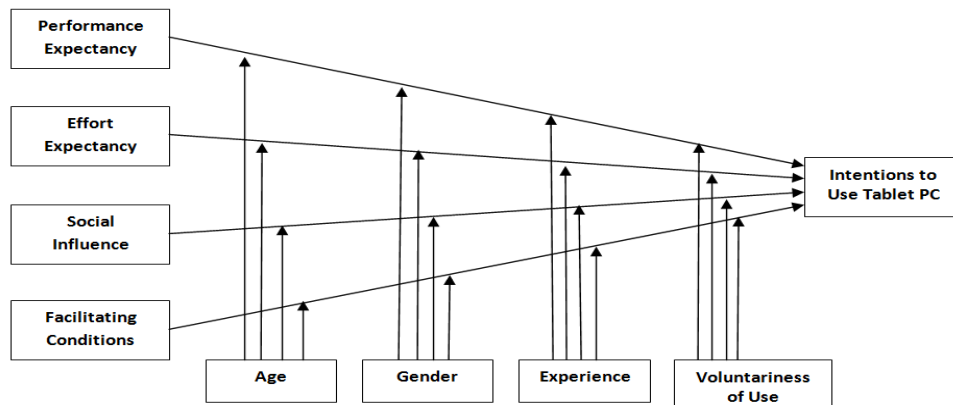


Figure 5. Research Model of the Study

H1: Performance expectancy positively affects use of Tablet PC.

H2: Effort expectancy positively affects use of Tablet PC.

H3: Social influence positively affects use of Tablet PC.

H4: Facilitating conditions positively affects use of Tablet PC.

H5: Age will moderate the relationships between various determinants of Tablet PC use.

H6: Gender will moderate the relationships between various determinants of Tablet PC use.

H7: Experience will moderate the relationships between various determinants of Tablet PC use.

H8: Voluntariness of Use will moderate the relationships between various determinants of Tablet PC use.

Methodology

Participants

There exists no universal definition of elderly or senior people. In European and other developed countries individual crossing age of 60+ is counted as old aged person. In some countries this standard varies from 45 to 70 (see Britannica Encyclopedia). But in developing world, 50+ age may also indicate senior person category (Kowal and Peachey, 2001) which is also taken as benchmark for this study to select respondents. Very few people normally continue their education during old ages. The ratio is even not much encouraging in developing world. Since this study mainly deals with measuring the usage intentions of senior users towards tablet-PCs (TPCs) as a tool for e-learning, therefore students over 50+ of age enrolled in different universities of capital territory of Pakistan are treated as the population of the study. From the last few years, some of the conventional universities in Pakistan are intending to offer some of their programmes in online mode. Some have already incorporated the important components of e-learning in their pedagogy parallel with formal teaching practices. Only those students are targeted who are either fully or partly associated with e-learning or will have to undergo online mode of education.

Procedure

The study was based on questionnaire survey. It was hard to collect the email data of students associated with e-

learning in either way therefore, hard copy of the questionnaires were floated to the targeted respondents through departmental representatives. This study basically employed judgmental sampling approach to collect data from senior users. Respondents were also required to indicate their ages to ensure the actual representation of desired subjects. In total 400 questionnaires were distributed. After the efforts of two months, around 230 questionnaires were received back and later analyzed using SPSS 15.0 and AMOS 20.

Measures

To measure the constructs of the study, various measures were adopted from the existing sources. Performance expectancy, effort expectancy, social influence and facilitating conditions were each measured with four items adopted from the original study of Venkatesh et al., (2003). "System" was replaced with "Tablet-PC". Intentions to Use Tablet-PC was measured with four items measuring behavior intentions opted from the study of Moran et al.,(2010). All the items were based on five point likert scale ranging from 1. Strongly Disagree to 5. Strongly Agree.

Nominal scale was used to measure demographical information assumingly had moderating effects on the relationships. Age was measured with three options i.e. "Less than 50", "50-60" and "61 and above". Respondents indicating age category as "Less than 50" were disqualified from the analysis as the study only consider employees over the age of 50 as subjects. Gender with "Male" and "Female". Experience with a statement *Your experience of using tablet-PC*: "Less than a year" and "One to three years" and "More than three years". Voluntariness of Use was measured through a statement *The use of Tablet-PC in my studies is*: "Voluntary" and "Mandatory".

Analysis and Results

Table-1
Demography of the Respondents

Variables	Items	Frequency	Percent
Age	50-60	136	78.61
	61 and above	37	21.39
Gender	Male	114	65.90
	Female	59	34.10
Experience	Less than a year	63	36.42
	One to three years	84	48.55
	More than three years	26	15.03
Voluntariness of Use	Voluntary	162	93.64
	Mandatory	11	6.36

Demographical data was collected for the variables which were later analyzed to know their moderating influence if any. Since the main purpose of the study was to know the usage behavior of senior users towards tablet PC therefore, data was collected from the senior users aged more than 50. Respondents could either fall in the age bracket of 50-60 or 61 and above. Nearly 79% subjects showed their ages within 50-60 and only 21% more than 61. The life expectancy in Pakistan is 65% approx. (WHO, 2014). Elderly students normally continue their education after 50 years of age mainly for two reasons. Either because of their self-interest or to have good job prospects after retirement age i.e. after 60 years. Since individuals do not have enough productive life after 60 years of age therefore we may assume that students aged more than 60 were enrolled to satisfy their educational needs.

Pakistan is categorized as a male dominant society. Females have to face different barriers if they wish to continue their education. However the educational participation is quite encouraging in the urban areas therefore, 34% of the females participated in the survey whereas 66% were male. In case of rural areas, the participation could have been much low.

In Pakistan tablet-PCs are considered as a luxurious technological gadget. It is not much common among people of different walk of life. In e-learning environment, it is deemed compulsory to have laptop or desktop computer. The tablet PC can be an edge on account of various advantages. Considering this fact, teachers or institutes hardly bound students to have tablet PC. But if they do it definitely helps them in learning. In this survey, only 11 respondents claimed that their table PC use in class is mandatory.

Tablet-PCs started penetrating into the market of Pakistan around 3 years ago. Now even some local companies are also offering tablet-PCs on reasonable prices. This helped to increase the sale and tablet PCs are now being used for

various purposes by locals including educational purposes. 36% of the survey respondents claimed that they are using TPCs from last one year, 49% from the last three years and 15% from more than three years.

Descriptive results (Table-2) showed relatively low usage intentions towards TPCs by the elderly students or senior users as indicated by the mean values. Social influence as well as facilitating conditions was also reported low by the subjects. Performance expectancy and effort expectancy were reported little high but the mean values couldn't not show an encouraging picture overall for all the variables.

Table-2
Means, Standard Deviations, Correlations, and Reliabilities

Variables	Mean	Std. Deviation	1	2	3	4	5
1 Performance Expectancy	3.08	0.94	(0.84)				
2 Effort Expectancy	3.08	0.96	0.69**	(0.85)			
3 Social Influence	2.85	1.02	0.77**	0.62**	(0.87)		
4 Facilitating Conditions	2.88	0.94	0.56**	0.47**	0.62**	(0.76)	
5 Behavior Intentions	2.86	1.04	0.79**	0.67**	0.73**	0.61**	(0.91)

*p<0.1; **p<0.01; ***p<0.001

Reliability estimates in parentheses.

Correlation analysis showed relatively high relationship between the explanatory and criterion variables. Especially, significantly high and strong relationship was observed between performance expectancy and behavior intentions $r=0.79$ ($p<0.01$), as well as between social influence and behavior intentions $r=0.73$ ($p<0.01$). Correlation values between effort expectancy and behavior intentions is calculated as $r=0.67$ ($p<0.01$) and between facilitating conditions and behavior intentions as $r=0.61$ ($p<0.01$).

Table-3
Results for Regression Analyses

Predictors	Dependent Variable	β	R	R ²	ΔR^2	F
Step-I						
Age	Behavior Intentions	0.19	0.17	0.03		1.207
Gender		0.22				
Experience		0.21				
Voluntariness of Use		0.08				
Step-II						
Age	Behavior Intentions	0.10	0.84	0.71	0.68	50.18***
Gender		0.16				
Experience		0.05				
Voluntariness of Use		0.30				
Performance Expectancy		0.51***				
Effort Expectancy		0.18**				
Social Influence		0.17*				
Facilitating Conditions		0.19***				

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

In view of the strong correlation values between some of the independent variables Variance Inflation Factor (VIF) was also calculated to diagnose any multicollinearity. The VIF values were lower than the cutoff value of 5 (Chatterjee, & Price, 1991) with acceptable tolerance level (tolerance > 0.7) (Hair, Anderson, Tatham & Black, 1998). This helped to ensure lack of multicollinearity between independent variables.

Hierarchical regression analysis was applied to know the total variation as well as predicting qualities of all independent variables. In the first step, all of the demographical variables were entered in the regression equation

and later four of the assumed predictors were added. UTAUT accounted for 71% variation in explaining behavioral intentions to use TPCs. All the explanatory variables were significantly related with behavior intentions. Correlation coefficients were calculated as Performance Expectancy ($\beta= 0.51, p<0.001$), Facilitating Conditions ($\beta= 0.19, p<0.001$), Effort Expectancy ($\beta= 0.18, p<0.01$) and Social Influence ($\beta= 0.17, p<0.05$).

Table-4
Gender

Paths	Male		Female		z-score
	Estimate	P	Estimate	P	
BI<---PE	0.477	0.000	0.617	0.000	1.416
BI<---EE	0.241	0.000	0.082	0.287	-1.677*
BI<---SI	0.170	0.000	0.144	0.073	-0.269
BI<---FC	0.219	0.000	0.105	0.209	-1.144

Notes: *** p-value < 0.01; ** p-value < 0.05; * p-value < 0.10

Table-5
Age

Paths	50-60		60 +		z-score
	Estimate	P	Estimate	P	
BI<---PE	0.527	0.000	0.398	0.000	-1.175
BI<---EE	0.204	0.000	0.136	0.084	-0.713
BI<---SI	0.115	0.018	0.449	0.000	3.271***
BI<---FC	0.226	0.000	0.048	0.569	-1.759*

Notes: *** p-value < 0.01; ** p-value < 0.05; * p-value < 0.10

Table-6
Voluntary of Use

Paths	Voluntary		Mandatory		z-score
	Estimate	P	Estimate	P	
BI<---PE	0.491	0.000	0.607	0.000	0.650
BI<---EE	0.192	0.000	0.130	0.483	-0.322
BI<---SI	0.186	0.000	0.117	0.564	-0.329
BI<---FC	0.180	0.000	0.249	0.162	0.378

Notes: *** p-value < 0.01; ** p-value < 0.05; * p-value < 0.10

Table-7
Experience

Paths	Less than a year		One to three years		z-score
	Estimate	P	Estimate	P	
BI<---PE	0.464	0.000	0.543	0.000	0.747
BI<---EE	0.141	0.078	0.088	0.226	-0.495
BI<---SI	0.193	0.013	0.117	0.075	-0.756
BI<---FC	0.305	0.000	0.169	0.013	-1.335
		One to three years		More than three years	
Paths	Estimate	P	Estimate	P	z-score
BI<---PE	0.543	0.000	0.293	0.000	-2.521**
BI<---EE	0.088	0.226	0.445	0.000	3.905***
BI<---SI	0.117	0.075	0.359	0.000	2.701***
BI<---FC	0.169	0.013	0.043	0.665	-1.057
		Less than a year		More than three years	
Paths	Estimate	P	Estimate	P	z-score
BI<---PE	0.464	0.000	0.293	0.000	-1.612
BI<---EE	0.141	0.078	0.445	0.000	3.11***
BI<---SI	0.193	0.013	0.359	0.000	1.672*
BI<---FC	0.305	0.000	0.043	0.665	-2.11**

Notes: *** p-value < 0.01; ** p-value < 0.05; * p-value < 0.10

Moderating Role of Gender, Age, Voluntariness and Experience

To know the moderating effects of gender, age, voluntariness and experience on the established relationships, critical ratios were examined between two groups. As indicated in the Table-4 to 8, the path from EE to BI ($z = -0.168$, $p < 0.10$) was different between males and females. For age, elderly students aged more than and less than 60 were different on the path from SI to BI ($z = 3.27$, $p < 0.01$) and FC to BI ($z = -1.76$, $p < 0.10$). Whereas no differences were observed for TPCs use voluntarily or mandatory across various paths.

To know the moderating role of experience, the subjects were divided into three groups having experience of using tablet PCs with less than a year, one to three years and more than three years. Comparing three stratum, no difference was found between individuals with TPCs experience of less than a year and one to three years. But the paths from PE to BI ($z = -2.52$, $p < 0.05$), EE to BI ($z = 3.91$, $p < 0.01$) and SI to BI ($z = 2.70$, $p < 0.01$) were significant between groups with one to three years of experience and more than three years of tablet experience. Moreover, the paths from EE to BI ($z = 3.11$, $p < 0.01$), SI to BI ($z = 1.62$, $p < 0.10$) and FC to BI ($z = -2.11$, $p < 0.05$) were found significant in comparing groups with less than a year and more than three years experience of tablet PCs use.

Findings and Discussions

Resistance to change is a common feature of human personality and when it's about technological change, the reactions to technological change is even drastic. Employees never accept technology until they are not convinced about its utility and comfort. The case of senior users is even more critical. Theories and researches have confirmed the repulsive behavior of elderly citizens towards technological change (Bohlen and Beal, 1957; Mallenius, Rossi and Tuunainen, 2010). This study mainly examined the factors playing role in the acceptance of tablet PCs as a tool of learning particularly for the senior users more than 50 years or age. Unified Theory of Acceptance and Use of Technology (UTAUT) was applied in this regard. The findings confirmed parsimonious nature of UTAUT Model in explaining the user acceptance. In this study, UTAUT helped to explain 71% variation towards the behavior intentions which was quite similar to the 70% variation concluded by Venkatesh et al. (2003).

The results revealed some interesting findings. As expected, senior users had less behavior intentions to use TPCs as a tool for e-learning but the roles of nearly all four independent variables in developing the usage intentions were significant. This precisely calls the attentions of policy makers to disseminate the important features of TPCs and its user friendly nature to augment the acceptance rate. Performance expectancy emerged as the most striking variable. Since senior users commonly continue their education for self-satisfaction or to increase job prospects after attaining superannuation age, therefore when they are convinced about the effectiveness of TPCs, it may increase the acceptability among this segment of aged people.

Facilitating conditions emerged as the second most significant variable in predicting behavior intentions. Training is among the key factors which help to cope with the resistance to change. Individuals normally start accepting technology when they have the knowledge and skill to use technologically advanced tools. Since individuals have weak learning capacity in elderly ages, this creates a phobia to be refrained from technical equipments. It induces management to provide training facilities or establish coaching/mentoring services to make them skillful in using tablet apps for learning purposes. Effort expectancy provides the same picture from other angle. Senior students with perception of easiness in operating TPCs may voluntarily accept this particular device.

Social influence though significant but relatively play less role in influencing behavior intentions. Reason might be the less opinionative tendencies among seniors. In South Asian culture, seniors are respected in a way that its hard to direct their behavior. They are more influenced by their will. Irrespective of external social influence, they can be motivated to use TPCs due to university administration because of the vested legitimate and coercive power (Robbins and Judge, 2013, p. 414).

The moderating analysis show that male and females are different in terms of effort expectancy. Males may accept tablet-PCs when they find it easy to use as compared to their female counterparts. Moreover, users less than 60 years of age need more favorable conditions to use TPCs. On the other hand, users more than 60 years of age may have high usage behavior due to social influence.

Voluntariness of use couldn't reveal any difference between mandatory and voluntary use of TPCs. Reason being the very limited number of respondents reported any compulsion to use TPCs. At contrast differences in terms of experience are observed about effort expectancy and social influence among groups with less than one year, one to three years and more than three years of TPCs experience in any field. As evident, users with more than three years of experience are more influenced by high effort expectancy and social influence. Facilitating conditions play more

pervasive role for users with less than one year of experience whereas performance expectancy is dominant for more than three years of experience.

Conclusion

Educational needs around the world has increased manifold due to the recent shift towards continuous improvement and innovation. Realizing this fact, individuals belonging to different walk of life look for better educational opportunities. E-learning or online mode of education has facilitated quite a lot by eliminating the barriers of distance and time. Various technological resources and devices such as smart phones, tablet apps, digital boards, online portals etc are now available to help students to enhance their competencies due to new assignments and environmental demands. However, individuals at elderly stages of life are repulsive to accept and use technological devices as a learning tool due to psychological and other limitations. This study explored the key factors which could address these limitations using Unified Theory of Acceptance and Use of Technology (UTAUT). Performance expectancy, effort expectancy, social influence and facilitating conditions emerged as key factors towards TPCs acceptance and use.

Implications

Performance expectancy and facilitating conditions showed the dominant role among all four predictors. Senior users may increase TPCs use when they are convinced about its effectiveness and utility. Universities and institutes need to highlight the benefits associated with TPCs through local electronic and print media. Senior users already using TPCs effectively should also be glorified. In addition, there should be facilities available to train or guide them about the use of tablet applications and problems encountering during learning in class room or even out of class environment.

Moderating role of age, gender, voluntariness and experience showed differences of only few paths for age, gender and voluntariness. Differences were found between users belonging to different “TPCs use experience” categories. Policy makers need to pay attention likewise to increase the tablet apps use.

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