

A Model of ICT Acceptance and Use for Teachers in Higher Education Institutions

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Abstract

Understanding why people accept or reject new information or communication technology has been one of the most challenging issues in the study of ICT acceptance model. There are numerous conditions to be met before ICT innovations can be introduced, adopted and diffused through higher education institutions. The study considered the models TAM and UTAUT to understand the teacher's behavioral intention on the acceptance and use of the technology. 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. The survey shows that, 57% were male and 43% were female. By using the pilot study questionnaire part of the demographic statements, we are able to answer the questions (a) Is ICT mandatory or Voluntary in your institution? (b) What are the greatest barriers to using ICT to you as an academician? Using SPSS version 15 we have the following results. Table1 shows that the majority of the full-time lecturers (89%) responded that ICT is mandatory. 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. Performance expectancy had a mean response of 4.32 and standard deviation of .665. The constructs was significantly correlated with BI at the 0.05 level (2tailed). This implies that the university ICT make task more easily accomplished, thereby making them more productive. Hence result from the survey shows that 86.5% agree. Therefore this determines the level of expected adoption of ICT by the respondents. Among the four UTAUT constructs, performance expectancy exerted the strongest effect. Therefore Performance expectancy is the most influential factor for the acceptance and use of ICT by the respondents. Recommendations made were that, all employed teachers in Federal, State and Private universities should undertake mandatory training and retraining on ICT programmes.

Keywords- ICT acceptance, Performance expectancy, Effort expectance, Social influence, HEIs, UTAUT.

1. Introduction

Information and communications Technology (ICT) has the potential to improve all aspects of our social, economic and cultural life. The introduction of ICT into universities clearly changes the way education is conducted. ICT also paves way for a new pedagogical approach, where students are expected to play more active than before (Alabi, 2004) ICT focuses on the crucial issues of how people communicate and learn in electronic environment. ICT in learning depends on effective communication of human knowledge, which may either occur in synchronous or asynchronous and blended learning situation as the case may be. The role of Information and Communications Technology (ICT) in human development has received growing attention among development practitioners, policy makers, government and civil society in recent years due to the growing proliferation of the Internet, convergence in IT and telecommunications technologies and increasing globalization. While issues of access and the adoption of new ICTs have tended to revolve around utopian themes of empowerment and the development potential of ICT, it has also raised the accompanying issue of digital divide and the challenges for developing countries to participate in the global information society.

ICT, when adopted as one of many complementary strategies in development projects such as health, education and rural development, has the potential to empower communities with improved access to knowledge networks and services. On the other hand, any meaningful participation in this ICT 'revolution' is also challenged by very apparent discrepancies, imbalances and inequalities that currently characterize issues of ICT access and adoption. 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.

ICT refers to 'Information', 'Communications' and 'Technology'. While most ICT-related studies have been obsessed with the 'Technology' component such as infrastructure, networks and connectivity, the 'Information' and 'Communications' components have been overshadowed despite their primary importance in this grouping.

The *technology* component only comes to play because it has the potential to support and enable the preceding conditions of *information* and *communications* through a combination of technologies to disseminate knowledge. Underpinning these dynamics is the integral role of people as agents for ICT development, since technology is borne out of specific cultural contexts, time and place. This is illustrated in diagram 1.

ICT is viewed as a factor that can promote quality distance education. (Johnson, 2007) points out that communication is a fundamental act of the education process. Hence, to enhance quality in open and distance learning, proper attention must be given to information and communication technology. In education, ICT can be viewed as the application of digital equipment to all aspects of teaching and learning. It involves a combination of technologies for collecting, storing, processing, communicating and delivering of information related to teaching and learning processes.

The Impact of ICT

According to (Bande, 2006); (Chiemeké & Longe, 2007), ICT is a revolution that involves the use of computers, internet and other telecommunication technology in every aspect of human endeavor. (Jimoh, 2007) defined ICT as the handling and processing of information (texts, images, graphs, instruction etc) for use, by means of electronic and communication devices such as computers, cameras, telephone. (Ofodu, 2007) also refer to ICT as electronic or

computerized devices, assisted by human and interactive materials that can be used for a wide range of teaching and learning as well as for personal use. From these definitions, ICT could therefore be defined as processing and sharing of information using all kinds of electronic device, an umbrella that includes all technologies for the manipulation and communication of information.

The pervasiveness of ICT has brought about rapid teleological, social, political and economic transformation, which has eventuated in a network society organized around ICT (Yusuf, 2005). 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.

This new development is a strong indication that the era of teachers without ICT skills are gone. Any classroom teacher with adequate and professional skills in ICT utilization will definitely have his students perform better in classroom learning. Teaching and learning has gone beyond the teacher standing in front of a group of students and disseminating information to them without the students' adequate participation (Ajayi, 2008).

The ICT facilities used in the teaching learning process in schools according to (Bande, 2006); (Bolaji, 2003) and (Ofodu, 2007) include; radio, television, computers, overhead projectors, optical fibers, fax machines, CD-Rom, Internet, electronic notice board, slides, digital multimedia, video/VCD machine and so on. In fact some of the facilities are not sufficiently provided for teaching – learning process in the institutions of learning. Undoubtedly, this might account for why teachers are not making use of them in their teaching.

In Nigeria the available infrastructure for ICT in most of these universities are grossly inadequate. It was observed that most university students still visit internet off campus because of too much demand on the internet on-campus. The bandwidths shared on most of these systems at cyber Cafés are still low, hence much time is still wasted on internet browsing. (Olaniyi, 2006) was of the view that most of the institutions of higher learning in Nigeria have started building their ICT centre but they focus mainly on internet facilities without considers other components that make up ICT Centre. However ICT infrastructure has not been the priority of government. Government policy has been the deregulation of telecommunication industry. ICT infrastructures are therefore mostly provided by private entrepreneur for business purpose (Akinsola, Marlien, & Jacobs, 2005). Awareness campaign and sensitization of personnel is a necessary step in developing ICT infrastructure in education. Organization of seminars, conferences and workshops for top management and other critical staff within the Ministry of Education, National University Commission (NUC), and in the universities and with other stakeholders are necessary in ICT infrastructure development. These workshops, seminars and conferences aimed at raising the level of awareness of the infrastructure challenges, to discuss the users need and various infrastructure options, to promote and encourage multi-stakeholder approaches, to solicit feedback from management and staff (Gesci, 2007).

One of the major trends of educational reform is geared towards acquiring and using information technology. The general impression is that integrating technology in learning and teaching is very valuable asset in the process of learning, appealing to many aspects of students' learning, and hence, it is vital to adopt ICT in education.

(Sife, Lwoga, & Sanga, 2007) argued that ICTs have not permeated a great extent in many higher learning institutions, not only in Tanzania but in many developing countries, due to many socioeconomic and technological circumstances. In their article, they observe that despite the achievements that the institutions of higher learning education in Tanzania have accomplished they still face many challenges in undertaking the ICT adoption process.

The challenges include lack of a system approach to learning, awareness and attitudes towards ICTs, administrative and technical support, staff development, and lack of ownership, inadequate funds, and transforming higher education.

Public expectations for ICT and educational systems have increase with the ubiquity of digital technologies in daily life. Currently, the discourse has been predominantly instrumental, focusing on skills and the use of ICT in the service of curriculum and instruction. Despite the fact that computers have been widely available in educational setting for more than two decades, hitherto, teachers are neither confident nor competent users of ICT. Studies by Kerry (Kerry, 2000) and (Wei-Tsong & Chao-Yueh, 2004), for instance, indicate that many practicing teachers feel unprepared to use ICT in their classrooms. In like manner, (Wei-Tsong & Chao-Yueh, 2004) found that many student teachers have low self-efficacy towards ICT and have negative attitudes towards ICT. The fact that both corporations and institutions of higher learning are increasingly adopting ICT as tools for learning, collaboration, communication, curriculum development, and staff development cannot be overemphasized. The case of ICT for education and training are more critical today than ever before since new means of improving instructional methods are triggering a change in the delivery of education (Pajo & Wallace, 2001). Undoubtedly, ICT makes access to education more flexible and reduces barriers of time and place. Asynchronous web based technologies, for example, can advance the effectiveness of learning by bringing learners into contact with learning peers from around the world(Lea, Rogers, & Postmes, 2002). In addition, Communication technologies can also enhance the quality of university teaching and research.

The Internet has emerged arguably the most visible component of the information and communication technologies (ICTs). The rate of adoption of the Internet exceeds that of all technologies before it. Its use ranges from communication, publishing to research. The dynamics of adoption and usage of ICTs could be examined at three levels, which are the macro- (national), meso- (sectoral), and micro-(organizational and individual) levels. (Oyelaran-Oyeyinka & Adeya, 2004)and (Achimugu, Oluwagbemi, Oluwaranti, & Afolabi, 2009) investigated the level and depth of use of computers by university staff. From their 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. Respondents suggest that resources be directed at training lecturers/researchers to incorporate the use of computer applications in academic functions.

There is a higher degree of e-mail and Internet use within the private universities compared to the public Universities. The main reason could be as a result of better facilities at some of the private universities coupled with lower densities of users per access point. This implies faster connections, shorter waiting times, less congestion and lower cost as the private institutions often provide free access for the staff. The challenges facing Nigerian Public

Universities pertaining ICT acceptance and usage for teaching and learning is primarily lack of commitment by the government in terms of funding, staff training and stable power supply(Oye , Salleh, & Iahad, 2011).

Model of Acceptance as a Theoretical Framework

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 (David, 1986; Davis, Bagozzi, & Warshaw, 1989).

The TAM is rooted in the theory of reasoned action (Ajzen & Fishbein, 1980; David, 1986; 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; David, 1986; 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).

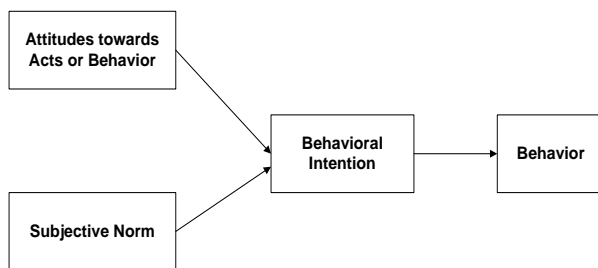


Figure 2: TRA theory proposed by (Fishbein & Ajzen, 1975) that an individuals' attitudes towards behavior and the surrounding subjective norms influence their behavioral intention.

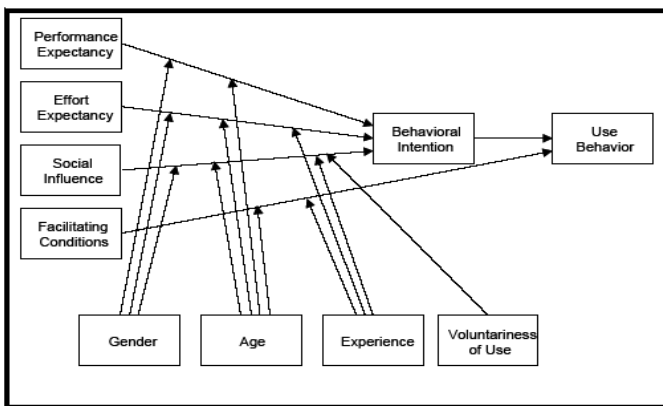


Figure 4 : UTAUT Model

- 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- Unified Theory of Acceptance and Use of Technology

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 theorizes that four constructs have a significant determination on user acceptance of IT innovations (David, 1986; Venkatesh, Davis, Morris, & Davis, 2003) as seen in Figure 4.

Research Questions:

- (i) Is ICT mandatory or voluntary for Teacher in HEIs?
- (ii) What are the barriers to using ICT by Teachers in HEIs?
- (iii) What are the most influential factors to acceptance and use of ICT by Teachers in HEIs?

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. The study shows that, 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. By using the pilot study questionnaire part of the demographic statements, we are able to answer the questions (i) Is ICT mandatory or

Voluntary at your institution? (ii) What are the greatest barriers to using ICT by an academician? By using SPSS version 17 we have the following results.

Table 1.

ICT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MANDATORY	89	89.0	89.0	89.0
	VOLUNTARY	11	11.0	11.0	100.0
	Total	100	100.0	100.0	

Table 2.

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 (30)

Is ICT mandatory or voluntary at your institution? Table1 shows that the majority of the full-time lecturers (89%) responded that ICT is mandatory. However, the survey revealed that most of the part-time lecturers ticked the use of ICT as voluntary. Some of these part-time lecturers in the cadre of professors, responded to Q32 as (do not fit my program). Actually in their dispensation, lecturing was done using the chalk board only. Therefore, some of them fill that it is too late to embark on the use of ICT as they are already in the process of pulling out of academic completely.

Demographic Question (32)

What are the greatest barriers to using ICT by 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; David, 1986), lack of interest, limited access to ICT facilities and lack of training opportunities were among the obstacles to ICT usage among academic staff. (David, 1986; 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 research question (iii) 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 (David, 1986; Venkatesh et al., 2003) as seen in Figure 4.

Table 5a. Reliability

Case Processing Summary

		N	%
Cases	Valid	100	100.0
	Excluded ^a	0	.0
	Total	100	100.0

a. Listwise deletion based on all variables in the procedure.

Table 5b. Reliability Statistics

Cronbach's Alpha	N of Items
.786	23

Table5a contains the measures of scale reliabilities for the constructs. Generally reliability numbers greater than 0.6 are considered acceptable in technology acceptance literature. (David, 1986; Zhang, Li, & Sun, 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 .70.

Results and Discussions

Descriptive Analysis

A descriptive statistical analysis is described in this section in order to provide a broad understanding of the academician’s view of ICT acceptance and use for teaching and learning. Participants were asked to rate their level of agreement with each statement or Question with appropriate responses on a five item Likert scale. Where (1) is “Strongly Disagree”, (2) is “Disagree” (3) is “Neither Agree nor Disagree”, (4) is ‘Agree”, and (5) is “Strongly Agree”.

Table 3: Summary of survey Responses (N= 100)

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
Performance Expectancy	1	2	3	4	5
Q1(PE1) I find the ICT offered at my institution useful in my job	0.0% (0)	0.0% (0)	10% (10)	49% (49)	42% (42)
Q2(PE2) Using the ICT available enable me to accomplish task more easily	0.0% (0)	0.0% (0)	3% (3)	73% (73)	24% (24)
Q3(PE3) Using the ICT available increases my productivity	0.0% (0)	0.0% (0)	21% (21)	50% (50)	30% (30)
Q4(PE4) If I use the current ICT, It will increase my chance of getting a rise	0.0% (0)	4% (3)	18% (18)	48% (48)	30% (30)

Performance expectancy had a mean response of 4.32 and standard deviation of .665 for (PE1). The construct was significantly correlated with BI at the 0.05 level (2tailed). Responses to performance expectancy questions (Q1-Q4) are related to the extent an individual believes ICT helps them to do their job better. The overall results for these series of questions associated to the perceived usefulness of ICT to the University academic staff were positive. This implies that the university ICT system make task more easily accomplished, thereby making them more productive. The result from the survey shows that 86.5% agree. Hence this determines the level of expected adoption of ICT by the respondents. Among the four UTAUT constructs, performance expectancy exerted the strongest effect. Therefore Performance expectancy is the most influential factor for the acceptance and use of ICT by the respondents. When one looked at questions Q1,Q2,and Q3 the notable thing with these question group is that nobody disagree with the usefulness of ICT, thus the disagree rate is 0%. Again responses to Q4 have 78% agreeing rate believing that using ICT in the job would increase their chance of getting a raise (promotion). The 78% agreement is suggesting that there is perceived monetary reward incentive linked with ICT usage and a future prospect of getting a better job with higher pay.

Table 4: Effort Expectancy (N= 100)

Effort Expectancy	1	2	3	4	5
Q5(EE1) My interaction with the ICT available is clear and understandable	0.0% (0)	0.0% (0)	20% (20)	70% (70)	10% (10)
Q6(EE2) It is simple for me to use the existing ICT technology	0.0% (0)	0.0% (0)	4% (4)	86% (86)	10% (10)
Q7(EE3) Whatever ICT I come across, it will be simple to operate	0.0% (0)	0.0% (0)	28% (28)	66% (66)	6% (6)
Q8(EE4)The knowledge of using ICT is simple for me.	0.0% (0)	0.0% (0)	11% (11)	84% (84)	5% (5)

Effort expectancy construct had a mean response of 3.87 and standard deviation of .562. EE was significantly correlated with BI at the 0.01 level (2-tailed). Responses to effort expectancy questions (Q5-Q8) are related to how easy an individual believes the ICT system is to use. Overall results for this series of questions were perceived as being positive with individual ability to easily use and understand the current ICT, which are always user friendly. The result shows that, 84.3% agreed that they could use ICT. EE has the highest correlation with BI, all the constructs were significantly correlated with BI but the strongest correlation was Q6 (EE2), which states that : ‘It is simple for me to the use existing ICT technology.’

Table 5: Social Influence (N= 100)

Social Influence	1	2	3	4	5
Q9(SI1)People who influence my action suppose that I apply ICT technology.	0.0% (0)	3% (3)	83% (83)	6% (6)	8% (8)
Q10(SI2) People who are important to me think I should use the ICT	0.0% (0)	3% (3)	55% (55)	41% (41)	1% (1)
Q11(SI3) The senior management of this institution has been helpful in the use of the ICT	0.0% (0)	4% (4)	10% (10)	65% (65)	21% (21)

Q12(SI4) In general, the organization has supported the use of ICT	0.0% (0)	2% (2)	12% (12)	64% (64)	22% (22)
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Social Influence had a mean of 3.03 and a standard deviation of .300. This construct was significantly correlated with BI with a correlation coefficient of .096. Responses to social influence questions (Q9-Q12) are related to whether or not important others' influence an individual's intention to use the ICT system. Overall results for this series of questions were perceived as being slightly positive with regard to personal and institutional support, and other's influence on their ICT system use. Correspondingly, 57% agreed with these sentiments and 3% disagreeing with 40% neither agreeing nor disagreeing. In general, senior officials would support the use of technology for teaching and learning. Q11 (SI3) had an over whelming positive response with 86% of the respondents “agree” or “strongly agree”.

Table 6: Facilitating Conditions (N= 100)

Facilitating Condition	1	2	3	4	5
Q13 (FC1) I have the resources necessary to use the current ICT	0.0% (0)	8% (8)	12% (12)	80% (80)	0.0% (0)
Q14(FC2) I have adequate ability to operate ICT technology.	0.0% (0)	0.0% (0)	8% (8)	90% (90)	2% (2)
Q15(FC3) The technology did not match the ICT I operate	0.0% (0)	80% (80)	16% (16)	4% (4)	0.0% (0)
Q16(FC4) Some people are present to help me with ICT problems.	8% (8)	5% (5)	35% (35)	52% (52)	0.0% (0)
Q17 (FC5) I could finish the work of ICT ... when nobody is available to assist.	0.0% (0)	8% (8)	92% (92)	0.0% (0)	0.0% (0)
Q18(FC6) I could complete the job or task using the ICT ...if I could call someone for help if I got stuck	0.0% (0)	0.0% (0)	14% (14)	58% (58)	28% (28)
Q19 (FC7) I can finish the work with ICT if I have enough time.	0.0% (0)	0.0% (0)	9% (9)	56% (56)	35% (35)

Q20 (FC8) I could complete the job or task using the ICT ...if I had just built-in help facility for assistance	0.0% (0)	0.0% (0)	34% (34)	60% (60)	6% (6)
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Facilitating Condition had a mean of 3.75 and standard deviation of .592. FC was significantly correlated with BI at the 0.05 level (2-tailed). Responses to facilitating condition questions (Q13-Q20) asks if individual's have the personal knowledge and institutional resources available to use the ICT: Overall results for this series of questions were perceived as being slightly positive with respondents stating that they possess the knowledge to use the ICT systems and that their institution's have a support structure available to users, should they need assistance. There was one notable exception in this group regarding the negative wording of Q15 that will necessitate reverse scoring for this item to get a true indication of the responses. As a result 58.9% agree with these sentiments and 13.5% disagrees while 27.5% neither agreeing nor disagreeing. Q17(FC5) had a negative result, probably the question need to be reframe to be clearly understood.

Table 7: Behavioral Intention(N= 100)

Behavioral Intention	1	2	3	4	5
Q21 (BI1) I guess I can operate ICT in three months.	0.0% (0)	0.0% (0)	67% (67)	33% (33)	0.0% (0)
Q22(BI2) I predict I will use the ICT in the next three months	0.0% (0)	3% (3)	56% (56)	41% (41)	0.0% (0)
Q23(BI3) I plan to use the ICT in the next three months	0.0% (0)	0.0% (0)	58% (58)	42% (42)	0.0% (0)

Behavioral Intention had a mean of 3.31 and standard deviation of .465. Responses for behavioral intention questions (Q21-Q23), is grounded in the theoretical relationship between several technology acceptance and use models incorporating intention to use a given technology with the actual usage of that technology. Thus, if a person's intention is to use ICT, it is theorized that they will likely do so as intention is a good predictor of usage. The overall results for this series of questions were perceived as being negatively responded to, as 38.7% agreed that they intend to use ICT within the next 3months and only 1% stated that they did not intend to use ICT with 60.3% neither agreeing nor disagreeing that they intended to use ICT. The notable fact in this group is that the disagreeing rate is extremely very low that is 1% and that of “neither agree nor disagree is very high which is 60.3%.

When we consider the responses on Behavioral Intention for all the three items, less than half of the participants responded “agree” or “strongly agree” to the statement, thus we have 33%, 41% and 42% respectively for Q21, Q22, and Q23. These results indicate that the majority of the participants are not quite confident of their intention to use

ICT. No wonder we have 60.3% of participants responding to “neither agreeing nor disagreeing” that they intended to use ICT.

Table 8:Correlations

		FacilitatingCondition	PerformanceExpectancy	EffortExpectancy	SocialInfluence	BehavioralIntention
FacilitatingCondition	Pearson Correlation	1	-.057	.045	-.053	.209*
	Sig. (2-tailed)		.570	.657	.604	.037
	N	100	100	100	100	100
PerformanceExpectancy	Pearson Correlation	-.057	1	.576**	.659**	.223*
	Sig. (2-tailed)	.570		.000	.000	.026
	N	100	100	100	100	100
EffortExpectancy	Pearson Correlation	.045	.576**	1	.674**	-.382**
	Sig. (2-tailed)	.657	.000		.000	.000
	N	100	100	100	100	100
SocialInfluence	Pearson Correlation	-.053	.659**	.674**	1	.096
	Sig. (2-tailed)	.604	.000	.000		.340
	N	100	100	100	100	100
BehavioralIntention	Pearson Correlation	.209*	.223*	-.382**	.096	1
	Sig. (2-tailed)	.037	.026	.000	.340	
	N	100	100	100	100	100

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Table 12: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PE1	100	3	5	4.32	.665
PE2	100	3	5	4.22	.484
PE3	100	3	5	4.08	.720
PE4	100	2	5	4.05	.783
EE1	100	3	5	3.87	.562
EE2	100	4	5	4.10	.302
EE3	100	3	4	3.60	.492
EE4	100	3	4	3.96	.197
SI1	100	2	4	3.03	.300
SI2	100	2	5	3.41	.570
SI3	100	2	5	4.09	.605
SI4	100	3	5	4.09	.570
FC1	100	2	4	3.75	.592
FC2	100	3	4	3.91	.288
FC3	100	2	4	2.29	.574
FC4	100	1	4	3.37	.884
FC5	100	2	4	2.91	.321
FC6	100	3	5	4.14	.652
FC7	100	3	5	4.28	.604
FC8	100	3	4	3.66	.476
BI1	100	3	4	3.31	.465
BI2	100	2	4	3.36	.542
BI3	100	3	4	3.39	.490
Valid N (listwise)	100				

Conclusion

Some studies have shown that digital technologies (ICTs) have the ability to reshape the quality of teaching and learning in HEIs if accepted and used by the teachers. A pilot study was conducted at the University of Jos, Nigeria, to verify the research questions of the study. It was discovered that although the use of ICT is mandatory, however the level of adoption among the university academic staff is still low. The challenges to ICT usage among academic staff ranges from, lack of funds, no opportunity for training, lack of sponsorship by the school management, inability to acquire personal ICT facilities, no ICT facilities at workplace, poor electricity supply, lack of ICT knowledge, insufficient time due to workload, lack of interest in learning, and lack of time for practice. On the issue of the barriers to using ICT, majority of the respondents (38%) said that their problem is time, (32%), said that there is no training opportunities. Among the four UTAUT constructs, performance expectancy exerted the strongest effect. Therefore Performance expectancy is the most influential factor for the acceptance and use of ICT by the respondents.

Recommendations made were that, all employed teachers in Federal, State and Private universities 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.

Reference

- Achimugu, Oluwagbemi, Oluwaranti, & Afolabi. (2009). Adoption of Information and Communication Technologies in Developing Countries: An Impact Analysis. *JITI*, 9, 37-46.
- Ajayi, T. O., Salawu, I. O., & Adeoye, F. A. (2008). E-learning and Distance Education in Nigeria. *The Turkish Online Journal of Educational Technology*, 7(4).
- Ajzen, I., & Fishbein. (1980). *Understanding attitudes and predicting social behaviors*. Englewood Cliffs: NJ: Prentice-Hall.
- Akinsola, O. S., Marlien, E. H., & Jacobs, S. J. (2005). ICT provision to disadvantage urban communities: A study in South Africa and Nigeria. *International journal of education and development using information and communication technology*.
- Alabi. (2004, Friday 30 April). Evolving Role of ICT in Teaching, Research and publishing. *Nigeria Tribunal*, 30-31.
- Archibong, I. A., & Effiom, D. O. (2009). ICT in University Education: Usage and Challenges among Academic Staff. *Africa Research Review*, 3(2), 404-414.
- Bandeled, S. O. (Ed.). (2006). *Development of modern ICT and internet system*. Abuja: Panof Press.
- Bolaji, O. A., Babajide. (2003). *Perception of lecturers and service teachers towards the use of communication media in teaching pure and applied science related disciplines*. Paper presented at the 44 Annual STAN Conference.

- Chiemeke, & Longe. (2007). Information communication Technology in Nigeria: Prospecta, Challenges and Metrics. *Asian Journal of Information Technology*, 45, 12-19.
- David, F. D. (1986). *A technology Acceptance Model for Empirically testing new End-User Information Systems*. Unpublished PhD Dissertation, Massachusetts Institute of Technology, Massachusetts.
- Davis, Bagozzi, & Warshaw. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35, 982-1003.
- Fishbein, M., & Ajzen, I. (1975). Belief, Attitude, Intention, and Behavior:. In *An Introduction to Theory and Research Reading*. MA: Addison- Wesley.
- Gesci. (2007). Global e-schools and communities initiatives: Infrastructure and connectivity. (Publication.:
- Ijeoma, A. A., Joseph, E. O., & Franca, A. (2010). ICT Competence among Academic staff in Unversities in Cross Rivers State, Nigeria. . *Computer and Information Science*, 3(4), 109-115.
- Jimoh, A. T. (2007). Students' attitude towards ICT in Nigeria tertiary institutions. *Education Focus*, 1(1), 73-79.
- Johnson, O. A. (2007). Enhancing Quality in Higher Education through Information and Communication Technology in Nigeria. In J. B. Babalola, Akpan, G. O., Ayeni, A. O. & Adedeji, S. O. (Ed.), *Access, Equity and Quality in Higher Education: NAEAP Publication*.
- Kerry, B. (2000). The power of the internet for learning: Moving from promises to places to practice.
- Lea, M., Rogers, P., & Postmes, T. (2002). SIDE-VIEW: evaluation of a system to develop teamplayers and improve productivity in internet collaborative learning groups. *British Journal of Educational Technology*, 33(1), 53-63.
- Ofodu, G. O. (2007). Nigeria Literacy educators and their technological needs in a digital age. *Education Focus*, 1(1), 22-30.
- Olaniyi, S. S. (2006). E-learning Technology: The Nigeria experience. [Electronic Version]. *Shape the chage*, 8-13,
- Oye , N. D., Salleh, M., & Iahad, N. A. (2011). Challenges of E-learning in Nigerian University Education Based on the Experience of Developed Countries. *International Journal of Managing Information Technology*, 3(2), 39-48.
- Oyelaran-Oyeyinka, & Adeya. (2004). Dynamics of Adoption and usage of ICT in African universities: a study of Kenya and Nigeria. *Elsevier*, 24, 841-851.
- Pajo, & Wallace, C. (2001). Barriers to the uptake of web-based technology by university teachers. *Journal of Distance Education*, 16, 70-84.
- Sife, A. S., Lwoga, C., & Sanga, C. (2007). New technologies for teaching and learning: Challenges for higher learning institutions in developing countries. *International journal of Education and Development using Information and Communication Technology*, 3(2), 57-67.
- Swanson, E. B. (Ed.). (1988). *Information System Implementation: Bridging the Gap Between Design and Utilization*
IL: Irwin: Homewood.
- Venkatesh, Davis, Morris, & Davis, G. B. (2003). User acceptance of information technology: Towards a unified view. *MIS Quarterly*, 27(3), 425-478.
- Wei-Tsong, & Chao-Yueh. (2004). The Application of the Technology Acceptance Model: A New way to Evaluate Information system success.
- Yusuf, M. O. (2005). Information and communication technology and education. Analysing the Nigerian National Policy for Information Technology. *International Education Journal*, 6(3), 316-321.
- Zhang, P., Li, N., & Sun, H. (2006). *Affective Quality and Cognitive Absorption: Extending Technology Acceptanc e Research*. Paper presented at the The Hawaii International Conference on System Sciences.

Appendix

Pilot Questionnaire

Directions: When completing the questionnaire, please keep in mind that we are using ICT in the context of teaching and learning, by the university academicians. ICT here refers to the application of digital equipments to all aspects of teaching and learning, which encompasses (PC, TV, Radio, Cellular phones, Laptops, overhead projectors, slide projectors, power-point projector, electronic boards, internet, hardware, software, and any technology specific to your teaching area).

Please rate each of the following on 1-5 scale, where (1) is "Strongly Disagree," (2) is "Disagree", (3) is "Neither Agree or Disagree", (4) is "Agree", and (5) is "Strongly Agree".

Performance expectancy (PE), Effort expectancy (EE), Social influence (SI), Facilitating condition (FC) and Behavioral intention (BI).

SECTION A: The UTAUT Survey

[1]PE1. I find the ICT systems offered at my institution useful in my job. []

[2] PE2. Using the ICT systems available enables me to accomplish tasks more quickly []

[3]PE3. Using the ICT systems available increases my productivity.[]

[4]PE4. If I use the current ICT system, I will increase my chances of getting a raise. []

[5]EE1. My interaction with the ICT systems available is clear and understandable.[]

[6]EE2. It would be easy for me to become skillful at using the current ICT system.[]

[7]EE3. I would find whatever ICT system available easy to use.[]

[8]EE4. Learning to operate an ICT system is easy for me.[]

[9]SI1. People who influence my behavior think I should use the ICT system.[]

[10]SI2. People who are important to me think I should use the ICT system. []

[11]SI3. The senior management of this institution has been helpful in the use of the ICT system.[]

[12]SI4. In general, the organization has supported the use of the ICT system.[]

[13]FC1. I have the resources necessary to use the current ICT system.[]

[14]FC2. I have the knowledge necessary to use the ICT system.[]

[15]FC3. The system is not compatible with other ICT systems I use.[]

[16]FC4. A specific person (or group) is available for assistance with ICT system difficulties.[]

[17]FC5. I could complete the job or task using the ICT systemif there was no one around to tell me what to do as I go.[]

[18]FC6. I could complete the job or task using the ICT systemif I could call someone for help if I got stuck. []

[19]FC7. I could complete the job or task using the ICT systemif I had a lot of time to complete the job for which the software was provided.[]

[20]FC8. I could complete the job or task using the ICT systemif I had just built-in help facility for assistance.[]

[21]BI1. I intend to use the ICT system in the next 3 months.[]

[22]BI2. I predict I would use the ICT system in the next 3 months.[]

[23]BI3. I plan to use the ICT system in the next 3 months.[]

SECTION B

Demographic Information:

[24]Gender: 1=Male 2=Female.

[25]Age: 1= Under 30years. 2= 30-44 years , 3= 45years and above

[26]What is your job status: 1= Part-time, 2= Full-time.

[27]Work Experience: 1= 1-5years, 2= 6-10years. 3= more than 10years.

[28]What is your career rank? 1= Lecturer, 2= Senior Lecturer, 3= Ass. Professor, 5= professor

[29]What is your workload? 1= 0-1 course, 2= 2-3 courses, 3= 4-5 courses, 4= more than 5 courses.

[30]Is ICT system use mandatory or voluntary at your institution?

1= Mandatory 2=Voluntary

[31]Technology (ICT) usage: 1= once or more a day, 2= once a week,

3= twice a month, 4= once a month, 5= Never

[32]If you had tom pick one issue that is the greatest barrier to using ICT, what would it be?

1= Time, 2= Technical support, 3= Cost, 4= Training, 5= Compensation,

6= Does not fit my program, 7= Others, please specify-----

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