UNIVERSITI PUTRA MALAYSIA

PREDICTIVE MODELING OF ICT USAGE AMONG BUSINESS EDUCATION TEACHERS IN TERTIARY COLLEGES OF NORTH WESTERN NIGERIA

ISIYAKU DANSARKI DAUDA

FPP 2015 4

PREDICTIVE MODELING OF ICT USAGE AMONG BUSINESS EDUCATION TEACHERS IN TERTIARY COLLEGES OF NORTHWESTERN NIGERIA

By

ISIYAKU DANSARKI DAUDA

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Master of Science

July 2015

DEDICATION

This work is dedicated to my beloved wife – Hannatu Dansarki Dauda and my kids, for their enduring love, support and understanding even when I had to be away from them to undertake this research!

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirements for the degree of Master of Science

PREDICTIVE MODELING OF ICT USAGE AMONG BUSINESS EDUCATION TEACHERS IN TERTIARY COLLEGES OF NORTHWESTERN NIGERIA

By

ISIYAKU DANSARKI DAUDA

July 2015

Chairman: Associate Professor Ahmad Fauzi Mohd Ayub, PhD
Faculty: Educational Studies

The purpose of this study was to propose a structural model to explain and predict teachers' ICT usage behaviour based on the interrelationships among subjective norm, job relevance, computer self-efficacy, perceptions of facilitating conditions, perceived enjoyment and perceived ease of use, perceived usefulness, attitude towards technology, behavioural intention and ICT usage (as endogenous variables). The theoretical underpinning of the study was established from the Theory of Reasoned Action, Theory of Planned Behaviour and the Technology Acceptance Model (TAM).

Almost two decades since the initiation of Nigeria's information technology policy, the country is still being ranked backward in ICT adoption and use (around Africa and across the world) especially for education. The country's education sector has been characterized by lack of adequate ICT facilities and lack of skilled ICT-manpower, with most teachers using obsolete tools in the classroom and only a few - buying and using ICTs out of their own volition. Overall, teachers' use of ICTs in tertiary schools' classrooms is presently very low in Nigeria and research initiatives on usage of ICTs are rare and predominantly descriptive in nature.

This study was a survey research design, conducted in the Northwestern zone of Nigeria, which comprises of seven States, namely: Kano, Jigawa, Katsina, Kaduna, Sokoto, Kebbi and Zamfara. The instrument of data collection was a structured questionnaire, titled ICTUS, adopted from previously validated studies. A pilot study was conducted on a sample of 30 business education teachers whereby an average Cronbach alpha reliability of .75 was obtained on the instrument. During the final study, conducted on a sample of 212 business education teachers, the reliability coefficient ranged from .819 to .956. The study data was analyzed using SPSS 21 for descriptive statistics and AMOS 21 for structural equation modeling.

The structural model of the study with 11 paths was tested and found fitting as per the set criteria. Out of the 11 paths in the model five paths have shown significant effects in the interrelationships explained by the model, while six paths have not.

The paths that reflected significant effects were as follows: teachers' perception of the relevance of ICTs to their jobs influences their perceived usefulness of ICTs (β= .327, p<.001); teachers' computer self-efficacy influences their perceived usefulness of ICTs (β= .488, p<.001); teachers' perceived enjoyment of ICTs influences their intention to use the ICTs for classroom purpose (β= .724, p<.001); teachers' perceived usefulness of ICTs influences their ICT attitude (β= .709, p<.001) and teachers' ICT attitude predicts their intention to use ICTs (β= .172, p<.001). On the other hand, the paths with non-significant effects were: teachers' subjective norm does not predict their intention to use ICTs (β= .016, p>.05); teachers' computer self-efficacy does not influence their perception of the ease of use of ICTs for classroom purpose (β= .135, p>.05); teachers' perception of facilitating conditions does not influence their perception of the ease of use of ICTs for classroom purpose (β= -.064, p>.05); teachers' perceived ease of use of ICTs does not influence their perception of the usefulness of ICTs for classroom purpose (β= -.109, p>.05); teachers perceived ease of use of ICTs does not influence their attitude towards using ICTs for classroom purpose (β= .017, p>.05) and teachers' intention to use ICTs does not influence their usage of ICTs for classroom purpose (β= .078, p>.05).

In addition to the significant paths in the proposed study model, the modification indices for the proposed model have revealed five new paths with significant effects in the interrelationships among the variables investigated in the study. The new paths were as follows teachers' subjective norm influences their attitude towards ICTs, (β= .156, p<. 05); teachers' perceived enjoyment of ICTs influences their attitude towards ICTs, (β= .318, p<. 05); teachers' computer self-efficacy influences their ICT usage behaviour, (β= .447, p<.001); teachers' perception of facilitating conditions influences their ICT usage behaviour, (β= .151, p<.05) and teachers' attitude towards technology influences their ICT usage behaviour, (β= .303, p<. 001). Overall, the modified structural model of the study with 16 paths has explained about 40% of the variance in the ICT usage behaviour of business education teachers in tertiary colleges of Northwestern Nigeria.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

MODEL PERAMAL TMK DALAM KALANGAN GURU PENDIDIKAN PERNIAGAAN KOLEJ TINGGI DI NORTHWESTERN NIGERIA

Oleh

ISIYAKU DANSARKI DAUDA

Julai 2015

Pengerusi: **Profesor. Madya Ahmad Fauzi Mohd Ayub, PhD**
Fakulti: **Pengajian Pendidikan**

Tujuan utama kajian ini adalah untuk meramal model struktural fit yang dapat menerang dan meramal perlakuan penggunaan TMK berasaskan saling-hubungan antara norma subjektif, kerelevanan kerja, efikasi swadiri komputer, persepsi keadaan memdahkan, persepsi keseronokan (pembolehubah *exogenous*) dan persepsi kemudahgunaan, persepsi kebergunaan, sikap terhadap teknologi, hasarat perlakuan dan penggunaan TMK (pembolehubah *endogenous*) berdasarkan kepada Teori Tindakan Bersebab, Teori Tingkahlaku Terancang dan Model Penerimaan Teknologi.

Kajian ini menggunakan rekabentuk kajian tinjauan yang dijalankan di Northwestern Zone, Nigeria yang terdiri daripada tujuan negeri, iaitu Kano, Jigawa, Katsina, Kaduna,Sokoto, Kebbi dan Zamfara. Instrumen kajian yang digunakan bagi pengumpulan data adalah menggunakan soal selidik Satu kajian rintis dijalankan ke atas sampel kajian 30 orang guru pendidikan bisnes. Nilai keseluruhan kebolehpercayaan instrumen kajian rintis adalah .75 yang mana julat adalah antara .819 hingga .956 untuk kajian sebenar yang dijalankan ke atas 212 sampel guru pendidikan bisnes. Data di analisis menggunakan SPSS21 untuk statistik deskriptif dan AMOS 21 untuk meramal model persamaan sktruktural.

Model struktural kajian ini terdiri daripada11 laluan telah diuji dan didapati fit bagi setiap keriteria yang diuji. Daripada 11 laluan dalam model ini, lima laluan menunjukkan kesan signifikan dalam saling-hubungan yang diterangkan oleh model, sementara enam laluan tidak. Laluan yang mencerminkan kesan signifikan adalah seperti berikut : persepsi guru terhadap perkaitan TMK dalam pekerjaan mereka meramalkan persepsi kebergunaan TMK($\beta = 0.327$, $p < .001$); efikasi swadiri komputer guru meramalkan perspsi kebergunaanTMK ($\beta = 0.488$, $p < .001$) ; persepsi keseronokan TMK guru meramalkan hasrat perlakuan penggunaan TMK untuk tujuan bilik darjah ($\beta = 0.724$, $p < .001$); persepsi kebergunaan TMK gurumeramalkan sikap terhadap TMK ($\beta = 0.709$, $p < .001$) dan sikap TMK guru meramalkan hasrat perlakuan menggunakan TMK ($\beta = 0.172$, $p < .001$).

Sebaliknya, laluan dengan kesan tidak signifikan adalah norma subjektif guru tidak meramalkan hasrat perlakuan penggunaan TMK (β = 0.016, p> .05);efikasi swadiri komputer guru tidak meramalkan persepsi kemudahgunaan mereka terhadap kemudahan penggunaan TMK untuk tujuan bilik darjah (β = 0.135 , p > .05) ;persepsi guru terhadap keadaan memudahkan tidak meramalkan persepsi kemudahgunaan TMK untuk tujuan bilik darjah (β = - .064 , p > .05); persepsi guru terhadap kemudahgunaan TMK tidak meramalkan persepsi mereka terhadap kebergunaan TMK untuk tujuan bilik darjah (β = -.109 , p > .05) ; persepsi guru terhadap kemudahgunaanTMK tidak meramalkan sikap mereka terhadap penggunaanTMK untuk tujuan bilik darjah (β = 0,017 , p > .05) dan hasrat perlakuan guru menggunakan TMK tidak meramalkan penggunaan TMK untuk tujuan bilik darjah (β = 0,078, p > .05).

Sebagai tambahan kepada laluan yang signifikan, model struktural kajian juga menunjukkan lima lauan baru yang memberi kesan signifikan dalam saling-hubungan antara pembolehubah dikaji dalam kajian ini. Laluan baru ini adalah seperti berikut: norma subjektif guru meramalkan sikap mereka terhadap TMK (β= .156, p<. 05); persepsi keseronokan guru meramal sikap mereka terhadap TMK (β= .318, p<. 05); efikasi swadiri komputer guru meramal penggunaan TMK (β= .447, p<.001); persepsi guru terhadap persepsi kondisi memudahkan meramal pelakuan penggunaan TMK (β= .151, p<.05) dan sikap guru terhadap teknologi meramal perlakuan penggunaan TMK (β= .303, p<. 001). Secara keseluruhan, model struktural kajian ini menerangkan 40% varians penggunaan perlakuan TMK guru pendidikan bisnes dalam kolej pengajian tinggi di Northwestern Nigeria.

ACKNOWLEDGEMENTS

I give profound gratitude to God Almighty for the strength and courage to start and finish this work successfully. I am very grateful to Associate Professor, Dr. Ahmad Mohd Fauzi, Ayub – the Chairman of my Thesis Committee for his commitment, patience, guidance, encouragements and support - to the extent of taking it upon himself to sponsor me on a special training in Structural Equation Modeling (a gesture that was beyond my wildest imagination). I am also very grateful to my Core-Supervisor - Dr Suhaida Abdul Kadir for the same commitment, patience, guidance, encouragements and support given to me in my studies here at UPM and in my research career. I also appreciate my course advisor – Professor Zaidatol Akmaliah Lope Pihie for her counsel on my first day in UPM. I am equally grateful to the members of my Examination Committee - the Chairperson, as well as my external and internal examiners for their useful remarks and comments on my thesis which were put together along with what my supervisors did earlier to produce this excellent work.

I appreciate the management body of FCE (T) Bichi for the opportunity to come to UPM. Thanks to Alhaji. Ibrahim Jibril – the College Provost, Dr. Muhammad Ali – the College Registrar, Dr. Magaji Dansarai - the Deputy Provost and to Dr. Sunday Okegbille. Thanks to all those who gave me their support towards this course when I needed it most.

I appreciate the members of my family; my parents - Mr and Mrs Rev. Isiyaku Korau Dansarki, as well as Mr. and Mrs. WOII Mohammed Abdullahi for their love, support, prayers and care to me and to my wife and kids while I was away. I appreciate my wife, Hannatu D.I. Dansarki and my kids, Gimbiya Maryam, Musa Yerima, Sarauniya Saratu, Hannatu - Mami, Sammy – the M.O.G. and Isiyaku Babangida – the Great, for their love, support, prayers and care. I also appreciate all my brothers and sisters at Funtua for their love, support, prayers and care.

Finally, I appreciate the following people for being there for me in diverse ways during the course of this work: Dr. Mohd Bashir, Dr Mande Hosea, Dr. Amos Ebenehi, Dr Bello Yekini, Dr. Gimba Fufa, Mrs. Grace Idowu, Mrs. Tahereh Kaboodv, Mr. Bello Kangiwa, Mr. Abel Ekele, Pst. Charles Ugwuabuchi, Pst Vincent Thompson, Pst. Henry Chibuike and Pst James. I am also grateful to all those who have directly or indirectly contributed to the success of this research but are not mentioned by their names. Thank you so much.

I certify that a Thesis Examination Committee has met on 1 July 2015 to conduct the final examination of Dansarki Isiyaku Dauda on his thesis entitled "Predictive Modeling of ICT Usage among Business Education Teachers in Tertiary Colleges of Northwestern Nigeria" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

Members of the Thesis Examination Committee were as follows:

Rosnaini binti Mahmud, PhD
Senior Lecturer
Faculty of Educational Studies
Universiti Putra Malaysia
(Chairman)

Wong Su Luan, PhD
Associate Professor
Faculty of Educational Studies
Universiti Putra Malaysia
(Internal Examiner)

Ruhizan Mohammad Yasin, PhD
Associate Professor
Universiti Kebangsaan Malaysia
Malaysia
(External Examiner)

ZULKARNAIN ZAINAL, PhD
Professor and Deputy Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 12 August 2015

This thesis was submitted to the Senate of the Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

Ahmad Fauzi bin Mohd Ayub, PhD
Associate Professor
Faculty of Educational Studies,
Universiti Putra Malaysia
(Chairman)

Suhaida Abdul Kadir, PhD
Senior Lecturer
Faculty of Educational Studies
Universiti Putra Malaysia
(Member)

BUJANG BIN KIM HUAT, PhD
Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date:

Declaration by graduate student

I hereby confirm that:

- this thesis is my original work
- quotations, illustrations and citations have been duly referenced
- the thesis has not been submitted previously or concurrently for any other degree at any institutions
- intellectual property from the thesis and copyright of thesis are fully-owned by Universiti Putra Malaysia, as according to the Universiti Putra Malaysia (Research) Rules 2012;
- written permission must be obtained from supervisor and the office of Deputy Vice –Chancellor (Research and innovation) before thesis is published (in the form of written, printed or in electronic form) including books, journals, modules, proceedings, popular writings, seminar papers, manuscripts, posters, reports, lecture notes, learning modules or any other materials as stated in the Universiti Putra Malaysia (Research) Rules 2012;
- there is no plagiarism or data falsification/fabrication in the thesis, and scholarly integrity is upheld as according to the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) and the Universiti Putra Malaysia (Research) Rules 2012. The thesis has undergone plagiarism detection software

Signature: _____ Date: _____

Name and Matric No: Isiyaku Dansarki Dauda (GS36703)

Declaration by Members of Supervisory Committee

This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) were adhered to.

Signature: _____	Signature: _____
Name of	Name of
Chairman of	Member of
Supervisory	Supervisory
Committee: _____	Committee: _____

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1 Background Information

The advent of Information Communication Technologies (ICTs) has continued to revolutionize the world with rapid increase in knowledge and power for people to do things even more easily and more effectively (ITU, 2014). This revolution brings leverage in regard to time and distance and also translates into efficiency and cost-effectiveness with the world linked together by ICTs such that the barriers of time and distance are removed and people can connect together as if they are all in one global village (Senso-Okyere & Mekonnen, 2012; Larkin & Belson, 2005). Hitherto, information can circulate the world with the speed of light, and issues of transparency are made easier so that at all levels people can make better decisions pertaining to every aspect of their lives (Valtonen, Kukkonen, Kontkanen, Sormunen, Dilon & Sointu, 2015).

In education, ICTs are fundamental to creative teaching and learning and they play important roles in bridging the gaps between teacher-centered and student-centered teaching methods (Asenso-Okyere & Mekonnen 2012). Extant research has shown that the appropriate use of ICTs can catalyze the paradigmatic shift in both content and pedagogy that is at the heart of education reform in the 21st century (Onyia & Offorma, 2011). As opined by Senso-Okyere, et al., (2012), ICTs are great tools for extending learning opportunities among informal and formal settings and they are important instruments for self-directed, life-long learning, capable of solving confronting educational challenges. ICTs uptake has continued to increase across the globe, with several educational tools transforming the classroom and giving room to access, create and share information more speedily and without boundaries (ITU, 2014; Valtonen et al., 2015). The impact of ICTs on our ways of lives generally and on education in particular, has become fundamentally revolutionary such that as ICTs are improving the quality and quantity of teaching and learning in teacher education, teachers' competence is now being connected with how they integrate ICTs in their classroom activities (Ololube, 2006; Teo 2014).

But while the use of ICTs has become crucial across the globe, and while one of the strongest indicators of ICT adoption is Internet access and use, it has been reported that out of the estimated population of seven billion people in the world, three billion have access to the Internet, and are using it – with a significant majority from Europe and America (ITU, 2014). However, despite the enormous population of Africa, being the second largest in the world, it is the least region in terms of Internet access and use - with only 20% of its population using the Internet (ITU, 2014). In Nigeria, despite her wealth, the percentage of individuals using the Internet as at December, 2012 stood at 28%, while Malaysia had 61% and Qatar had 86%, being the highest among developing nations, (ITU, 2012; UNESCO, 2010). On the whole, out of the 4 billion people not yet using the Internet, more than 90% of them are from Africa and other developing regions of the world - including Nigeria (Internet World Stats, 2014). Impliedly, until recently in regions of less-developed-countries (LDCs) such

as Africa, the diffusion of ICTs has remained extremely low, (Anandarajan, Igbaria, & Anakwe, 2002; Odedra, Bennett, Goodman, & Lawrie, 1993). This is an indication of critical ICT development gaps (digital divide), between regions of Africa and the rest of the world. And it is a matter of serious concern that despite the evidence in recent surveys showing annual growth rate of 90% in purchases of microcomputers/ICT tools in the business sectors of the LDC regions (The Fourteen Major Trends, 1997), yet the benefits of effective ICT usage have remained far from being actualized in countries like Nigeria, (Anandarajan et al., 2002; Asogwa & Eze, 2013; Delaviz, Andrade, Pouwelse, & Epema, 2012; Ololube, Egbezor, & Kpolovie, 2008; Olusola & Alimi, 2015). Hence, the UNESCO (2010), has observed that while educational institutions in some regions of the world are characterized by highly integrated ICT transformation that incorporate competent personnel utilizing ICTs maximally in virtual classrooms; on the other side of the coin some regions are yet to begin. Consequently, in places like Europe, America, Australia and most of Asia, teachers have advanced in using ICTs for teaching and learning López-Nicolás, Molina-Castillo & Bouwman, (2008), whereas in places like Nigeria – Africa, the scenario is still characterized by strong obstacles against the utilization of these technologies (Mbaba & Shema, 2012; Ubulom, Enyekit, & Onuekwa, 2011; Umoru, 2012). Sequel to this, in Nigerian technical and vocational institutions, business education teachers are still using outdated tools like the manual typewriters and ink duplicators, and the traditional 'classroom blackboards' for traditional learning, while their counterparts across the globe are using highly sophisticated computer hardware and software, plus interactive learning tools like the 'collaborative blackboards (Larkin & Belson, 2005).

Hitherto, Nigeria has resolved to ensure the integration and utilization of ICTs in the country since the late 1990s. According to NPIT, (2001) the necessity for a policy on national Information Technology (IT) was marked out after the participation of the Nigerian delegation in the first African Development Forum on the Challenge to Africa on Globalization in the Information Age, held in Addis Abba in October 1999. Sequel to this, a national workshop on the National Information and Communication Infrastructure (NICI) was held in Abuja in March 2000. Several Governmental Organizations (GOs) and Non-Governmental Organizations (NGOs) such as National Information Technology Development Agency (NITDA), National Information Technology Development Fund (NITDEF), Computer Association of Nigeria (COAN), Information Technology Association of Nigeria (ITAN), Institute of Software Practitioners of Nigeria (ISPN), ZINOX Computers, OMATEK Computers, Digital Bridge Institute (DBI), Nigerian Communication Commission (NCC) and Tertiary Education Trust Fund (TETFUND) have pooled their efforts together to support the appropriate up-take of ICTs in the Nigeria. Nigerian Government has provided ICT infrastructures at levels of Local Information Infrastructure (LII), State Information Infrastructure (SII), National Information Infrastructure (NII), National Broadband Plan (NBP), and Global Information Infrastructure (GII), using Very-Small-Aperture-Terminals (VSAT) and Fiber Optic Networks (FON) to provide high-speed gateways and broad band/multimedia technologies across the country. More importantly, to restructure the education system of the country, schools (especially tertiary schools) were provided with ICT Centers and Laboratories, Computers (including lap-tops for teachers), Train-The-Trainer Programs (TTTP), and so on.

However, despite Nigeria's efforts towards ensuring the appropriate uptake and integration of ICTs in the country, a recent report by the Network Readiness Index (NRI) at the World Economic Forum (WEF) - (2013), has shown that Nigeria was ranked 113th out of 144 countries that were assessed in terms of ICT uptake and integration across the world. Unfortunately, several other African countries, including Cape Verde (81st), Ghana (95th), Liberia (97th) and Gambia (98th) were ranked ahead of Nigeria. Similarly, a recent report from Oxford Business Group (2014) has revealed that Nigeria is still going through a slow technology take-up, characterized by low broadband penetration levels that have continued to deny the country a lot of the benefits of ICTs. Congruently, empirical evidence has shown that Nigeria's educational system has continued to linger in inadequacies that have close linkages with ICT usage problems (Aduwa-Ogiegbaen & Iyamu, 2005; Asogwa & Eze, 2013; David, 2012; Ololube et al., 2008). Yet, until recently, the efforts aimed at building the bridges between theory and practice as well as the research results toward alleviating ICT usage problems in Nigerian classrooms, especially in technical and vocational education, are very scanty and essentially descriptively oriented (Jegede, Dibu-Ojerinde, & Ilori, 2007; Osuala, 2004; Thorelli, 2008). Nevertheless, literature has established that the successful adoption of technology for teaching and learning depends on teachers' perceptions, attitudes and intentions toward ICTs, because the teachers are the ones who eventually determine how these technologies are used in the classroom (Bullock & Fuchs, 2004; Kersaint, 2003; Marcinkiewicz, 1994; Schepers & Wetzels, 2007; Teo, 2011). Unfortunately, this is the same scenario that has characterized the Nigerian technical and vocational education system. But despite all these constraints, and as was observed in Oxford Business Group (2014), the ICT sector has become a significant contributor to the Nigerian economy. In 2013, the ICT sector has accounted for 10.4% of Nigerian GDP and its contribution is expected to rise as demand brings improvements in ICT service delivery across the nation (National Bureau of Statistics, 2014). Hitherto, although the Nigerian government has shown commitment towards ensuring the appropriate uptake of ICTs in the country, it is rather unfortunate that results are not forthcoming. The situation is therefore giving serious concern to the Nigerian government, and as a step towards helping the country out, researchers in Nigeria are keen at investigating problems associated with technology usage behaviour among individuals in the country; and this study is one of such keen efforts. Hence, the focal point of this study is to investigate the trend of ICT usage/ICT usage attitudes and intentions among teachers, alongside with a cluster of their perceptions toward ICTs which are associated with subjective norm, job relevance, computer self-efficacy, facilitating conditions, perceived fun, perceived usefulness and perceived ease of use of technology.

1.1.2. ICTs in Technical and Vocational Education/ Business Education in Nigeria

Whereas there are streams of educational advantages in ICTs that can be utilized by teachers and students in Technical and Vocational Education/Business Education, such as ICT inclined online education programmes that facilitate formal and informal self-directed, lifelong learning, Howell, Williams and Lindsay, (2003); it was observed that going by the overall status of ICTs in Nigeria, most colleges and universities in the country have not been able to implement effective online

education programs; thereby incapacitating the drive towards the development of a knowledgeable society (Ololube, Ubogu, & Egbezor, 2007).

For the past four decades researchers in business and information systems, as well as those in education, have been keenly interested in studying ICT usage behaviour among individuals (Teo, 2015), yet in conventional universities of North Central Nigeria, the mean rating of student-teachers' ICT use was low (M=2.35) (Anunobi 2015). Congruently, it was also observed recently that faculty members in Nigerian tertiary colleges are unable to cope with ICT usage for their private purposes as well as for classroom purposes (Onwuagboke, Singh, & Fook, 2015).

ICT usage in Nigerian technical and vocational education has remained epileptic over the years, owing to a general neglect and condescension of TVE programmes by the Nigerian government and people as well, which translated into poor facilitating ICT conditions across the few institutions that offer TVE programmes in the country. To support this assertion Okolie, (2014) has observed that most of the technical and vocational education departments in Nigerian institutions do not have up-to-date ICTs that are crucial for improving the quality of teaching and learning in schools. Congruently, unfavourable dispositions and perceptions of a large number of the Nigerian citizenry toward ICT adoption and usage has remained one of the foremost challenges facing the Nigerian education system (Okolie, Elom Elisha, Nwuzo Alphonsius, Inyiagu Emmanuel, & Ndem Joseph, 2014).

However, realizing the value of vocational technical education (VTE) in the implementation of growth inducing technologies and productivity practices in societies, most nations have already undergone enormous changes in their TVE programmes, and consequently other countries such as Nigeria are now being forced into tuning their traditional VTE policies and practices in line with the current global trend (Okolocha, 2012). As part of the steps towards reforming the overall Nigerian education system, Nigeria is now investing in ICTs and in TVE programmes with the hope that the outcome of it would leapfrog the general educational status of the country to the next level. However, investing in ICTs and in TVE programmes would not do much unless stakeholders such as teachers are committed to the use of new technologies in their classrooms. One of the ways by which this can be made to happen is to study teachers' perceptions and predispositions towards ICT usage in the classroom with the view of identifying the factors that directly or indirectly affect their actual usage of these ICTs.

However, for an optimal teaching and learning experience in TVET and in business education, teachers must shift from the traditional forms of teaching and learning and implement ICTs in the way they design, teach, and assess their courses (Rienties & Townsend, 2012). Whereas doing this requires a strong ICT baseline, it is rather unfortunate that technical and vocational education faculties as well as those in business education in Nigeria are lacking the necessary ICT infrastructure, to effectively implement ICT-compliant teaching. In this wise, obsolete equipment such as manual typewriters, ink duplicators and traditional blackboards are still being used in Nigerian business education classrooms with majority of teachers lacking the right attitude toward ICT competence and usage in the classroom (Asogwa & Eze, 2013 & Ugwuogo, 2013).

1.2 Statement of the Problem

Despite the prevalent benefits of applying ICTs in education, teachers in developing countries of Africa (including Nigeria) have not been able to cope with the pace of technology adoption in the classroom (Asogwa, 2013; Ololube, 2014; Prasad, Lalitha, & Srikar, 2015; Anunobi, 2015). Teachers' perceptive and attitudinal beliefs have been associated with their intentions and behavioural performances in the use of ICTs for teaching (Becker, 2001; Ertmer, 2005; Windschitl & Sahl, 2002; Higgins & Moseley, 2001; Sugar et al., 2004). A study among 382 student teachers in a Nigerian university has revealed that teachers are ineffectual at integrating ICTs in university curriculums due to weak ICT infrastructure and inadequate internet access (Mudasiru & Modupe 2011). Teachers' failure to use technology in the classroom has become an issue of great concern in Nigeria (David, 2012; Oghogho & Ezomo, 2013).

While it is important to appreciate that so much resources have been invested towards ensuring the appropriate uptake of ICTs in Nigeria FRN (2000) and NPIT (2001), it is also important to understand that the country's standard of ICT adoption has remained low for the past several years (Arekete et al., 2014; Iloanusi & Osuagwu, 2009; NRI, 2013; ITU, 2012; 2013; 2014). Unfortunately, underlying issues such as teachers' perception of the usefulness and ease of use of technology, their perception of the fun in using ICTs, their intentions and attitudes towards using technology; their computer self-efficacy, their perception of the expectations of others with regard to their use of technology in the classroom as well as their perception of the facilitating conditions for using ICTs in the classroom, have not been properly investigated. Descriptive studies that are prevalent in Nigeria's literature have shown that educational institutions in the country lack adequate funds to secure facilities for appropriate ICT uptake and they still use obsolete tools in the classroom (Abolade & Yusuf, 2005; Asogwa, 2013; Delaviz et al., 2012; Ololube et al. 2008; Ugwuogo, 2013). Accordingly, while some teachers lack technical expertise to teach students with new technologies, others buy and use ICTs out of their own volitions (Abodade & Yusuf, 2005; Higgins & Moseley, 2001; Sugar et al., 2004). Aduwa-Ogiegbaen and Iyamu (2005) have confirmed that instructional materials that aid teaching and learning, such as textbooks, classrooms, laboratory equipment, access to the internet (computers) and other ICT equipment, are grossly inadequate in most learning institutions of Nigeria. Consequently, the standard of education in the country has fallen over the years and educational achievements amongst students have become purely self-guided, with little or no significant assistance from teachers (Asogwa, 2013; Delaviz et al., 2012 & Ololube et al.2008). Unfortunately, as complex as ICT usage problems have become in Nigeria, research initiatives on teachers' use of ICTs with the country's perspectives have remained scanty and predominantly descriptive in nature (Arekete, Ifinedo, & Akinnuwesi, 2014; Jhurree, 2005). But educational policies should not stop at merely bringing ICT tools into the educational environment without investigating how teachers use them (Rana, 2013). Similarly, by just providing schools with ICTs, it should not be assumed that teachers are using them effectively – it is important to find out how the extent to which the teachers use them (Kadel, 2005). Hence, this study aims at investigating teachers ICT usage behaviour from the standpoint of their perceptive beliefs, intentions and attitudes toward using technology in the classroom. It is

expected that the study will play a vital role towards underpinning strategic policies for ICT adoption in Nigerian education.

1.3 Objectives of the Study

The overall objective of this study is to use TAM to develop a structural model that will explain and predict teachers' ICT usage behaviour on the basis of the interrelationships that exist among subjective norm, job relevance, computer self-efficacy, perceptions of facilitating conditions, perceived enjoyment (as exogenous variables) and perceived ease of use, perceived usefulness, attitude towards technology, behavioural intention and ICT usage (as endogenous variables). This fundamental objective is further broken down as follows:

i) To describe the types of ICT tools used in the classroom by teachers in tertiary colleges of Northwestern Nigeria.
ii) To describe the responses of teachers on each of the variables of interest in the study, namely: subjective norm, job relevance, computer self-efficacy, perceptions of facilitating conditions, perceived enjoyment, perceived ease of use, perceived usefulness, attitude towards technology, behavioural intention and ICT usage behaviour.
iii) To determine the influence of subjective norm and perceived enjoyment on behavioural intention.
iv) To determine the influence of job relevance, computer self-efficacy and perceived ease of use on perceived usefulness.
v) To determine the influence of computer self-efficacy and facilitating conditions on perceived ease of use.
vi) To determine the influence of perceived usefulness and perceived ease of use on attitude towards technology.
vii) To determine the influence of attitude toward technology on behavioural intention.
viii) To determine the influence of behavioural intention on ICT usage behaviour.
ix) To test the model fit of the study in explaining ICT usage behaviour among teachers in tertiary colleges of Northwestern Nigeria.

1.4 Research Questions and Hypotheses

To achieve the objectives of this study, the following research questions and hypotheses investigated:

Objective 1

RQ_1 What are the types of ICT tools used in the classroom by business education teachers in tertiary colleges of Northwestern Nigeria?

Objective 2

RQ_2 What are the mean ratings of the responses of business education teachers on their perceptions of the expectations of others towards their usage of ICTs in the classroom?

RQ_3 What are the mean ratings of the responses of business education teachers on their perceptions of the relevance of ICTs to their jobs?

RQ_4 What are the mean ratings of the responses of business education teachers on their perceptions of their abilities of using computers for the purpose of classroom instructions?

RQ_5 What are the mean ratings of the responses of business education teachers on their perceptions of the adequacy of ICT facilities provided in business education faculties of colleges of education in Northwestern Nigeria?

RQ_6 What are the mean ratings of the responses of business education teachers on their perceptions of the fun they derive from using ICTs for classroom purpose?

RQ_7 What are the mean ratings of the responses of business education teachers on their perceptions the ease of using ICTs for classroom purpose?

RQ_8 What are the mean ratings of the responses of business education teachers on their perceptions of the usefulness of ICTs to their jobs?

RQ_9 What are the mean ratings of the responses of business education teachers on their perceptions of their abilities of using computers for the purpose of classroom instructions?

RQ_{10} What are the mean ratings of the responses of business education teachers on their attitudes toward technology?

RQ_{11} What are the mean ratings of the responses of business education teachers on their perceptions of the frequency with which they use ICTs for classroom purposes?

RQ_{12} What are the mean ratings of the responses of business education teachers on their perceptions of the volume of work they do with ICTs for classroom purposes?

To achieve objectives 3 to 8, eleven hypotheses will be tested:

Objective 3

H_1 Subjective Norm has a direct significant influence on Intention to use ICTs.

H_6 Perceived enjoyment has a direct significant effect on Intention to Use ICTs

Objective 4

H_2 Job Relevance has a direct significant influence on Perceived Usefulness of ICTs.

H_3 Computer Self Efficacy has a direct significant influence on Perceived Usefulness of ICTs

H_7 Perceived Ease of Use of ICTs has a direct significant influence on Perceived Usefulness of ICTs

Objective 5

H_4 Computer Self Efficacy has a direct significant influence on Perceived Ease of Use of ICTs

H_5 Perception of Facilitating Conditions has a direct significant influence on Perceived Ease Use of ICTs.

Objective 6

H_8 Perceived Usefulness of ICTs has a direct significant influence on ICT Attitude.

H_9 Perceived Ease of Use of ICTs has a direct significant influence on ICT Attitude.

Objective 7

H_{10} ICT Attitude has a direct significant influence on Intention to Use ICTs.

Objective 8

H_{11} Intention to Use ICTs has a direct significant influence on Actual ICT Usage

Objective 9

This objective will be achieved by testing the fitness of the structural model against the parameters of goodness of fit, incremental fit and parsimonious fit, i.e. (Relative Chi-Sq≤5, GFI≥0.8, AGFI≥0.8, CFI≥0.9, IFI≥0.9, TLI≥0.9, RMR≤0.8 and RMSEA≤0.8).

1.5 Significance of the Study

This study will contribute theoretically to the body of extant literature by providing useful data and information on Nigeria's ICT developments and challenges, especially in its educational sector. Empirical evidence has shown that out of the various ICT studies in education, only a few have focused on how teachers feel and behave towards ICTs, especially in business education or technical and vocational education with Nigerian perspectives. In addition, more attention has been given to ICT studies among students, whereas teachers are not investigated. Hitherto, whereas such studies are scanty and rare, they are also basically descriptive in nature. To fill this gap, the current study is inferential in nature, which means it does not stop at a simple description of the problem, rather it aims at making inferences and predictions that underpin the problem being investigated.

The study will be of immense benefit to teachers in Nigerian tertiary colleges, especially those in technical and vocational education majoring in business education. By this study they will see the increasing need for them to be effectual in ICTs, be positive in their perceptions and attitudes toward ICTs and reinforce their intentions for using technology in classroom. By this study, teachers will also appreciate the relevance of ICTs to their jobs and hence, be committed to the use of such tools in the classroom. Additionally, the wealth of literature reviewed and the important findings in this study will serve as source of information for teachers, researchers, policy makers and curriculum planners to make better ICT-integration investigations, decisions and policies especially in regard to business education in Nigerian tertiary schools and beyond.

1.6 Limitations of the Study

Being that questionnaire will be used as instrument of data collection in this study, the researcher would have to rely on the opinions of respondents to assess their perceptions, attitudes and intentions with regard to ICT usage. Hence findings are based on respondents' self-reports and this is an obvious limitation to the study. Hence great caution is in results interpretation. Another limitation to this study is that its sample will be limited only to teachers in business education from tertiary colleges of Northwestern Nigeria; hence generalization of findings may be limited to

that scope. Congruently, this study is limited by time - being a thesis required to be completed within a specified period for the purpose of Master of Science Degree; there was no sufficient time to acquire substantial data from the whole of Nigeria – hence, the study cannot be generalized over the whole Nigerian country. Nevertheless, in the view of the researcher, the gains of doing the research are worth more than the limitations involved.

1.7 Definitions of Terms

The following operational terms are defined within the context of this study:

1.7.1 Information Communication Technologies (ICTs)

Information Communication Technologies (ICTs), describes technologies of the internet along with computer networks, World Wide Web, e-mail and search engines used in producing and sharing information,(United Nations Educational Scientific and Cultural Organization, 2010). ICT was described by Oghogho and Ezomo (2013) as an umbrella term that includes any communication device or application, encompassing: radio, television, mobile and fixed phones, computer and network hardware and software, satellite systems and so on, (as well as the various services and applications associated with them, such as videoconferencing, distance learning, and so on) necessary for the delivery of information in the form of audio, data, video, image, and so on. In the context of this study ICT/ICTs refer to those technologies used in facilitating classroom instructions such as ICT peripherals for classroom interactions, ICT tools for virtual interactions, ICT tools for research, ICT tools for mind mapping and brainstorming, and ICT tools for content creation.

1.7.2 Attitude towards Technology

The term ‘attitude’ has been defined as a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor (Eagly Alice & Chaiken, 1998). Attitude can also be expressed as feelings of joy, elation and pleasure; or depression, disgust, displeasure and hate, associated by an individual with a particular phenomenon (Thompson et al., 1991). In this study attitude refers to the extent to which a teacher exhibits favourable or unfavourable dispositions towards performing classroom functions.

Attitude towards technology has been defined as a person’s general evaluation or feeling towards technology and specific computer and Internet related activities (Smith, Caputi, & Rawstorne, 2000). Attitude towards technology can also be referred as how people think and feel towards ICTs; their demeanor and how they react to ICTs, how they react to change initiatives that have to do with ICTs, Wilkinson and Schilt (2008). In this study attitude towards technology refers to teachers’ ICT attitude, i.e., the extent to which teachers exhibit favourable or unfavourable dispositions toward usage of technology in facilitating classroom instructions. This is indicated by teachers’ opinions on how they look forward to

performing those aspects of their jobs that require the use of ICTs and their opinions on whether ICTs make business education classroom more interesting.

1.7.3 Subjective Norm

Subjective norm refers to the perception of an individual that most people who are important to him/her would think that he/she should or should not perform a specific behaviour (Venkatesh et al., 2003). Subjective norm has also been referred to as the perceptions of an individual in regard to the beliefs and expectations of others and the pressures that arise from such beliefs and expectations towards the individual (S. S. Ho, Poorisat, Neo, & Detenber, 2014). In this study subjective norm was defined as the extent to which teachers perceive that they are expected by others, to use ICTs in the classroom. This is indicated by the opinions of teachers on their perceptions of influence of others on their ICT usage behaviour and their perceptions of their institutions' general support for the use of ICTs.

1.7.4 Job Relevance

Job relevance is defined as the degree to which an individual believes that the target system is applicable to his/her job (Venkatesh & Davis, 2000). Job relevance has also been defined as the extent to which an individual on his/her job uses technology and the extent to which the technology has become relevant to the job done (Kim, 2008). In the context of this study job relevance refers to the degree to which teachers believe that ICTs are applicable to their instructional functions. This is indicated by the opinions of teachers on whether usage of ICTs was high in their subject areas and their opinions on whether it was inevitable to use ICTs for teaching or not.

1.7.5 Computer Self Efficacy

Computer self-efficacy is defined as an individual's belief that he/she has the ability to perform a specific task/job using the computer (Compeau & Higgins, 1995b). Computer self-efficacy is also defined as an individual's control beliefs regarding his/her personal ability to use a computer system (Venkatesh & Bala, 2008).In the context of this study computer self-efficacy refers to teachers' judgment of their capabilities in using ICTs for facilitating their classroom instructions. This is indicated by the teachers' opinions on their knowledge of ICTs and their confidence at using ICTs in the classroom.

1.7.6 Facilitating Conditions

Facilitating conditions have been defined as the degree to which an individual believes that organizational and technical resources exist to support the use of the system (Venkatesh et al., 2003).Facilitating conditions are also referred to as the

objective factors in the environment that observers agree make an act easy to accomplish (Thompson et al., 1991). Congruently, facilitating conditions can be referred to as the extent to which a teacher believes that factors in the environment influence his or her decision to use technology (Teo, 2011). In the context of this study facilitating conditions have been defined as the degree to which teachers believe that they are supported with ICT equipment/tools by government and their school authorities to facilitate their classroom instruction functions. This is indicated by teachers' opinions on the availability of specific persons or group to assist with ICT difficulties and their opinions on the availability of timely assistance when they are faced with ICT difficulties in their institutions.

1.7.7 Perceived Enjoyment

Perceived enjoyment was defined as the extent to which "the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use" (Venkatesh, 2000). Perceived enjoyment is also defined as the perception of inherent enjoyment in using computers, apart from the anticipated improvement in performance they will bring (Davis, Bagozzi, & Warshaw, 1992). In the context of this study, perceived enjoyment refers to the extent to which teachers perceive using ICTs in the classroom is enjoyable. This is indicated by the teachers' opinions on whether they perceive ICTs to be enjoyable or not, and on whether they perceive the actual process of using ICTs to be enjoyable or not.

1.7.8 Perceived Ease of Use

Perceived ease of use was defined as the degree to which a person believes that using technology will be free of effort (Davis et al., 1989). Perceived ease of use was also defined as the degree to which microcomputers are perceived as relatively easy to understand and use (Anandarajan et al., 2002). Congruently, perceived ease of use was defined as the degree to which computer technology is relatively easy to understand and use (Igbaria, Iivari, & Maragahh, 1995). In the context of this study, perceived ease of use is defined as the degree to which teachers believe that using ICTs for classroom instructions will be easy for them. This was indicated by the teachers' opinion on their perception of the difficulty of learning to use ICTs for classroom interactions and their opinions on whether their interaction with ICTs in the classroom is understandable or not.

1.7.9 Perceived Usefulness

Perceived usefulness is defined as the degree to which a person believes that using technology would enhance his or her job performance (Davis, 1989).Perceived usefulness can also be defined as prospective user's subjective probability that using a specific application system will increase his or her job performance (Anandarajan et al., 2002). Perceived usefulness has also been defined as the extent to which a teacher believes that using technology would enhance his or her job performance (Teo, 2011). In this study perceived usefulness is the teacher's assessment of how

ICTs are useful and productive to him/her in the course of performing classroom functions. This is indicated by the teachers' opinions on whether using ICTs does not improve their performance in the classroom and their opinions on whether ICTs enhance their effectiveness as teachers.

1.7.10 Behavioural Intention

Behavioural intention was defined as the strength of an individual's intention to perform behaviour, (Kim, 2008). Behavioural intention has also been defined as the degree of a teachers' willingness to use technology (Teo, 2011). In this study behavioural intention is defined as the degree to which teachers are determined and intending to use ICTs in the classroom. This is indicated by the opinions of teachers on whether they would use ICTs in subsequent semesters or not, and whether they would regularly use the ICTs during the coming semesters or not.

1.7.11 ICT Usage Behaviour

ICT usage behaviour is defined as the frequency of use (how often) and its volume (how much) with which an individual uses ICTs (Kim, 2008). ICT usage behaviour has also been defined as the extent to which ICTs are used daily and the frequency of such use in proportion to the amount of task performed, using the ICTs (Igbaria et al., 1995). In the context of this study, ICT usage behaviour is defined as the frequency with which teachers use ICTs and the volume of the tasks they perform with these ICTs for classroom purposes. This is indicated by teachers' opinions on the frequency with which they use ICTs in the classroom; their opinions on the frequency with which they use ICTs in preparing continuous assessments and their opinions on the volume of classroom functions they perform each day using ICTs.

1.8 Summary

In sum, this chapter has attempted to give a preview of the focus of this study by highlighting the ICT usage scenario of Nigeria's educational institutions and stating the problem to be studied. The chapter has also stated the purpose/objectives of the study as well as the research questions and hypotheses that are to guide the study. To begin the investigation of the identified problem, the preceding chapter will explore the position of extant literature in connection with efforts that were geared towards finding solutions to the problem.

REFERENCES

Adams, J., Khan, H. T., & Raeside, R. (2014). *Research Methods for Business and Social Science Students*: SAGE Publications India.

Adewole-Odeshi, E. (2014). Attitude of Students Towards E-learning in South-West Nigerian Universities: An Application of Technology Acceptance Model. *Library Philosophy and Practice e-journal*.

Aduwa-Ogiegbaen, S. E., & Iyamu, E. O. S. (2005a). Using Information and Communication Technology in Secondary Schools in Nigeria: Problems and Prospects. *Journal of Educational Technology & Society, 8*(1).

Aduwa-Ogiegbaen, S. E., & Iyamu, E. O. S. (2005b). Using Information and Communication Technology in Secondary Schools in Nigeria: Problems and Prospects. *Educational Technology & Society, 8*(1), 104-112.

Agarwal, R., & Karahanna, E. (2000). Time flies when you're having fun: Cognitive absorption and beliefs about information technology usage. *MIS Quarterly, 24*(4).

Agarwal, R., & Prasad, J. (1997). The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. *Decision Sciences, 28*(3), 557-582.

Agudo-Peregrina, Á. F., Hernández-García, Á., & Pascual-Miguel, F. J. (2014). Behavioral intention, use behavior and the acceptance of electronic learning systems: Differences between higher education and lifelong learning. *Computers in Human Behavior, 34*, 301-314.

Agyeman, O. T. (2007a). ICT for Education in Nigeria. *Survey of ICT and Education In Africa: Nigeria Country Report. Retrieved October, 24*, 2010.

Agyeman, O. T. (2007b). Survey of ICT and education in Africa: Nigeria country report.

Aiken, L. R. (1994). Some observations and recommendations concerning research methodology in the behavioral sciences. *Educational and Psychological Measurement, 54*(4), 848-860.

Ajayi, A. (2008). Towards Effective use of Information and Communication Technology (ICT) for teaching in Nigeria Colleges of Education. *Asian Journal of Information Technology, 7*(5), 210-214.

Ajzen, I. (1985). From Intentions to Actions: A Theory of Planned Behavior. In J. Kuhl & J. Beckmann (Eds.), *Action Control* (pp. 11-39): Springer Berlin Heidelberg.

Ajzen, I. (1989). Attitude structure and behavior. *Attitude structure and function*, 241-274.

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes, 50*(2), 179-211.

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behaviour.

Ajzen, I., & Fishbein, M. (2000). Attitudes and the attitude-behavior relation: Reasoned and automatic processes. *European review of social psychology, 11*(1), 1-33.

Alharbi, S., & Drew, S. (2014). Using the Technology Acceptance Model in Understanding Academics' Behavioural Intention to Use Learning Management Systems. *(IJACSA) International Journal of Advanced Computer Science and Applications, 5*(1).

Amoor, S. S. (2010). The need to improve teacher quality in business education in Nigerian universities. *International Journal of Education Research, 11*(1).

Anandarajan, M., Igbaria, M., & Anakwe, U. P. (2002). IT acceptance in a less-developed country: a motivational factor perspective. *International Journal of Information Management, 22*(1), 47-65.

Anao, A. (1986). The role of business education in a developing economy. *Business Education Journal, 2*(1), 12.

Anunobi, V. N. (2015). *A Study of the Information and Communication Technology Use among Student-Teachers in Universities in North Central Nigeria.* Paper presented at the Information and Knowledge Management.

Arekete, S., Ifinedo, P., & Akinnuwesi, B. A. (2014). Antecedent Factors to End-Users' Symbolic Acceptance of Enterprise Systems: An Analysis in Nigerian Organizations.

Ary, D., Jacobs, L. C., Sorensen, C., & Razavieh, A. (2010). *Introduction to Research in education* (8th ed.). Belmont, CA. : Wadsworth, Cengage Learning.

Asenso-Okyere, K., & Mekonnen, D. (2012). The importance of ICTs in the provision of information for improving agricultural productivity and rural incomes in Africa. *African Human Development Report. UNDP Sponsored research Series*.

Asogwa, E.B. (2013). Electronic government as a paradigm shift for efficient public services: Opportunities and challenges for Nigerian Government. *Library Hi Tech, 31*(1), 141-159.

Asogwa, E.B. (2013). The Readiness of Universities in Managing Electronic Records: A Study of Three Federal Universities in Nigeria. *Electronic Library, The, 31*(6), 9-9.

Atkinson, M., & Kydd, C. (1997). Individual characteristics associated with World Wide Web use: an empirical study of playfulness and motivation. *ACM SIGMIS Database, 28*(2), 53-62.

Bagozzi, R. P. (2007). The Legacy of the Technology Acceptance Model and a Proposal for a Paradigm Shift. *Journal of the Association for Information Systems, 8*(4), 3.

Bajaj, A., & Nidumolu, S. R. (1998). A feedback model to understand information system usage. *Information & Management, 33*(4), 213-224.

Barki, H., & Hartwick, J. (1994). Measuring user participation, user involvement, and user attitude. *MIS Quarterly*, 59-82.

Bartlett, J. E., Kotrlik, J. W., & Higgins, C. C. (2001). Organizational research: Determining appropriate sample size in survey research appropriate sample size in survey research. *Information technology, learning, and performance journal, 19*(1), 43.

Beasley, W. A., & Sutton, R. E. (1993). Integration of computers in schools: Three levels of teacher expertise. *Journal of Computing in Teacher Education, 9*(4), 11-15.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological bulletin, 107*(2), 238.

Bertia, P. (2010). *Measuring students attitude towards e-learning A case study*. Paper presented at the 5th standing conference on e-learning and software for development Bucharist Romania

Binder, M., & Niederle, U. (2007). Institutions as determinant of preference change: Max Planck Working Paper.

Boomsma, A., & Hoogland, J. J. (2001). The robustness of LISREL modeling revisited. *Structural equation models: Present and future. A Festschrift in honor of Karl Jöreskog*, 139-168.

British Educational Communications and Technology Agency (Becta). (2000). *ICT planning, purchasing and good practice for the National Grid for Learning*. Coventry: Becta.

Bullock, J. B., & Fuchs, A. (2004). System and method for storing and using information associated with geographic locations of interest to a mobile user: Google Patents.

Byrne, B. M. (2013). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*: Routledge.

Cheok, M. L., & Wong, S. L. (2015). Predictors of E-Learning Satisfaction in Teaching and Learning for School Teachers: A Literature Review. *International Journal of Instruction, 8*(1).

Cheung, C. M., Lee, M. K., & Chen, Z. (2002). *Using the Internet as a learning medium: an exploration of gender difference in the adoption of FaBWeb.* Paper presented at the System Sciences, 2002. HICSS. Proceedings of the 35th Annual Hawaii International Conference on.

Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). New York: Jonh Willey & Sons.

Cohen, L., Manion, L., & Morrison, K. (2011). Research methods in education. Milton Park. *Abingdon, Oxon,[England]: Routledge*.

Compeau, D. R., & Higgins, C. A. (1995a). Application of social cognitive theory to training for computer skills. *Information Systems Research, 6*(2), 118-143.

Compeau, D. R., & Higgins, C. A. (1995b). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly*, 189-211.

Crank, F., & Crank, D. (1977). Historical perspectives of education for business. *Curriculum development in education for business*, 1-18.

Creswell, J. W. (2012). *Qualitative inquiry and research design: Choosing among five approaches*: Sage publications.

Daniel, J. (2011). *Sampling essentials: Practical guidelines for making sampling choices*: Sage Publications.

David, O. N. (2012). Using Mixed Method Approach to Understand Acceptance and Usage of ICT in Nigerian Public University. *International Journal of Computers & Technology, 2*(3), 47-63.

Davis. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly, 13*(3), 319-340. doi: 10.2307/249008

Davis, F., Bagozzi, R., & Warshaw, P. (1992). Extrinsic and intrinsic motivation to use computers in the workplace1. *Journal of applied social psychology, 22*(14), 1111-1132.

Davis, F. (1993). User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. *International journal of man-machine studies, 38*(3), 475-487.

Davis, F., Bagozzi, R., & Warshaw, P. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management science, 35*(8), 982-1003.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 319-340.

Delaviz, R., Andrade, N., Pouwelse, J. A., & Epema, D. H. (2012). 2012 IEEE 32nd International Conference on Distributed Computing Systems.

DeVellis, R. F. (2003). *Scale Development: Theory and Applications*. Newbury Park, CA: Sage: .

Dishaw, M. T., & Strong, D. M. (1999). Extending the technology acceptance model with task–technology fit constructs. *Information & Management, 36*(1), 9-21.

Duyck, P., Pynoo, B., Devolder, P., Voet, T., Adang, L., & Vercruysse, J. (2008). User acceptance of a picture archiving and communication system. Applying the unified theory of acceptance and use of technology in a radiological setting. *Methods of information in medicine, 47*(2), 149-156.

Eagly, A. H., & Chaiken, S. (2007). The advantages of an inclusive definition of attitude. *Social Cognition, 25*(5), 582-602.

Eagly Alice, & Chaiken, S. (1998). Attitude Structure and Function. In D. T. Gilbert, S. T. Fisk, & G. Lindsey (Eds.), *Handbook of Social Psychology* (pp. 269–322). New York:: McGowan-Hill.

Echeng, R., & Usoro, A. (2014). Acceptance Factors and Current Level of Use of Web 2.0 Technologies for Learning in Higher Education: a Case Study of Two Countries.

Egbri, J. N. (2012). Assessment of the use of ICT in the teaching and learning of Business Education in University of Benin. *BusinessEducationJournal*, *VIII*(2), 290-303.

Ekpenyong, L. E., & Nwabuisi, J. (2003). Business teacher education in Nigeria: projecting a new direction. *Journal of Vocational Education and Training, 55*(1), 33-46.

Ellen, P. S., Bearden, W. O., & Sharma, S. (1991). Resistance to technological innovations: an examination of the role of self-efficacy and performance satisfaction. *Journal of the academy of marketing science, 19*(4), 297-307.

Ezeani, N., & Akpotohwo, F. C. (2014). Integrating Information and Communication Technology (ICT) in Accounting Education Instruction in Ekiti State Universities.

Fadare, O. G., Babatunde, O. H., & Theophilus, D. (2011). Behavioral Intention for Mobile Learning on 3G Mobile Internet Technology in South-West Part of Nigeria. *World Journal of Engineering and Pure and Applied Sciences, 1*(2), 19-28. Fafunwa, A. (1983). Development of Education in Nigeria. Trends and Issues in Nigerian Education. *Ife: University of Ife Press Ltd*.

Federal Ministry of Education. (2004). *Ministerial initiative on e-education for Nigerian education system*. Abuja, Nigeria.

Federal Republic of Nigeria. (2000). *National Policy on Telecommunications - Abuja: Ministry of Communication*. Abuja, Nigeria.

Federal Republic of Nigeria. (2001). *Nigeria National Policy for Information Technology (IT)*. Abuja, Nigeria.

Fishbein, M. (1979). A theory of reasoned action: some applications and implications.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*.

Fishbein, M., & Ajzen, I. (2011). *Predicting and changing behavior: The reasoned action approach*: Taylor & Francis.

Fornell, C. (1982). A Second Generation of Multivariate analysis, New York: Praeger Publishers.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (Eds.). (2012). *How to design and evaluate research in education.* (8th ed.). New York: McGraw-Hill

French, J. R., & Raven, B. (1959). The bases of social power *Studies in social power* (Dorwin (Ed), ed., pp. 150-167). Oxford, England: Univer. Michigan.

Garland, & Noyes, J. (2005). Attitudes and confidence towards computers and books as learning tools: a cross-sectional study of student cohorts. *British Journal of Educational Technology, 36*(1), 85-91.

Garland, & Noyes, J. (2008). Computer attitude scales: How relevant today? *Computers in Human Behavior, 24*(2), 563-575.

Gaskin, J. (2012, Sptember 2014). Statswiki General Guidelines. Retrieved from http://statwiki.kolobkreations.com

Gaskin, J. (2014). SEM BootCamp 2014 Day 1 Morning. *Gaskination's Statistics. Stats Tools Package:*. [Video] Retrieved from http://youtube.com/Gaskination

George, D., & Mallery, P. (2008). *SPSS for Windows Step by Step: A Simple Study Guide and Reference, 15.0 Update,* (8th ed.). Boston, MA: Pearson Education.

Government Of Eastern Nigeria. (1955). *Economic Rehabilitation of Eastern Nigeria: Report of Economic Mission to Europe and North America*. (Sessional Paper No.6). Enugu: The Government Printer.

Gupta, B., Dasgupta, S., & Gupta, A. (2008). Adoption of ICT in a government organization in a developing country: An empirical study. *The Journal of Strategic Information Systems, 17*(2), 140-154.

Hair, J., Black, W., Babin, B., & Anderson, R. (2010). Multivariate Data Analysis: Global Edition. London: Pearson Higher Education

Harrington, D. (2009). Confirmatory Factor Analysis.(Pocket Guides to Social Work Research Methods Series): New York: Oxford University Press.

Henry, J. W., & Stone, R. W. (1997). The development and validation of computer self-efficacy and outcome expectancy scales in a nonvolitional context. *Behavior Research Methods, Instruments, & Computers, 29*(4), 519-527.

Henry, J. W., & Stone, R. W. (1999). The impacts of end-user gender, education, performance, and system use on computer self-efficacy and outcome expectancy. *Southern Business Review, 25*(1), 10-16.

Hermans, R., Tondeur, J., van Braak, J., & Valcke, M. (2008). The impact of primary school teachers' educational beliefs on the classroom use of computers. *Computers & Education, 51*(4), 1499-1509.

Hill, T., Smith, N. D., & Mann, M. F. (1987). Role of efficacy expectations in predicting the decision to use advanced technologies: The case of computers. *Journal of applied psychology, 72*(2), 307.

Ho, R. (2006). *Handbook of univariate and multivariate data analysis and interpretation with SPSS*: CRC Press.

Ho, S. S., Poorisat, T., Neo, R. L., & Detenber, B. H. (2014). Examining how presumed media influence affects social norms and adolescents' attitudes and drinking behavior intentions in rural Thailand. *Journal of health communication, 19*(3), 282-302.

Hoe, S. L. (2008). Issues and procedures in adopting structural equation modeling technique. *Journal of Applied quantitative methods, 3*(1), 76-83.

Howell, S. L., Williams, P. B., & Lindsay, N. K. (2003). Thirty-two trends affecting distance education: An informed foundation for strategic planning. *Online Journal of Distance Learning Administration, 6*(3).

Hsu, C.-L., & Lin, J. C.-C. (2008). Acceptance of blog usage: The roles of technology acceptance, social influence and knowledge sharing motivation. *Information & Management, 45*(1), 65-74.

Huang, Y.-F., Kuo, F.-Y., Luu, P., Tucker, D., & Hsieh, P.-J. (2015). Hedonic evaluation can be automatically performed: An electroencephalography study of website impression across two cultures. *Computers in Human Behavior, 49*, 138-146.

Igbaria, M., & Iivari, J. (1995). The effects of self-efficacy on computer usage. *Omega, 23*(6), 587-605.

Igbaria, M., Iivari, J., & Maragahh, H. (1995). Why do individuals use computer technology? A Finnish case study. *Information & Management, 29*(5), 227-238.

Iloanusi, N. O., & Osuagwu, C. C. (2009). ICT in Education: Achievements so far in Nigeria. *Research, Reflections and Innovations in Integrating ICT in Education*, 1331-1335.

Im, K. S., & Grover, V. (2004). Equation Modeling in IS Research: Review and Recommendations. *The handbook of information systems research*, 44.

International Telecommunicaion Union. (2013). The World in 2013 *ICT Facts and Figures*. Geneva, Switzerland.

International Telecommunication Union. (2011). Measuring the Information Society. Geneva, Switzerland.

International Telecommunication Union. (2012). Measuring the Information Society. Geneva, Switzerland.

International Telecommunication Union. (2013a). Measuring the Information Society. Geneva, Switzerland.

International Telecommunication Union. (2013b). Measuring the Information Society: Executive Summary. Geneva, Switzerland.

International Telecommunication Union. (2014a). Manual for Measuring ICT Access and Use by Households and Individuals (2014 ed.). Geneva Switzerland.

International Telecommunication Union. (2014b). The World in 2014 *ICT Facts and Figures*. Geneva Switzerland.

Internet World Stats. (2013). Usage and Population Statistics. from http://www.internetworldstats.com/

Internet World Stats. (2014). Usage and Population Statistics. from http://www.internetworldstats.com/

Isiyaku, D. D. (2009). Applying information technology in business education. *Bichi Journal of Business Education (BIJOBE), 2*(1).

Jackson, C. M., Chow, S., & Leitch, R. A. (1997). Toward an understanding of the behavioral intention to use an information system. *Decision Sciences, 28*(2), 357-389.

Jegede, Dibu-Ojerinde, O., & Ilori, M. (2007). Relationships between ICT competence and attitude among some Nigerian tertiary institution lecturers. *Educational Research and Review, 2*(7), 172-175.

Jhurree, V. (2005). Technology Integration in Education in Developing Countries: Guidelines to Policy Makers. *International Education Journal, 6*(4), 467-483.

Johanson, G. A., & Brooks, G. P. (2009). Initial scale development: sample size for pilot studies. *Educational and Psychological Measurement*.

Kadel, R. (2005). How Teacher Attitudes Affect Technology Integration. *Learning & leading with technology, 32*(5), 34-35.

Kavanoz, S., Yüksel, H. G., & Özcan, E. (2015). Pre-service teachers' self-efficacy perceptions on Web Pedagogical Content Knowledge. *Computers & Education, 85*, 94-101.

Kelman, H. C. (1958). Compliance, identification, and internalization: Three processes of attitude change. *The Journal of conflict resolution, 2*(1), 51-60.

Kelman, H. C. (1961). Processes of opinion change. *Public opinion quarterly, 25*(1), 57-78.

Kersaint, G. (2003). Technology beliefs and practices of mathematics education faculty. *Journal of Technology and Teacher Education, 11*(4), 549-577.

Kim, S. H. (2008). Moderating effects of job relevance and experience on mobile wireless technology acceptance: Adoption of a smartphone by individuals. *Information & Management, 45*(6), 387-393.

Klem, L. (2000). Structural equation modeling.

Kline, R. B. (2011). *Principles and practice of structural equation modeling*: Guilford press.

Krysik, J., & Finn, J. (2013). *Research for effective social work practice*: Routledge.

Larkin, T. L., & Belson, S. (2005). Blackboard technologies: A vehicle to promote student motivation and learning in physics. *Journal of STEM Education, 6*(1/2), 14-27.

Legris, P., Ingham, J., & Collerette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information & Management, 40*(3), 191-204.

Lei, P. W., & Wu, Q. (2007). Introduction to structural equation modeling: Issues and practical considerations. *Educational Measurement: Issues and Practice, 26*(3), 33-43.

Leonard-Barton, D., & Kraus, W. A. (1985). Implementing new technology. *Journal Name: Harv. Bus. Rev.; (United States); Journal Volume: 63:6; Other Information: JPTS-CST--85-023, 18 July 1985*, Medium: X; Size: Pages: 102-110.

Lim, C. P., & Khine, M. (2006). Managing teachers' barriers to ICT integration in Singapore schools. *Journal of Technology and Teacher Education, 14*(1), 97-125.

Lohmöller, J.-B. (1989). *Latent variable path modeling with partial least squares*: Physica-Verlag Heidelberg.

Lomax, R. G., & Schumacker, R. E. (2012). *A beginner's guide to structural equation modeling*: Routledge Academic.

López-Nicolás, C., Molina-Castillo, F. J., & Bouwman, H. (2008). An assessment of advanced mobile services acceptance: Contributions from TAM and diffusion theory models. *Information & Management, 45*(6), 359-364.

Lowry, P. B., & Gaskin, J. (2014). *Partial least squares (PLS) structural equation modeling (SEM) for building and testing behavioral causal theory: When to choose it and how to use it*

Luan, W. S., & Teo, T. (2009). Investigating the technology acceptance among student teachers in Malaysia: An application of the Technology Acceptance Model (TAM). *The Asia-Pacific Education Researcher, 18*(2), 261-272.

Madden, T. J., Ellen, P. S., & Ajzen, I. (1992). A comparison of the theory of planned behavior and the theory of reasoned action. *Personality and social psychology Bulletin, 18*(1), 3-9.

Mann, D. (1999). *West Virginia Story: Achievement gains from a statewide comprehensive instructional technology program*. Virginia: Milken Exchange Retrieved from www.milkenexchange.org.

Marcinkiewicz, H. R. (1994). Computers and Teachers: Factors Influencing Computer Use in the Classroom. *Journal of Research on Computing in Education, 26*(2), 220-237.

Marsh, H. W., & Hocevar, D. (1988). A new, more powerful approach to multitrait-multimethod analyses: Application of second-order confirmatory factor analysis. *Journal of applied psychology, 73*(1), 107.

Mathieson, K. (1991). Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research, 2*(3), 173-191.

Mbaba, A., & Shema, I. (2012). Analysis of the Frequency of Academic Staff and StudentsUse of Information and Communication Technology (ICT). *Mediterranean Journal of Social Sciences*.

McDonald, R. P., & Ho, M.-H. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological methods, 7*(1), 64.

McInerney, V., McInerney, D. M., & Sinclair, K. E. (1994). Student teachers, computer anxiety and computer experience. *Journal of Educational Computing Research, 11*(1), 27-50.

McQuitty, S. (2004). Statistical power and structural equation models in business research. *Journal of Business Research, 57*(2), 175-183.

Mills, G., Airasian, P., & Gay, L. (2012). Educational research: Competencies for analysis and application: Englewood Cliffs, NJ: Prentice Hall.

Mohd, A. F. M., Mokhtar, M. Z., Wong, S. L., & Tarmizi, R. A. (2010). A comparison of two different technologies tools in tutoring Calculus. *Procedia-Social and Behavioral Sciences, 2*(2), 481-486.

Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research, 2*(3), 192-222.

Morgan, G. A., Leech, N. L., Gloeckner, G. W., & Barrett, K. C. (2007). *IBM SPSS for Introductory Statistics: Use and Interpretation* (3rd ed.). Mahwah, New Jersey - London: Lawrence Erlbaum Associates.

Mountjoy, K. J. (2007). Perceptions of Business Educators Concerning Change and Adaptation in Business Teacher Education Programs at Two Midwestern Universities.

Mudasiru, Y., & Modupe, B. (2011). Student-Teachers' Competence and Attitude towards Information and Communication Technology: A Case Study in a Nigerian University. *Contemporary Educational Technology, 2*(1), 18-36.

Murillo Montes de Oca, A., & Nistor, N. (2014). Non-significant intention–behavior effects in educational technology acceptance: A case of competing cognitive scripts? *Computers in Human Behavior, 34*, 333-338.

National Bureau of Statistics. (2014). State Information. Retrieved 25th March, 2014, from http://nigerianstat.gov.ng/information

Ngai, E. W., Poon, J., & Chan, Y. (2007). Empirical examination of the adoption of WebCT using TAM. *Computers & Education, 48*(2), 250-267.

Nigerian Commission for Colleges of Education. (2014). List of Colleges of Education in Nigeria. Retrieved 25th March, 2014, from http://www.ncceonline.edu.ng/colleges.php

Nigerian Population Commission. (2014). Data for National Development. Retrieved 25th March, 2014, from http://www.population.gov.ng/index.php/state-population

Odedra, M., Bennett, M., Goodman, S., & Lawrie, M. (1993). Sub-Saharan Africa: a technological desert. *Communications of the ACM, 36*(2), 25-29.

Oghogho, I., & Ezomo, P. (2013). ICT For National Development in Nigeria: Creating an Enabling Environment. *International Journal of Engineering, 3*(2), 2305-8269.

Ogunsola, L., & Aboyade, W. (2005). Information and Communication Technologyin Nigeria: Revolution or Evolution. *Journal of Social Sciences, 11*(1), 7-14.

Okolie, U. C. (2014). Roles of Instructional Materials and ICTs in Improving Quality of Technical and Vocational Education Training. *Journal of Education Policy and Entrepreneural Research, 1*(1), 59-68.

Okolie, U. C., Elom Elisha, N., Nwuzo Alphonsius, C., Inyiagu Emmanuel, E., & Ndem Joseph, U. (2014). Vocational Education for Youth Empowerment:

Entrepreneurial Development and the Missing Links in Higher Education Institutions. *Malaysian Online Journal of Educational Management, 2*(3).

Okolocha, C. C. (2012). Vocational technical education in Nigeria: Challenges and the way forward. *Business management dynamics, 2*(6), 1-8.

Okolocha, C. C., & Onyeneke, E. N. (2013). Secondary School Principals' Perception of Business Studies Teachers' Teaching Effectiveness in Anambra State, Nigeria. *Journal of Education and Practice, 4*(2), 171-179.

Okoro, O. M. (1993). *Principles and Methods in Vocational and Technical Education*. Enugu: University Trust Publishers.

Olasina, G., & Mutula, S. (2014). The Acceptance and Use of E-Books: A Group Study in Nigeria. *International Journal of Global Education, 3*(3).

Ololube, N. P. (2006). Appraising the relationship between ICT usage and integration and the standard of teacher education programs in a developing economy. *International Journal of Education and Development Using ICT, 2*(3).

Ololube, N. P. (2014). Managing and Planning Technology Usage and Integration in Teacher Education Programs in an Emergent Nation. *Effects of Information Capitalism and Globalization on Teaching and Learning*, 96.

Ololube, N. P., Egbezor, D. E., & Kpolovie, P. J. (2008). Education policies and teacher education programs: meeting the millennium development goals. *Journal of Teacher Education for Sustainability, 9*(1), 21-34.

Ololube, N. P., Ubogu, A. E., & Egbezor, D. E. (2007). ICT and distance education programs in a sub-Saharan African country: a theoretical perspective. *Journal of Information Technology Impact, 7*(3), 181-194.

Olusola Olayiwola, I., & Alimi, K. M. (2015). Preparedness of Colleges of Education in Southwestern Nigeria for the Adoption of Blended Learning. *Journal of Education and Learning (EduLearn), 9*(1), 25-34.

Onwuagboke, B. B. C., Singh, T. K. R., & Fook, F. S. (2015). Need for ICT Integration for Effective Instructional Delivery in Nigerian Colleges of Education. *Journal of Education and Practice, 6*(3), 51-56.

Onyia, C., & Offorma, G. C. (2011). Learning Style Preferences of Nigerian University Undergraduates: Implications for New Faculty Development Model. *Learning in Higher Education*, 145.

Osuala, E. C. (Ed.). (2004). *Foundations of Vocational Education.* Enugu: Cheston Agency Ltd.

Oxford Business Group. (2014, 18th September). Nigeria gears up for ICT growth. Retrieved 17th October, 2014, 2014, from http://www.oxfordbusinessgroup.com/news/nigeria-gears-ict-growth

Oye, N., Iahad, N., & Rabin, Z. A. (2011). A model of ICT acceptance and use for teachers in higher education institutions. *International Journal of Computer Science & Communication Networks, 1*(1), 21-40.

Oye, N., Iahad, N., & Rahim, N. A. (2012). The history of UTAUT model and its impact on ICT acceptance and usage by academicians. *Education and Information Technologies*, 1-20.

Oye, N., Iahad, N., & Rahim, N. A. (2014). The history of UTAUT model and its impact on ICT acceptance and usage by academicians. *Education and Information Technologies, 19*(1), 251-270.

Pallant, J. (2010). *SPSS survival manual: A step by step guide to data analysis using SPSS*: McGraw-Hill International.

Pelgrum, W. J. (2001). Obstacles to the integration of ICT in education: results from a worldwide educational assessment. *Computers & Education, 37*(2), 163-178.

Pituch, K. A., & Lee, Y.-k. (2006). The influence of system characteristics on e-learning use. *Computers & Education, 47*(2), 222-244.

Prasad, C. V., Lalitha, P., & Srikar, P. (2015). Barriers to the Use of Information and Communication Technology (ICT) in Secondary Schools: Teacher's Perspective. *Journal of Management Research, 7*(2), 190-208.

Pynoo, B., Devolder, P., Tondeur, J., Van Braak, J., Duyck, W., & Duyck, P. (2011). Predicting secondary school teachers' acceptance and use of a digital learning environment: A cross-sectional study. *Computers in Human Behavior, 27*(1), 568-575.

Pynoo, B., Tondeur, J., Van Braak, J., Duyck, W., Sijnave, B., & Duyck, P. (2012). Teachers' acceptance and use of an educational portal. *Computers & Education, 58*(4), 1308-1317.

Pynoo, B., & van Braak, J. (2014). Predicting teachers' generative and receptive use of an educational portal by intention, attitude and self-reported use. *Computers in Human Behavior, 34*, 315-322.

Rana, N. (2013). A Study to assess Teacher Educators' Attitudes towards Technology Integration in Classrooms. *MIER Journal of Educational Studies, Trends and Practices, 2*(2).

Rastogi, A., & Malhotra, S. (2013). ICT Skills and Attitude as Determinants of ICT Pedagogy Integration.

Reports On Naija. (2012). The Six Geo-Political Zones of Nigeria. Retrieved from http://reportsonnaija.blogspot.com/2012/07/six-geo-political-zones-of-nigeria.html

Rienties, B., & Townsend, D. (2012). Integrating ICT in business education: using TPACK to reflect on two course redesigns *Learning at the Crossroads of Theory and Practice* (pp. 141-156): Springer.

Robinson, P. B., Stimpson, D. V., Huefner, J. C., & Hunt, H. K. (1991). An attitude approach to the prediction of entrepreneurship. *Entrepreneurship Theory and Practice, 15*(4), 13-31.

Salkind, N. J. (1997). *Exploring research* (3rd ed.). Prentice Hall: Upper Saddle River, NJ.

Samah, B. A. (2014). *Structural Equation using Amos*. Seminar. Institute for Social Science Studies. Universiti Putra Malaysia.

Schepers, J., & Wetzels, M. (2007). A meta-analysis of the technology acceptance model: Investigating subjective norm and moderation effects. *Information & Management, 44*(1), 90-103.

Schumacker, E., & Lomax, R. (2010). Structural equation modeling: New York: Routledge, Taylor & Francis Group.

Smith, Caputi, & Rawstorne. (2000). Differentiating computer experience and attitudes toward computers: an empirical investigation. *Computers in Human Behavior, 16*(1), 59-81.

Straub, D., Limayem, M., & Karahanna-Evaristo, E. (1995). Measuring system usage: implications for IS theory testing. *Management science, 41*(8), 1328-1342.

Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research, 6*(2), 144-176.

Teo, T. (2008). Pre-service teachers' attitudes towards computer use: A Singapore survey. *Australasian Journal of Educational Technology, 24*(4), 413-424.

Teo, T. (2009). The impact of subjective norm and facilitating conditions on pre-service teachers' attitude toward computer use: A structural equation modeling of an extended technology acceptance model. *Journal of Educational Computing Research, 40*(1), 89-109.

Teo, T. (2010). Validation of the technology acceptance measure for pre-service teachers (TAMPST) on a Malaysian sample: A cross-cultural study. *Multicultural Education & Technology Journal, 4*(3), 163-172.

Teo, T. (2011). Factors influencing teachers' intention to use technology: Model development and test. *Computers & Education, 57*(4), 2432-2440. doi: http://dx.doi.org/10.1016/j.compedu.2011.06.008

Teo, T. (2015). Comparing pre-service and in-service teachers' acceptance of technology: Assessment of measurement invariance and latent mean differences. *Computers & Education, 83*, 22-31.

Teo, T., Lee, C. B., & Chai, C. S. (2008). Understanding pre-service teachers' computer attitudes: applying and extending the technology acceptance model. *Journal of Computer Assisted Learning, 24*(2), 128-143.

Teo, T., Lee, C. B., Chai, C. S., & Wong, S. L. (2009). Assessing the intention to use technology among pre-service teachers in Singapore and Malaysia: A multigroup invariance analysis of the Technology Acceptance Model (TAM). *Computers & Education, 53*(3), 1000-1009. doi: http://dx.doi.org/10.1016/j.compedu.2009.05.017

Teo, T., & Zhou, M. (2014). Explaining the intention to use technology among university students: a structural equation modeling approach. *Journal of Computing in Higher Education*, 1-19.

Tezci, E. (2011). Factors that influence pre-service teachers' ICT usage in education. *European Journal of Teacher Education, 34*(4), 483-499.

Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: toward a conceptual model of utilization. *MIS Quarterly*, 125-143.

Thorelli, H. (2008). Simulation as virtual reality in international-business education. *Research in Global Strategic Management, 14*, 309-324.

Tilbury, D., & Ryan, A. (2011). Today becomes tomorrow: Re-thinking business practice, education and learning in the context of sustainability. *Journal of Global Responsibility, 2*(2), 137-150.

Tinsley, H. E., & Tinsley, D. J. (1987). Uses of factor analysis in counseling psychology research. *Journal of counseling psychology, 34*(4), 414.

Turner, M., Kitchenham, B., Brereton, P., Charters, S., & Budgen, D. (2010). Does the technology acceptance model predict actual use? A systematic literature review. *Information and Software Technology, 52*(5), 463-479.

Ubulom, W., Enyekit, E., & Onuekwa, F. (2011). Analysis of ICT Accessibility and Utilization in Teaching of Business Studies in Secondary Schools in Adoni Local Government Area of Rivers State. *Academic Research, 1*.

Udoye, N. R., & Ndum, V. E. (2014). Reinvigorating business teacher education towards self-reliance in Nigeria. *International Letters of Social and Humanistic Sciences*(08), 130-139.

Ugwuogo, C. C. (2013). Business Education and National Development: Issues and Challenges. *Journal of Educational and Social Research, 3*(4), 129.

Ulinfun, F. E. (1986). Business Education – A 'Utility' Education in a Developing Economy. *Business Education Journal, 1*(1).

Umoru, T. A. (2012). Barriers To The Use Of Information And Communication Technologies In Teaching And Learning Business Education. *American Journal of Business Education (AJBE), 5*(5), 575-580.

United Nations Educational Scientific and Cultural Organization. (2002). *Information and Communication Technologies in Teacher Education*.

United Nations Educational Scientific and Cultural Organization. (2009). Guide to measuring information and communication technologies (ICT) in education.

United Nations Educational Scientific and Cultural Organization. (2010). ICT transforming education: A regional guide. *Asia and Pacific Regional Bureau for Education* (Bangkok 10110. Thailand ed.). Bangkok, Thailand.

Valtonen, T., Kukkonen, J., Kontkanen, S., Sormunen, K., Dillon, P., & Sointu, E. (2015). The impact of authentic learning experiences with ICT on pre-service teachers' intentions to use ICT for teaching and learning. *Computers & Education, 81*, 49-58.

Van der Heijden, H. (2004). User acceptance of hedonic information systems. *MIS Quarterly*, 695-704.

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research, 11*(4), 342-365.

Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences, 39*(2), 273-315.

Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: Development and test*. *Decision sciences, 27*(3), 451-481.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies. *Management science, 46*(2), 186-204.

Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly*, 115-139.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 425-478.

Verkasalo, H., López-Nicolás, C., Molina-Castillo, F. J., & Bouwman, H. (2010). Analysis of users and non-users of smartphone applications. *Telematics and Informatics, 27*(3), 242-255.

Walker, S. K., & Kim, H. (2015). Family Educators' Technology Use and Factors Influencing Technology Acceptance Attitudes. *Family and Consumer Sciences Research Journal, 43*(4), 328-342.

Wang, J., & Wang, X. (2012). *Structural equation modeling: Applications using Mplus*: John Wiley & Sons.

Webb, M. B., Dowd, K., Harden, B. J., Landsverk, J., & Testa, M. (2009). *Child welfare and child well-being: New perspectives from the national survey of child and adolescent well-being*: Oxford University Press.

Webster, J., & Martocchio, J. J. (1992). Microcomputer playfulness: development of a measure with workplace implications. *MIS Quarterly*, 201-226.

West, S., Taylor, A., & Wu, W. (2012). Model fit and model selection in structural equation modeling. *Handbook of structural equation modeling*, 209-231.

Wilkinson, P., & Schilt, J. (2008). *ABC of Ict: An Introduction to the Attitude, Behavior and Culture of Ict*: Van Haren Publishing.

Williams, B. A. O. (1981). *Persons, character and morality*.

Wold, H. (1982). Soft modelling: the basic design and some extensions. *Systems Under Indirect Observation, PartII*, 36-37.

World Economic Forum. (2013). The Global Competitiveness Report. In K. Schwab (Ed.), (Full Data Edition ed.). Switzerland: Columbia University.

Yusuf, M. O. (2005a). Information and communication technology and education: Analysing the Nigerian national policy for information technology. *International Education Journal, 6*(3), 316-321.

Yusuf, M. O. (2005b). An investigation into teachers' self-efficacy in implementing computer education in Nigerian secondary schools. *Meridian: A Middle School Computer Technologies Journal, 8*(2).

Yusuf, M. O., & Yusuf, H. T. (2009). Educational reforms in Nigeria: The potentials of information and communication technology (ICT). *Educational Research and Reviews, 4*(5), 225-230.

Zainudin, A. (2012). Structural Equation Modelling Using Amos Graphic. *Shah Alam: Universiti Teknologi MARA Publication Centre (UPENA).*