Adoption and Acceptance of ICT Innovations in Nigerian Public Universities

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Abstract-This paper examined the adoption and acceptance of ICT innovation in Nigerian Public Universities. This study was conducted at the university of Jos Plateau state, Nigeria as a pilot study. One hundred questionnaires were administered and collected, containing 23 UTAUT survey questions and 9 demographic statements totaling 32 questions. In addition, 57% of the respondents were male and 43% were female. The paper attempt to answer the questions (1) What are the barriers to using ICT by an academician? . Question Q32 which talk about barriers to use of ICT, have the majority of the respondents (42%) which said that their problem is time; on the other hand (31%) said that the problem is training. Others respondents (4%) said that cost are their problem, another group (20%) said that they need compensation and the final group (3%) said that, it does not fit their programme. This paper use regression analysis to verify the UTAUT Model. We use the regression analysis to check the influence of the independent variables (PE, EE, SI & FC) on the dependent variable (BI) which is the behavioral intention to accept and use ICT by the university academicians, using SPSS version 17. The major determining factors are the correlation (r), the variance (R^2) and the p-value of significance. Figures 1-7, discusses the influence of the independent variables (PE, EE, SI & FC) on the dependent variable (BI) with their respective interpretations. From table 8, the best result is obtained by the influence of the four independent variables on the dependent variable BI. This is followed by the influence of the three independent variables (PE, EE & FC) on BI. Finally the two independent variables that influence the BI most are the PE &EE. The findings have important implications for teaching and learning. PE and EE are found to be the most significant predictors of academic staff acceptance of ICT and use. Therefore the university academicians need to be aware of the possibility of using ICT for teaching and learning without too much difficulty. They need to learn the basics of the technologies that will be most useful in their teaching and learning. Recommendations made were that, all employed teachers in Federal, State and Private universities should undertake mandatory training and retraining on ICT programme
Keywords: Adoption; ICT; Innovation; Acceptance; Public Universities; UTAUT Model.

INTRODUCTION

The rapid expansion of the knowledge of ICT has quickly transformed the teaching and learning procedure in tertiary institutions (Pulkkinen, 2007). The world is in the global era, therefore so much is expected from the universities in terms of researches, innovation, knowledge dissemination, creative teaching and translation of research product to human needs. Globalization is the networking of the world through the global network, to develop global economy. Hence people around the globe are more connected to each other than ever. Undoubtedly, the use of ICT is inevitable and ICT skills are very necessary to participate in the knowledge societies and

economies. Certainly, ICT is replacing traditional information and communication. Higher education institutions in Nigerian now are currently facing the challenges of globalization and information age. Nigeria has no precise and clear expressed policy on ICT. The national policy on education has no guideline on school technology plan. The national policy on education is unable to completely accommodate the demand of the Nigerian educational system. The Nigerian national policy on education should be reviewed to cut across learning about ICT and learning through ICT(Yusuf, 2005).

In Nigeria the attainable infrastructure for ICT in most of the public universities are grossly insufficient. It was noticed that most university students hitherto visit internet off campus because of the conjection on the internet on campus. ICT infrastructure availability is of great significance to anticipate for effective use of ICT in education. According to (Gesci, 2007; Yusuf, 2005), "infrastructure refers to hardware or equipment, software applications and services associated with ICTs, including telecommunication, electricity and gird networks."The investigation and examination of the current infrastructure of ICT in education is important to improve the ICT infrastructure. The examination of institution infrastructure entails perusal of existing plan and connectivity of infrastructure for all educational institutions.

ICT has become a fashionable acronym borne largely out of the Internet and telecommunications 'revolution' to describe an electronic means of capturing, processing, storing and disseminating information. Little attention, however, is placed on the fact that ICT is not a recent phenomenon since its broader definition also includes print-media, radio, telephone and television. Currently e-learning is becoming one of the most common means of using ICT to provide education to students both on and off campus by means of teaching online offered via web-based systems. Considering the role of education in nation building and the population explosion in the secondary schools these days, the use of ICT in the teaching-learning process becomes imperative. This is true because its adoption by the teachers will enhance effective teaching. Such issues like good course organization, effective class management, content creation, self-assessment, self-study collaborative learning, task oriented activities, and effective communication between the actors of teaching learning process and research activities will be enhanced by the use of ICT based technology.

ICT need for Nigerian Public Universities
(Keegwe, Onchwari, & Wachira, 2008) opine that academic networking is possible with their student counterpart across the globe. Excellent and current learning materials are required from academic staff to promote the quality of education and their product. Nigerian university academic staff should be able to compete globally with their colleagues.

However the concern is whether university academic staff are prepared to integrate the technology that is feasible to them into effective lessons for their students. and (Ma & Streith, 2005; Zhang, Li, & Sun, 2006). (Keegwe et al., 2008), argue that, "the integration of ICT into our classrooms is determined by key factors, such as the contexts in which teachers interact, their beliefs, and their attitudes towards teaching and learning" (p80). The stage of enlightenment on which ICT could be use in education is still low. Many lecturers hardly comprehend the benefit of ICT in education. Most of the lecturers acknowledged the fact that internet could be browsed as a point of supply of teaching materials. (Oyelaran-Oyeyinka & Adeya, 2004) investigated the level and depth of use of computers by university staff. From the survey, in Nigeria, 58.5% use computers for word processing, 32.2% use it for spreadsheet and data processing and 20.5% use it for programming. 66.9% use it for e- mail/Internet while 9.4% use the computer for other purposes apart from the aforementioned. (IIoanusi & Osuagwu, 2009) stated that 90% of Nigerian educational institutions are in the emerging phase of ICT, 7% in the applying phase, and 3% in the infusing and transforming phases. ICT is therefore in its' infancy in Nigeria. Nigeria though, has a great advantage because there are many Nigerian ICT experts in the Diaspora. However, no concerted and win-win effort have been made to harness this potential to accelerate and sustain ICT development in Nigerian educational settings. (Oye , Salleh, & Iahad, 2010),in a case study of Federal University of Technology Yola (FUTY), Adamawa state, Nigeria. The application of ICTs is already changing many higher learning institutions in most developing counties due to many socio-economic and technological circumstances. However in the case of FUTY, the ICT infrastructure is more tilted to the management and schools (faculties) than to the departments, lecture halls and the student hostels. This is the partial e-learning that exist in most Nigerian HE institutions. Hence this paper is proposing a move from partial e-learning focus to holistic e-learning focus.

Using ICT for Teaching and Learning

In higher education, an important aspect of the shift in technological processes has been to the acceptance and use of ICT for teaching and learning. The teachers main goal was their students' academic success, however the imposition of ICT usage are putting tension on teachers. (Borstorff & Lowe, 2006) opine that ICT is an increase load on lecturers timetable, for this will involve integrating activities slot into his teaching schedule.(Good Fellow, 2005), said that ICT in teaching and learning should promote communication between the teachers and the students. Research Institute of teaching and learning in Higher Education Conference, 2003; (Goodfellow & Lea, 2007; Roberts, 2004) are of the opinion that using ICT for teaching and learning can facilitate in many ways including hearing, seeing and participating in classroom activities. (Hannon & D'Netto, 2007) explain that the capability of teaching and learning technologies to update learning count on the context of learning and evaluation. Investigations by(Ashraf, 2009)and (Good Fellow, 2007; Gosper et al., 2008), shows that many studies in the area of

ICT in teaching and learning in HEIs fail to supply concrete reasons of increase influence of ICT for teaching and learning. Teachers who are already fearful of the technology will become more reluctant when the use of ICT is mandatory on them. There has been some optimism among teachers in Nigerian universities, that a thorough understanding of effective ICT use would enhance motivation to use ICT with their students. Due to the rapid growth of IT technology, ICTs have become indispensable ingredient in the process of teaching and learning in Nigerian HEIs. One important factor for effective use of ICT in HEIs is that teachers should believe that ICT will improve their teaching and their students' learning. The truth is that a lot of hindrances remain in the infusion of ICT in Nigerian HEIs. Some of these hurdles include low funding, irregular and low quality power supply, high cost of ownership of ICT facilities and inadequateness of ICT infrastructure. If Nigeria keep up with sound planning and embark on better policies, ICT will gradually transform the quality of Nigerian educational system.

Adoption of ICT in Higher Education Institutions

In developing countries Nigeria precisely, preliminary investigations show that only a few organizations in the economy have adopted the IT, but there has not been formal study to determine the level of diffusion and the factors affecting IT diffusion as well as impact on the efficiency of the organizations. (Achimugu, Oluwagbemi, Oluwaranti, & Afolabi, 2009)opined that the adoption Information Technology (IT) successfully in Developing Countries is one of the most pressing current developmental issues. Since IT became commercial in the early 1990s, it has diffused rapidly in developed countries but generally slowly in developing ones. Nigerian universities are focusing on curricula that might contribute more directly to economic growth and network as in the case of Nigeria today, individuals may not use ICT service for different reasons ranging from lack of interest, illiteracy, lack of awareness, exorbitant rate of services, poor quality of service and low per capita income. (Bridget, 2008) opined that pedagogical adoption of ICT is complex and requires an integration of vision, system-wide experimentation and new roles and relationships for teachers and students. ICTs, when used in ways that make use of their affordances, are a powerful driver for change. Let us not forget that classrooms have never been ideal learning environments and teachers in public education systems have always been somewhat burdened by working with students who are there under compulsion. ICTs can help to make schools less-stressful workplaces for both teachers and students. The rapid diffusion of the Internet has not only generated a renewed interest in the role of new information and communication technologies (ICTs) in higher education and learning (Dutton & Loader, 2002), but it has also affected the ways people teach and learn(DeLacey & Leonard, 2002)and(Radcliffe, 2002). At the same time, there has been growing concern over the possible decline of traditional practices and institutions, as e-learning, virtual universities, and distance education become feasible alternative platforms for higher education. Students, teachers, and administrators

have continued to employ the Internet and Web for their practices, and e-learning have remained a key item on educational agendas. The adoption of these systems in campus settings has many implications for ICT innovations in education. There are numerous conditions to be met before ICT innovations can be introduced, adopted and diffused through higher education institutions. The innovation-decision process theory is base on time and five distinct stages. (Rogers, 2003) described the innovation-decision process as "an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation" (p. 172). For (Rogers, 2003), the innovation-decision process involves five steps: (1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation. These stages typically follow each other in a time-ordered manner.

Technology Acceptance Model:
The *Technology Acceptance Model* or TAM(Davis, Bagozzi, & Warshaw, 1989) is one of the most profound frameworks frequently used in studies to predict and explain the use of computer based applications and solutions. The model asserts that the adoption of a technology is determined by the user's intention to use, which in turn is

influenced by his or her attitudes towards the technology. It is very likely that the variability in these attitudinal and behavioral constructs depends on the user's perceptions — *perceived usefulness* (PU) and *perceived ease of use* (PEOU). While PU indicates the extent to which the use of the technology is promising to advance one's work, PEOU represents the degree to which the technology seems to be free of effort (Davis et al., 1989). This model posits that attitudes and behavioral intention mediate the effects of PU and PEOU, the two constructs of extrinsic motivation. With the ongoing development of ICT and the diversification of the fields it affects, various theoretical studies have been carried out in order to ensure better understanding concerning its diffusion, adoption, acceptance, and usage (Davis et al., 1989; Rogers, 2003; Taylor & Todd, 1995; Venkatesh & Davis, 2000; Venkatesh et al., 2003; Yi 2006).
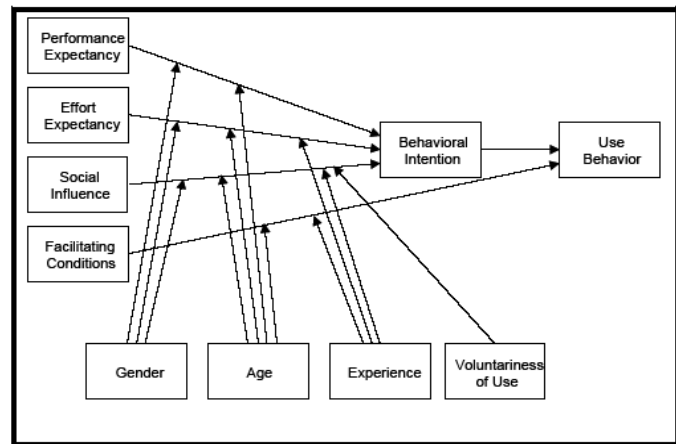
Understanding why people accept or reject new information or communication technology has been one of the most challenging issues in the study of new technologies (Swanson, 1988). Among the various efforts to understand the process of user acceptance of information systems, the Technology Acceptance Model (TAM) introduced by (David, 1986) is one of the most cited theoretical frameworks. The model aims not only to explain key factors of user acceptance of information systems, but also to predict the relative importance of the factors in the diffusion of technological systems (Davis et al., 1989).

The TAM is rooted in the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), which has been applied to predicting and explaining user behaviors across a wide variety of domains. According to the theory of reasoned action (TRA), a person's performance of a specified behavior is determined by his or her behavioral intention to perform the behavior, and behavioral intention is jointly determined

by the person's attitude and subjective norms concerning the behavior in question (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). Following the logic of the TRA, the TAM explores the factors that affect behavioral intention to use information or computer systems and suggests a causal linkage between two key variables—*perceived usefulness* and *perceived ease of use*—and users' attitude, behavioral intention, and actual system adoption and use (David, 1986).

UTAUT Model
The Unified Theory of Acceptance and Use of Technology (UTAUT) theorizes that four constructs have a significant determination on user acceptance of IT innovations (Venkatesh et al., 2003) as seen in Figure 8.

UTAUT Model

- PE - is the extent an individual believes the system will help them do their jobs better.(PU)
- EE - relate to how ease an individual believes the system is to use.(PEOU)
- SI - relate to whether or not important others' influence an individuals' intention to use the system.
- FC - whether individual have the personal knowledge and institutional resources available to use the system.

UTAUT also addresses how individual differences determine the acceptance and use of technology. Precisely speaking, the connection between PU, PEOU, and intention to use can be moderated by age, gender, and experience For instance, the strength between PU and intention to use varies with age and gender such that it is more significant for male and young workers. Again the effect of PEOU on intention is also moderated by gender and age such that it is more significant for female and older workers, and the effect decrease with experiences. The UTAUT model accounted for 70% of the variance in usage intention, better than any of TAM studies alone.

Objective of the Study
(i) What are the greatest barriers to using ICT by the academic staff?
(ii) To measure the most influential factors for the acceptance and use of ICT by the University academicians, using regression analysis.

METHODOLOGY

This study was conducted at the university of Jos Plateau state, Nigeria as a pilot study. One hundred questionnaires were administered and collected, containing 23 UTAUT survey questions and 9 demographic statements totaling 32 questions. In addition, 57% were male and 43% were female. The expectations are that the survey will provide evidence of the acceptance and use of ICT by the university academicians. The respondents are the university academicians. The survey tool presented modified questions based on UTAUT model.

To achieve objective (i) we use the demographic question (32), by using the SPSS we have the following results.

Table 1. GREATEST BARRIER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	TIME	42	42.0	42.0	42.0
	TECHNICAL SUPPORT	20	20.0	20.0	62.0
	COST	4	4.0	4.0	66.0
	TRAINING	31	31.0	31.0	97.0
	DOES NOT FIT MY PROGRAM	3	3.0	3.0	100.0
	Total	100	100.0	100.0	

Demographic Question (32)

What are the greatest barriers to using ICT to you as an academician? Question Q32 which talk about barriers to use of ICT, have the majority of the respondents (42%) said that their problem is time; on the other hand (31%) said that the problem is training. Others respondents (4%) said that cost are their problem, another group (20%) said that they need compensation and the final group (3%) said that, it does not fit their programme. ICT development programme among academic staff of educational institutions especially at the tertiary level is faced by number of obstacles. Prominent among them is the lack of training opportunities for staff. The same problem is recurring in this study again. In a study by (Archibong & Effiom, 2009), lack of interest, limited access to ICT facilities and lack of training opportunities were among the obstacles to ICT usage among academic staff. (Ijeoma, Joseph, & Franca, 2010) opined that inadequate ICT facilities, excess workload and funding were identified as major challenges to ICT usage among academic staff in Nigerian universities.

To respond to objectives (ii) we are going to use the UTAUT model. The UTAUT model theorizes that four constructs have a significant determination on user acceptance of IT innovations (Venkatesh et al., 2003) as seen in Figure 4. We want to use regression analysis to check the influence of the independent variables (PE, EE, SI and FC) on the dependent variable Behavioral Intentions(BI) to accept and use ICT by the university Academicians, by using SPSS version 17.

Table 2a: **Reliability**

Case Processing Summary

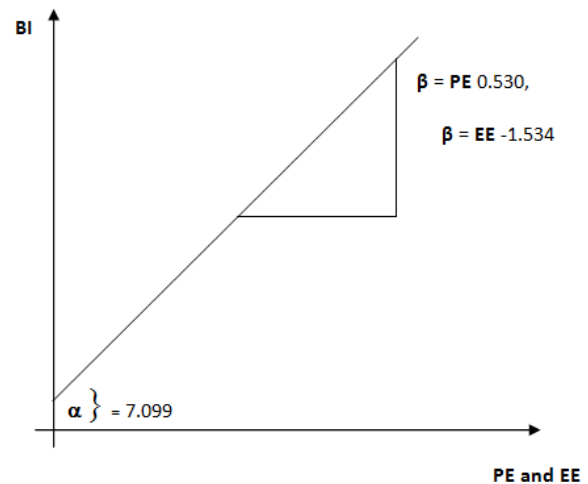|		N	%
Cases	Valid	100	100.0
	Excluded[a]	0	.0
	Total	100	100.0

a. List wise deletion based on all variables in the procedure.

Table 2b: Reliability Statistics

Cronbach's Alpha	N of Items
.786	23

Generally reliability numbers greater than 0.6 are considered acceptable in technology acceptance literature. (Zhang et al., 2006). As summarized in the table 5b, a reliability analysis was conducted, for the 23 items using Cronbach's Alpha. The UTAUT constructs appears to have a good degree of reliability of above .7

Regression Analysis

Figure1. The Influence of Independent variables PE & EE on BI

α - implies that the **BI** figure will remain at 7.099 as the **PE** and **EE** figures tends to zero.

β - Implies that increase change on the variable **PE** has led to an increased change on variable **BI** by 0.530 and vice versa, indicating a positive relationship between **BI** and **PE,** based on the data collected for the study. While the variable **EE** indicate an inverse relationship with the **BI**, as increase change on **EE** has led to a decrease change on **BI** by 1.534 (negative slope -1.534) and vice versa, indicating an inverse relationship.

R^2 -implies that 44% (0.440 * 100) variation on the **BI** is explained by **PE** and **EE** based on the data collected for the study.

Table 3: Model Summary

l	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.663[a]	.440	.428	.35966

a. Predictors: (Constant), Effort Expectancy, Performance Expectancy

ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	9.857	2	4.928	38.099	.000[a]
Residual	12.548	97	.129		
Total	22.404	99			

b. Dependent Variable: Behavioral Intention

Coefficients [a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	7.099	.603		11.771	.000
Performance Expectancy	.530	.074	.663	7.134	.000
Effort Expectancy	-1.534	.187	-.764	-8.220	.000

a. Dependent Variable: BehavioralIntention

From figure 1. R^2 is the amount of variation in BI contributed by the independent variables PE and EE. This shows that PE and EE contributed 44% of variation as observed in BI which is the dependent variable. The regression equation Y=7.099 + 0.530PE – 1-534EE is significant since our P-value is equal to 0.000. While the standard error of the estimate of coefficient that is b_o = 0.603, PE =0.074, EE = 0.187 and all the coefficients are significant,

because their respective P-values are 0.000. From the equation one can deduce that if there is a unit increase in PE (which is the extent an individual believes that the (ICT) system will help them do their job better), then this will also increase the behavioral intention to accept and use the (ICT) system. On the other hand, if there is a unit change in EE (which related to how ease an individual believes the system is to use), hence there will be a decrease in behavioral intention to accept and use ICT in the university by the academicians.
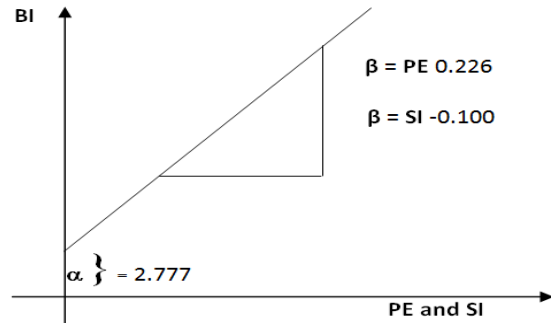

Figure 2.The Influence of Independent variables PE & SI on BI

α - implies that the **BI** figure will remain at 2.777as the **PE** and **SI** figures tends to zero.
β -   implies that increase change on the variable **PE** has led to an increased change on variable **BI** by 0.530 and vice versa, indicating a positive relationship between **BI** and **PE,** based on the data collected for the study. While the variable **SI** indicate an inverse relationship with the **BI**, as increase change on **EE** has led to a decrease change on **BI** by 0.100 (negative slope -0.100) and vice versa, indicating an inverse relationship.
R^2 -   implies that 5.4% (0.054* 100) variation on the **BI** is explained by **PE** and **SI** based on the data collected for the study.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.233[a]	.054	.035	.46736

a.   Predictors: (Constant), Social Influence, Performance Expectancy

ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1.217	2	.609	2.786	.067[a]
Residual	21.187	97	.218		
Total	22.404	99			

a.   Predictors: (Constant), Social Influence, Performance Expectancy

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.777	.413		6.720	.000
PerformanceExpectancy	.226	.105	.282	2.150	.034
Social Influence	-.100	.146	-.090	-.683	.496

a. Dependent Variable: Behavioral Intention

From figure 2. SI and PE contributed only 5.4% of the total variation observed in behavior intention. Since R^2 is low (0.054) the independent variables (PE & SI) has contributed less to the variation in the dependent variables (BI). Therefore our equation Y= 2.777 + 0.266PE – 0.100SI is not significant, since the P-value is (0.067) > (0.05). In the above equation the estimate of the constant and PE are significant, while that of SI is not because the P-value obtained (0.496) > (0.05) which is the level of significance. We can deduce here that it is only changes in PE that can cause a positive change in behavioral intention to accept and use the ICT system.
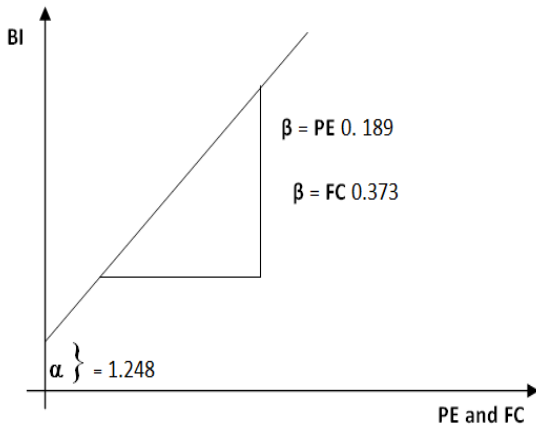

Figure 3.The Influence of Independent Variables PE & FC on BI

α   -implies that the **BI** figure will remain at 1.248 as the **PE** and **SI** figures tends to zero.

β   implies that the increased change on the variables **PE and FC** has led to an increased change on the variable **BI** by 0.189 and 0.373 respectively and vice versa, indicating a positive relationship between the **BI** and the variables **PE and FC** based on the data collected for the study.

R^2 -   implies that 9.9% (0.099* 100) variation on the **BI** is explained by **PE** and **FC** based on the data   collected for the study.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.315[a]	.099	.081	.45614

a.   Predictors: (Constant), Facilitating Condition, Performance Expectancy

ANOVA[b]

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	2.222	2	1.111	5.340	.006[a]
Residual	20.182	97	.208		
Total	22.404	99			

a.   Predictors: (Constant), Facilitating Condition, Performance Expectancy
b.   Dependent Variable: Behavioral Intention

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.248	.674		1.851	.067
Performance Expectancy	.189	.077	.236	2.444	.016
Facilitating Condition	.373	.162	.223	2.307	.023

a.   Dependent Variable: Behavioral Intention

PE and FC contributed only 9.9% of the total variation observed in the behavioral intention to accept and use ICT by the academic Staff. From table 3. Both PE and FC are significant (0.016 and 0.023) respectively, however the constant is not significant (0.067). The regression equation Y= 1.248 + 0.189PE + 0.373FC, with the P-value .006 is significant. Since R^2 is low the independent variables (PE and FC) will contribute less to the variation in the dependent variable (BI). Therefore an increase in the extent an individual believes the system will help him do his job better and an increase in the degree to which an individual believes that an organization and technical infrastructure exists to support the use of ICT, the there will be a corresponding increase in the behavioral intention to accept and use ICT by the academicians.
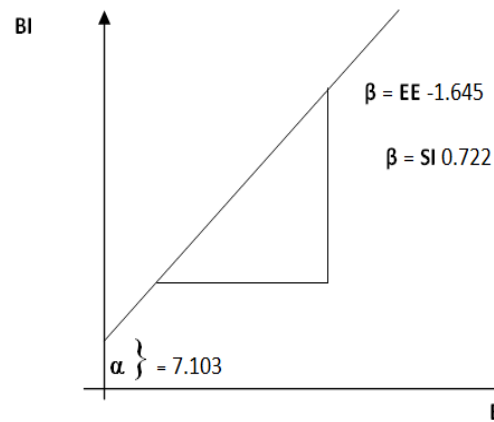

Figure 4.The Influence of Independent Variables EE & SI on BI

α   - implies that the **BI** figure will remain at 7.103 as the **EE** and **SI** figures tends to zero.

β   -   implies that increase change on the variable **SI** has led to an increased change on variable **BI** by 0.722 and vice versa, indicating a positive relationship between **BI** and **SI,** based on the data collected for the study. While the variable **EE** indicate an inverse relationship with the **BI**, as increase change on **EE** has led to a decrease change on **BI** by 1.645 (negative slope -1.645) and vice versa, indicating an inverse relationship.

R^2 - implies that 37.6 % (0.376 * 100) variation on the **BI** is explained by **EE** and **SI** based on the data collected for the study.

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.613[a]	.376	.363	.37974

a. Predictors: (Constant), SocialInfluence, Effort Expectancy

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.417	2	4.208	29.184	.000[a]
	Residual	13.988	97	.144		
	Total	22.404	99			

a. Predictors: (Constant), Socia lInfluence, Effort Expectancy

b. Dependent Variable: Behavioral Intention

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.103	.640		11.104	.000
	Effort Expectancy	-1.645	.218	-.819	-7.545	.000
	Social Influence	.722	.121	.649	5.972	.000

a.   Dependent Variable: Behavioral Intention

From the figure 4 above EE and SI contributed 37.6% of the total variation observed in behavioral intention to accept and use ICT by the university academicians. Since R^2 is high (0.376) the independent variables EE (which is related to the ease an individual believes the system is to use and SI, which is the degree to which an individual perceives that important others believe he or she should use the new system, both have contributed highly to the variation in the dependent variable (BI), hence the correlation is also high (0.613). Therefore, the

regression equation Y=7.103- 1.645EE + 0.722SI is significant, because the P-values are 0.000. From the equation one can deduce that an increase change in SI has led to a corresponding increase change in behavioral intention to accept and use ICT and vice versa. This is actually indicating a positive relationship between BI and SI. On the other hand EE indicate an inverse relationship with the BI.
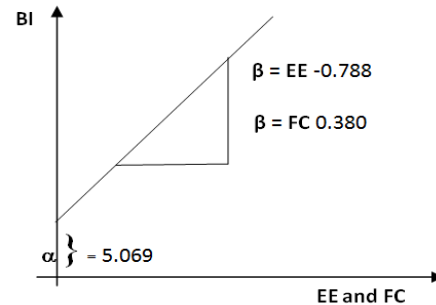

Figure 5.The Influence of Independent Variables EE & FC on BI

α - implies that the **BI** figure will remain at 5.069 as the **EE** and **FC** figures tends to zero.

β -   implies that increase change on the variable **FC** has led to an increased change on variable **BI** by 0.380 and vice versa, indicating a positive relationship between **BI** and **FC,** based on the data collected for the study. While the variable **EE** indicate an inverse relationship with the **BI**, as increase change on **EE** has led to a decrease change on **BI** by 0.788 (negative slope -0.788) and vice versa, indicating an inverse relationship.

R^2 - implies that 19.7% (0.197* 100) variation on the **BI** is explained by **EE** and **SI** based on the data collected for the study.

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.444[a]	.197	.181	.43056

a.   Predictors: (Constant), Facilitating Condition, Effort Expectancy

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.423	2	2.211	11.928	.000[a]
	Residual	17.982	97	.185		
	Total	22.404	99			

a. Predictors: (Constant), FacilitatingCondition, Effort Expectancy

b.   Dependent Variable: Behavioral Intention

Coefficients[a]

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.069	.873		5.805	.000
	Effort Expectancy	-.788	.183	-.392	-4.310	.000
	Facilitating Condition	.380	.152	.227	2.490	.014

a. Dependent Variable: Behavioral Intention

From figure 5, EE and FC contributed 19.7% of the total variation observed in behavioral intention to accept and use ICT by the university academicians. The regression equation $Y = 5.069 - 0.788EE + 0.380FC$ is significant, since the P-value is 0.000. Again we note that all the coefficients are significant because their respective P-values are 0.000, 0.000 and 0.014.

From the equation one can infer that an increase change in FC will lead to an increase change in the behavioral intention to accept and use ICT by the university academicians. Hence this is an indication of positive relationship between BI and FC. This means that, if there is an increase in the degree to which an individual believes that an organizational and technical infrastructure exist to support the use of the system, this will lead to an increase in behavioral intention to accept and use of ICT(system). On the other hand EE indicate an inverse relationship with the BI. The interpretation is that, if there is an increase in the believe of an individual related to the ease of use of the system, then there will be a corresponding decrease in behavioral intention to use the(ICT) system.
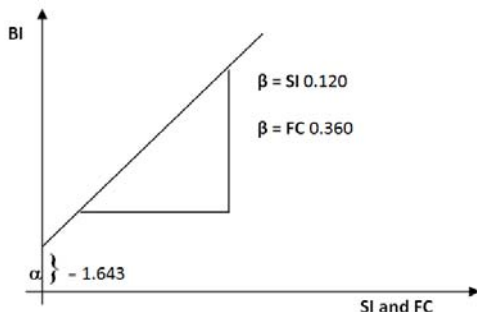

Figure 6.The Influence of Independent Variables SI & FC on BI

α   - implies that the **BI** figure will remain at 1.643as the **SI** and **FC** figures tends to zero.

β   -   implies that the increased change on the variables **SI and FC** has led to an increased change on the variable **BI** by 0.120 and 0.360 respectively and vice versa, indicating a positive relationship between the **BI** and the variables **SI and FC** based on the data collected for the study.

R^2 - implies that 5.5% (0.055* 100) variation on the **BI** is explained by **SI** and **FC** based on the data collected for the study.

Table 8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.235[a]	.055	.036	.46713

a.   Predictors: (Constant), Social Influence, Facilitating Condition

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.238	2	.619	2.837	.063[a]
	Residual	21.166	97	.218		
	Total	22.404	99			

a.   Predictors: (Constant), SocialInfluence, FacilitatingCondition
b.   Dependent Variable: BehavioralIntention

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.643	.729		2.254	.026
	Facilitating Condition	.360	.165	.215	2.173	.032
	Social Influence	.120	.110	.108	1.089	.279

a. Dependent Variable: BehavioralIntention

From figure 6, SI and FC contributed 5.5% of the total variation observed in behavioral intention to accept and use ICT by the academic staff. Since R^2 is low (0.055), the independent variables (SI &FC) has contributed less to the variation in the dependent variable (BI). The equation $Y = 1.643 + 0.360SI + 0.120FC$ is not significant with P-value 0.063. In the equation, the estimate of the constant, SI and FC are significant since they are less than 0.05 which is the level of significance. We can therefore deduce that an increase in SI and FC will cause a positive change in behavioral intention to accept and use ICT by the university academicians. Therefore if there is an increase in the degree to which an individual perceives that important others believe he or she should use ICT and an increase in the degree to which an individual believes an organizational and technical infrastructure exists to support the use of ICT, then there will be an increase in the behavioral intention to use ICT by the university academicians.
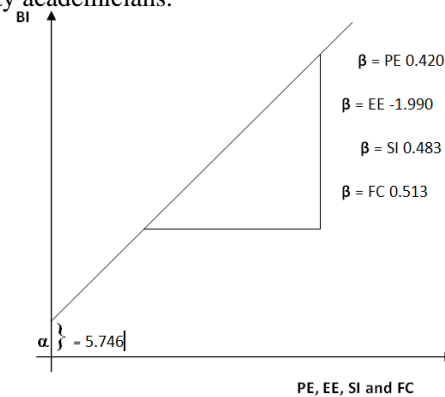

Figure 7.The Influence of Independent Variables PE, EE, SI & FC on BI

α   - implies that the **BI** figure is constant at 5.746 as the respective figures of the variables **PE, EE, SI and FC** tends to zero.

β   -   implies that the increase in the figures of each of the variables **PE, SI and FC**, has led to an increased **BI** figures by 0.420, 0.483 and 0.513 respectively and vice versa, indicating a positive relationship between the **BI** and the variables **PE, SI and FC** based on the data collected for the study. While the variable **EE** indicate an inverse relationship with the **BI**, as increase in **EE** has led to a decrease in **BI** by 1.990 (negative slope -1.990) and vice versa.

R^2 -   implies that 60.2 % (0.602 * 100 = 60.2%) variation on the **BI** is explained by the variables **PE, EE, SI and FC** based on the data collected for the study.

Table 9: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.776[a]	.602	.585	.30641

a.   Predictors: (Constant), Performance Expectancy, Facilitating Condition, Effort Expectancy, Social Influence

ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	13.485	4	3.371	35.907	.000[a]
Residual	8.919	95	.094		
Total	22.404	99			

a. Predictors: (Constant), Performance Expectancy, Facilitating Condition, Effort Expectancy, Social Influence

b.Dependent Variable: Behavioral Intention

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	5.746	.625		9.187	.000
Effort Expectancy	-1.990	.182	-.991	-10.909	.000
Facilitating Condition	.513	.109	.307	4.693	.000
Social Influence	.483	.109	.434	4.416	.000
Performance Expectancy	.420	.071	.525	5.917	.000

a.   Dependent Variable: Behavioral Intention

From figure 7, the independent variables (PE, EE, SI & FC) contributed 60.2% of the total variation observed in behavioral intention to accept and use ICT by the university academicians. The correlation and the R^2 are high, which are 0.776 and 0.602 respectively and the P-value 0.000 is significant. The regression equation Y= 5.746 – 1.990EE + 0.513FC + 0.483SI + 0.420PE, the estimate of the constant, and the coefficients are all significant with P-values 0.000 respectively. We can deduce that an increase in the unit of EE, FC SI, and PE will cause a positive change in behavioral intention to accept and use ICT by the university academicians. On the other hand EE indicate an inverse relationship with the (BI). The interpretation is that, if there is an increase in the believe of an individual related to the ease of using ICT, then there will be a corresponding decrease in behavioral intention to accept and use ICT by the university academicians and vice versa.

CONCLUSION

The study focus on the adoption and acceptance of ICT innovation in Nigerian Public Universities. A pilot study was conducted at the University of Jos, Nigeria, to verify the objectives of the study. This paper use regression analysis to verify the UTAUT Model. The UTAUT model theorizes that four constructs have a significant determination on user

acceptance of IT innovations (Venkatesh et al., 2003). We use the regression analysis to check the influence of the independent variables (PE, EE, SI & FC) on the dependent variable (BI) which is the behavioral intention to accept and use ICT by the university academicians, using SPSS version 17. The major determining factors are the correlation (r), the variance (R^2) and the p-value of significance. Figures 1-7, discusses the influence of the independent variables (PE, EE, SI & FC) on the dependent variable (BI) with their respective interpretations. Others here refer to the regression of three independent variables on the dependent variable BI. The summary outcome of the regression analysis is presented on table 10.

Table 10. Regression Analysis Summary Outcome

Figures	Independent Variables	Dependent Variable	R	R^2	Significant
1	PE &EE	BI	.663	.440	.000
2	PE & SI	BI	.233	.054	.067
3	PE & FC	BI	.315	.099	.006
4	EE &SI	BI	.613	.376	.000
5	EE & FC	BI	.444	.197	.000
6	SI & FC	BI	.235	.055	.063
Others	PE, EE &SI	BI	.714	.510	.000
	PE, EE &FC	BI	.721	.520	.000
	EE, SI & FC	BI	.675	.445	.000
7	PE, EE, SI & FC	BI	.776	.602	.000

From table 8, the best result is obtained by the influence of the four independent variables on the dependent variable BI. This is followed by the influence the three independent variables (PE, EE & FC) on BI. Finally the two independent variables that influence the BI most are the PE &EE.
The findings have important implications for teaching and learning. PE and EE are found to be the most significant predictors of academic staff acceptance of ICT and use. Therefore the university academicians need to be aware of the possibility of using ICT for teaching and learning without too much difficulty. They need to learn the basics of the technologies that will be most useful in their teaching and learning. This study confirms the validity of the UTAUT model in the field context of a developing countrys'educational system. Knowledge gained from the study is beneficial to both the university academic staff and the Nigerian ICT policy makers.
Recommendations made were that, all employed teachers in Federal, State and Private Universities in Nigeria, should undertake mandatory training and retraining on ICT programmes. This is to provide them with practical and functional knowledge of computer, internet and associated areas of ICT for improved effectiveness and efficiency. The government should develop ICT policies and practices that would support lecturers in their academic work and students in their learning. ICT tools should be made more accessible to both academic staff and students.

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