ATHABASCA UNIVERSITY

GREATER ACCESS TO HIGHER EDUCATION THROUGH COMMUNICATION TECHNOLOGIES IN SUB-SAHARAN AFRICA: E-LEARNING READINESS OF DISTANCE EDUCATION STUDENTS IN NIGERIA.

BY

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Approval of Thesis

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Dedication

This thesis is dedicated to my late parents, Jacob and Alice Edemadide, for their commitment to equal educational opportunities for the girl child, belief in success through hard work, passion for excellence, confidence in my abilities, and last but not the least, their faith in God. These are the values that have seen me through life thus far, and without which, completing these studies would have been far less gratifying.

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Abstract

This concurrent mixed methods study sought to determine e-learning readiness by distance education students in Nigeria based on their level of communication technology usage and perceptions of distance education delivery methods, and comparing learning experiences via the Internet and via study centre methods in Nigeria. This exploratory study using quantitative survey instrument measured the current levels of students' technology usage, while qualitative interview instrument was used to examine students' perceptions, attitudes and experiences of communication technology by distance education students in Nigeria. The results of this study reported high communication technology usage based on the high level of smart phone ownership and Internet browsing, high level of personal computer usage, high level of internet social networking, and high positive response for online learning, among other positive indicators. Consequently, the research findings seemed to indicate that distance education students surveyed are highly enthusiastic and are ready for e-learning in Nigeria.

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List of Abbreviations

ARCS – Attention, Relevance, Confidence and Satisfaction
AUF – Agencé Universitaire de la Francophone
CBHE – Cross-Border Higher Education
DLI – Distance Learning Institute (University of Lagos, Nigeria)
FME – Federal Ministry of Education
JAMB – Joint Admission and Matriculation Board
NCC – Nigerian Communications Commission
NOUN – National Open University of Nigeria
NPE – National Policy on Education
NUC – National University Commission
TAM – Technology Adoption Model
UBE – Universal Basic Education
UEPR – University Education Participation Rate
UNESCO – United Nations Education Science and Cultural Organization

Glossary

Communication technology is made up of diverse tools such as, computers, electronic media and mobile devices, synchronous and asynchronous platforms and the Internet among others, which are increasingly being employed by users for searching and exploring, analyzing and computing, exchanging and presenting information in a fast changing world of work, networking, education and other activities.

Developing countries according to the World Bank are low- and middle-income countries, that is, countries with less than Gross National Income (GNI) per capita of US$3,975. But notes that this term is convenient, it is not intended to imply that all economies in the group are experiencing similar development or that other economies have reached a preferred or final stage of development.

E-Learning Readiness according to Chapnick (2000), is used to represent an evaluation of students' level of technology adoption and students' preparedness for on-line or web-based learning. In this study, e-learning readiness refers to students' preparedness in terms of their level of motivation, technical and study skills necessary for web-based or communication technology-mediated learning.

Emerging countries are political entities that are in their early stages of becoming industrialized and undergoing economic growth and foreign investment (QFINANCE, 2010).

Higher education in this study refers to a level of education provided by universities, polytechnics and colleges. Programmes with an educational content composed of largely theoretically based programmes intended to provide sufficient qualifications for gaining entry to advanced research programmes and professions with high skill requirements (ISCED97) - International Standard Classification of Education (ISCED) was designed by UNESCO in the early 1970's).

Nigeria is located in Western Africa on the Gulf of Guinea and has a total area of 923,768 km^2 (356,669 sq. miles). The country shares land borders with the Republic of Benin in the west, Chad and Cameroon in the east, and Niger in the north. Nigeria is the most populous country in Africa. More than half of the population in West African (about one hundred and fifty million people) reside in Nigeria (Appendix A).

Students' Perceptions refers to learners' recognition or appreciation of situations based on what was observed or thought (MacMillan Dictionary, 2012). It can also be defined as a student's mental interpretation of information noticed or discerned. In other words, it is a student's impression of an external stimulus.

Study Centre. The reading and studying of the printed course materials can take place at some designated location called Study Centres. Also face-to face tutorial facilitation is carried out by full-time and part-time facilitators through the year. These places are located across the geopolitical zones of the country. Some distance education students particularly those of dual mode institutions are expected to spend at least three months in the designated study centre yearly for face-to-face instruction and examinations.

Sub-Saharan Africa is a geographical term used to describe the area of the African continent (Appendix B) which lies south of the Sahara desert, or those African countries that are fully or partially located south of the desert. The region is distinct culturally as well as geographically from the North African sub-region. The term *sub-Saharan* also refers to Tropical Africa, which corresponds with the standard representation of north as above and south as below. Therefore, if strictly applied, the term Sub-Saharan would exclude South Africa, which lies outside of the Tropics.

Technology-Mediated Learning is also referred to as web-based learning, online learning, or information and communication technology (ICT) - mediated learning in this research study.

Universal Basic Education is the education policy of the Nigerian government on compulsory basic education for the Nigerian child, that is, equal access to qualitative elementary and junior high school education for every Nigerian child.

CHAPTER I

INTRODUCTION

Education is a fundamental human right of every person in the world, according to Universal Declaration of Human Rights (1948). The Nigerian National Policy on Education (NPE) of 2004 states that every child shall have equal right to educational opportunities, and higher education shall be accessible to all on the basis of merit. Globally, the socio-economic benefits of higher education to anyone no matter his/her socio-demographic characteristics cannot be overemphasized. In Nigeria and elsewhere, acquisition of higher education determines an individual's social status and economic competitiveness in the global market place. To meet these expectations, the Nigerian government introduced the Universal Basic Education (UBE), a programme developed to get all Nigerian children off the streets, back into schools and the classrooms. The Nigerian University Commission (NUC) and the Joint Admission and Matriculation Board (JAMB) are agencies of the Federal government established to ensure access, equity, and qualitative education at the tertiary level in the country. It is anticipated that the graduates of the UBE program, as from 2010, would be expected to increase further the numbers seeking higher education in the country (Okebukola, 2006). Consequently, it is likely that the demand for higher education will continue to grow unabated for many years. The story is not different in other parts of Africa such as Botswana. Richardson (2009) argued that the provision of tertiary education has not expanded at the same rate as basic education; net enrolment rate is less than 12% and by 2016 one of eight students would find a place in the university. There is clearly a huge shortfall in tertiary education provision, he concluded. In Ethiopia, with increasing secondary school graduation rates, demand for

higher education continues to grow at a breakneck pace (World Education Services, 2010). From 34,000 student enrolment in 2000/2001, it rose to more than 125,000 in 2007/2008.

Higher education systems in sub-Saharan Africa and Nigeria in particular are already overstretched (Fabiyi &Uzoka, 2009). Moti (2010) has also corroborated this fact of university over enrolments, stating that higher education institutions in Nigeria operate at higher carrying capacities than they were originally established to handle. For example, the university system was overloaded by about 17,000 students (18%) of the student population in 2007/2008 academic year (Moti, 2010). This number was the difference between the total candidates admitted (107,320) and the total carrying capacity (90,656) of the Nigerian university system.

According to Fabiyi and Uzoka (2009), NUC's inspection of universities in 2005 showed that 72% of universities were over-enrolled, overcrowded, over-populated and that facilities were obviously overstretched. To substantiate this claim, a research study conducted on the state of physical facilities in Nigerian universities showed that 89.9% of respondents (Heads of Departments) indicated that infrastructural facilities were overstretched in their institutions (Fabiyi & Uzoka, 2009).

Higher education institutions have long exceeded their carrying capacities even as demand continues to rise (Moti, 2010). As described by Adedipe (2007) and Moti (2010), carrying capacity is the maximum number of students that can be sustained by an institution in terms of available physical, human and material resources in the provision of quality education. Therefore, growing student population, increasing student enrolments, limited carrying capacity and the resultant overcrowding has put great strain on the Nigerian university system (Fabiyi & Uzoka, 2009).

Furthermore, the Nigerian Federal Ministry of Education (FME), while launching its roadmap for the education sector in 2009, also identified access, carrying capacity and

staff capacity as some of the problems facing the Nigerian education sector (British Council, 2011). Therefore, one critical challenge of the Nigerian government today is the need to expand access to higher education. Since higher education institutions have exceeded their carrying capacities (Moti, 2010), there is need, therefore, to consider alternatives or other options in the creation of greater access to higher education in the country. One of the ways the Nigerian government has responded to this challenge is by increasing Federal- and State-owned universities from six in 1972 to 73 in 2011 (NUC, 2011).

According to Akpotu and Akpochfo (2009), other countries in the sub-Saharan region have also followed the global trend in providing greater access to higher education through private ownership of higher educational institutions. In recent years, Ethiopia, Tanzania, Ghana and Nigeria, among others, have expanded access to higher education through privately-owned higher institutions (Akpotu & Akpochafo, 2009). For example, Ethiopia is hoping to transform from an agrarian society into a modern economy and society through a highly educated citizenry (World Education Services, 2010). The Ethiopian government in recent years is expanding higher education capacity through upgrades and mergers of existing colleges. However, this effort is hardly keeping pace with increase in demand for higher education.

In Nigeria, there are 45 licensed private universities, according to the NUC (2011). Even with these efforts at expanding access to higher education in Nigeria, especially in the last ten years, less than 20% of qualified candidates gain admission into higher institutions in the country (Akpotu & Akpochafo, 2009). Udom (2009) argued that demand has continually outstripped available spaces. Moti (2010) also corroborated that less than 20% of those who apply to the universities are admitted. This fact was upheld by the British Council (2011), stating that only 20% of Nigerian secondary school leavers

currently have access to places at the universities, thereby leaving many thousands without the chance to continue their education.

It may be valid to think, as an alternative measure to both public and private campus based learning, that distance educational methods could provide the needed access to higher education. This is especially significant, as accessibility, flexibility and affordability are at the heart of various distance education systems across the world (Moore & Kearsley, 2008). However, in Nigeria as in most other countries in the sub-Saharan region, few universities offer distance education or operate open learning systems. For example, only four universities offer dual mode distance education opportunities in Nigeria (Ipaye, 2007). The establishment of the National Open University by the Federal government in 2003 has been a good start but the numbers enrolled have not kept pace with demand and the institution falls short of addressing the issue of limited access to higher education in the country. Study centre delivery methods, that is, "brick and mortar" infrastructures adopted by distance education institutions, seem to limit flexibility, which is a benefit that distance education offers (Moore & Kearsley, 2008). This limitation could be mitigated by the power of web-based, modern day communication technologies that provide opportunities for students to study anywhere and anytime.

In recent years, the commencement of dialogue on Cross-Border Higher Education (CBHE), and the proposed collaboration between the British Council and the Nigerian government is another positive step towards creating greater access to higher education in Nigeria (British Council, 2011). The CBHE programme is expected to provide expanded opportunities through three partnership models: the twinning model, the branch campus model and the open and distance learning model. In order to avoid the limitations of study centre distance education in Nigeria, these models may require the adoption of current communication technologies, especially as both the UNESCO (2010) and the World Bank

(2011) continue to encourage the use of ICTs in education worldwide and particularly in developing countries. For educational institutions to take advantage of learning opportunities provided by ICT, policy makers need to consider present-day implications of ICTs in education, determine the current level of ICT usage and the need to evaluate institutional readiness for web-based learning in particular.

Africa is the fastest growing mobile market in the world. According to GSMWorld (2012), Africa achieved this milestone as mobile penetration reached 649 million connections in 2011, having first exceeded 50 per cent mobile penetration in 2010. Of these Nigeria has about 93 million mobile lines. The rapid developments in communication technologies in Nigeria (NCC, 2011; Ndukwe, 2008), provide the basis and justification for the introduction of technology-mediation in open and distance education systems, and for the proposed cross-border higher education models in Nigeria. Therefore, there is the need to explore institutional e-learning readiness, specifically readiness for web-based learning in greater detail, beginning with an investigation into the current level of motivation, technical and study skills of distance education students, and their perceptions and attitudes to web-based distance education in Nigeria. The level of institutional technology infrastructure and faculty e-learning readiness would make valid and beneficial research topics for future investigation in the sub-region.

Background

The World Bank (2011) believes that knowledge and advanced skills are critical determinants of a country's economic growth, the standard of living, greater institutional capacity, a more effective public sector, a stronger civil society and a better investment climate, among others. The successful achievement of these goals depends strongly on adequate systems of higher education.

Today, the World Bank is working for better quality outcomes from higher education because it believes that advanced education is an important instrument of socio-economic growth and technological development worldwide (World Bank, 2011). According to Bates (2000), information technology is fast becoming more important than physical assets and hierarchical organizational structures of the industrial age. Furthermore, UNESCO (2011) suggests that the world is experiencing a major shift from an economy and society based on mass production of goods to one based on knowledge creation, that is, a new paradigm shift from production of objects to production of knowledge. According to UNESCO (2011), knowledge societies have the capability to identify, produce, process, transform, disseminate and use information to build and apply knowledge for human development. UNESCO further maintains that knowledge societies are sources of development for all, especially the least developed countries. There is the consciousness that education is the key to the future, as development is founded on the quality of human resources in emerging countries (UNESCO, 2010).

In today's postindustrial age, the workplace is being driven by advanced development of information and communication technologies. Globalization and advancements in information technology are bringing about significant changes in the way people live and work (UNESCO, 2011). In other words, knowledge is playing a crucial role and education is having a profound impact on socio-economic development, culture and the way of life of peoples and countries around the world.

It is imperative, therefore, for countries to provide their young people with quality education that would enable them to compete in the global marketplace, as well as, enabling them to benefit from the growing socio-cultural global exchanges of the 21st century (World Bank, 2011). Decision-makers must focus on the skills and capacities that young people need to become citizens and workers in a knowledge-based society. The web

is expanding the global village through advanced communication technologies, thereby enhancing communication, participation, collaboration and cooperation of peoples with each other across the world (UNESCO, 2011).

UNESCO has further argued that the transformative impact of information and communication technology on education is universal regardless of the economic circumstances of the educational systems involved. Most developed countries are concerned about improving the quality of education for their people, while most developing countries are at a standstill, and others in actual terms are slipping backwards. UNESCO (2007) observed that higher education systems in developing countries are not witnessing corresponding increases in infrastructures and human resource development because of poor funding by various governments. This situation is not different in the sub-region, in spite of the fact that approximately half of today's higher education students live in the developing world.

In the last ten years, due to financial constraints, negative attitudes towards innovation, and policy summersaults in the implementation of educational policies and strategies by government officials (UNESCO, 2007), the Nigerian university system has not witnessed corresponding expansion of its infrastructural facilities. The university system has been unable to accommodate the ever-growing numbers of qualified candidates seeking higher education in the country (British Council, 2011). This demand has risen to such high levels that the higher educational institutions have been seriously overstretched (Akpotu & Akpochafo, 2009, Fabiyi & Uzoka, 2009; Moti, 2010).

Furthermore, the inability of governments to increase funding to the university system has been largely due to financial constraints arising from the slow growth of the nation's economy (Richardson, 2009). According to UNESCO (2003), although government continues to fund education, some degree of fiscal mismanagement or

inefficient budget planning leaves little room for improvement of institutional services and operations after the payment of staff salaries and allowances. In addition, UNESCO recommended that 26% of the national budget should be allocated to the education sector. This has never been met by the Nigerian government at any point in time (Akpotu & Akpochfo, 2009). In 1999, 11% of the Nigerian annual budget was allocated to education; this fell to 6.9% in 2002 and fell further to 1.8% in 2003, but rose to 10.5% in 2004 (Akpotu & Akpochafo, 2009). Obviously, the Federal government's budgetary allocation to education has been much less than the recommendation of UNESCO. It is, therefore, not surprising that there has been little corresponding improvement of institutional facilities and infrastructure, thereby greatly reducing access for students seeking higher education in the country. Several hundreds are turned away every year and this poses serious problems in the country (Moti, 2010). It is worrying to think about where these young people go or what they do. Some of them take to vocational education and training (Richardson, 2009), others seek menial jobs, while a good number just stay at home waiting to try for admission the following academic year (Akpotu & Akpochafo, 2009), thereby risking increases in crime rates and youth restiveness. The "wait time" was a minimum of one year but it is expected to increase further as from 2010, when graduates of the Universal Basic Education (UBE), would come seeking access to higher education (Okebukola, 2006).

According to NUC (2011), the Nigerian university system consists of 119 universities comprising 73 federal and state universities, 45 private universities and one National Open University. According to Ipaye (2007), 24% of qualified candidates obtained admission in 1998. This fell to 5% in 2002 and rose marginally to 8% in 2004, as a result of the establishment of more federal, state and private universities. This marginal increase is far less than expected and statistics released by NUC in 2009, indicate that total

carrying capacity for Nigerian universities was only 170,000 spaces for yearly new intakes. For the 2009/2010 academic year, more than one million qualified candidates sat for the national admission examination, and less than 20% were offered admission (University World News, 2009). Today, there is no indication that the carrying capacity of less than 20% has changed (British Council, 2011). With demand for university spaces far outstripping supply, it is obvious, that the higher education needs in the country are not being met.

According to Ipaye (2007), the university educational system responded with the introduction of satellite/outreach centres where thousands of students were admitted and were provided off-campus university education. In no time, these satellite/outreach centres run by some Federal- and State-owned universities were grossly abused due to incapacity to meet the demand for the available few spaces, thus, leading to corruptive tendencies and disregard for standards. Since there were no discernable admission qualifications, principles were compromised and money-making became the focus. Consequently, this initiative was short-lived as the Federal government ordered the immediate closure of all satellite/outreach centres run in the country (Ipaye, 2007).

Furthermore, the demand for Cross-Border Higher Education (CBHE) in neighbouring Ghana and South Africa in recent times has increased astronomically. To endorse this deposition, the university authorities in Ghana have had to put a ceiling on the number of Nigerian students obtaining university admissions in the country. The demand for foreign degrees from Europe and North America is also on the rise. According to the British High Commissioner, Sir Richard Gozney, Nigeria had the fifth largest population of students studying in the United Kingdom in 2007 (British High Commission, 2007).

The rising demand for CBHE underscores the existence of an educational gap and the need to create greater access. Therefore, web-based CBHE offers additional choices

and opportunities to students who are unable to secure foreign student visas or unable to afford the high living expenses in foreign countries, thereby providing further possibilities for young people to acquire higher education without having to leave their home countries. Taking advantage of web-based CHBE in the sub-region is one of the reasons for undertaking this exploratory study, which is aimed at the evaluation of students' e-learning readiness, determination of the current level of communication technology usage and the perceptions of students to web-based learning methods in distance education.

It is important to mention here that graduate and postgraduate programs have also suffered the same fate as undergraduate programs. Inaccessibility and underdevelopment of graduate programs within the Nigerian university system has led to the production of very few doctoral degrees (PhDs). Students seeking graduate level education have had to go overseas to obtain Masters or doctoral degrees. According the British High Commission, a total of 27,000 Nigerians applied for student visas to the UK alone in 2006, but 75% of them were turned down.

The aging population of the teaching staff at a professorial level across the university system has created even greater challenges for the academic programs in the country. The number of professors in the university system is dwindling every year due to retirements and the inability of the educational system to reproduce qualified academic staff needed for their replacement. Career advancements for lecturers (academic staff) have also been hindered by poor or non existent research facilities. For the same reasons the university system is unable to produce the needed human resource for teaching and research. Consequently, students with academic interests are forced to seek training overseas and many are unable to secure foreign student visas for graduate and post-graduate work. Unfortunately, those who successfully scale the visa hurdles, once they were out of the country, were unlikely to return to the country, even if they did, were more

unlikely to return to the university system. Today, many Nigerian academics living and working in Europe and North America are building partnerships and networks to reach back to help the Nigerian university sector (World Education Services, 2010). Nevertheless, there is still a dearth of qualified academic staff needed for the smooth running of the university system, although this is being addressed by some regional initiatives, such as Agence Universitaire de la Francophone - AUF (World Education Services, 2010).

The problem of the dearth of academic staff has been further compounded by the new policy of the NUC, which makes possession of a doctoral degree or a Masters degree with current registration in a doctoral program as the minimum entry requirement for an academic position in the Nigerian university system. In Ethiopia, the availability of qualified staff to match the growth rate of institutions is a major issue, as fewer than 20% hold a masters degree, while less than 4% hold doctorate degrees. A regional initiative is being developed to grow the number of faculty members with doctoral degrees in West and Central Africa. Agence Universitaire de la Francophone (AUF) is a program which aims at helping non-doctoral lecturers earn PhDs and also to promote integration and collaboration through networking and scientific partnerships in the sub-region (World Education Services, 2010).

The World Bank gives priority to programs and projects that can bring about positive development and innovations in education at all levels. Since 1963, the World Bank has supported the growth and diversification of tertiary education systems in developing countries. The World Bank especially supports comprehensive strategies that address tertiary education in client countries including Nigeria by targets such as, increasing institutional diversification, improving the quality and relevance of tertiary

education, enhancing and expanding ICT capacity to reduce the digital divide (World Bank, 2011).

Furthermore, the growth of Cross-Border Higher Education (CBHE) globally in recent times has serious implications on students, academic staff, educational programs and higher educational institutions according to UNESCO (2010). Therefore, the key role of UNESCO in cross-border education is focussed on standards setting, capacity building and information sharing worldwide. As regards information sharing, UNESCO is developing information tools for students, preparing a database of recognized higher institutions, and producing publications on studying abroad with the aim of promoting consumer protection.

However, until recently, foreign training providers were prohibited from running degree programs in Nigeria (British Council, 2011). The crackdown on cross-border higher education was due to the proliferation of unrecognized and unaccredited offshore institutions preying on anxious and frustrated "waiting time" students seeking admission into licensed institutions (World Education Services, 2010). In order to increase access to higher education, the Nigerian government in collaboration with the British Council (2011) has commenced dialogue on CBHE in Nigeria. The three types of CBHE models permissible in Nigeria will be the twinning model, the branch campus model, and the open and distance education model. CBHE, if properly regulated, offers great opportunities for institutional capacity-building across the sub-region (British Council, 2011).

UNESCO has observed that many developing countries are coming to terms with just how important higher education is to socio-economic development and prosperity (University World News, 2010). Therefore, UNESCO (2010) is providing support for greater access to higher education through cross-border higher education. As a response to this initiative, there is a growing interest by developing countries to promote the use of

information and communication technologies in teaching and learning. UNESCO (2011) has stated that, "information and communication technologies has come to be seen by policy-makers as significant opportunity for improved educational access, improved student achievements, increased efficiencies, reduced costs, and to prepare young people for global competiveness". Furthermore, "the power and capability of interconnectivity of ICTs provide an opportunity for participation and interaction with other people. Policy-makers in developing countries in particular have come to see ICT as a viable and effective way of responding to the multiple challenges they face" (p. 4). Moreover, UNESCO is committed to the development of open educational resources, which allow academics and students to draw on a worldwide pool of excellent teaching and learning materials while adapting them to local needs (UNESCO, 2010). Therefore, educational institutions and policy-makers need to evaluate their level of readiness for technology-mediated learning (see Glossary).

A serious analysis of the prevailing situation as discussed above underscores the need to explore all possible opportunities that would create greater and better access to higher education including technology-mediated distance education delivery systems. Therefore, investigating institutional, faculty, and students' readiness would be an appropriate first step beginning with a research study of students' e-learning readiness in Sub-Saharan Africa and especially in Nigeria.

Purpose of Study

The purpose of this concurrent mixed methods study was to investigate students' readiness for technology-mediated distance learning in Nigeria and sub-Saharan Africa in general.

There are some existing studies in literature on e-learning readiness of higher education institutions in Africa. For example, studies at the University of Botswana

investigated e-learning readiness of the institution, the attitudes of academic staff and students' perception towards e-learning (Tella, 2007). Another study on students' experiences and perceptions of online learning in Ghana reported non-readiness and students' negative attitudes to web-based learning in sub-Saharan Africa (Asunka, 2008). However, the study on students' preparedness for web-based learning, in which regular students of a conventional university in Nigeria were investigated, reported positive attitudes to web-based learning (Awoleye & Siyanbola, 2008). This discrepancy and the need to investigate distance education students in particular, made it necessary, therefore, to carry out this exploratory research study.

Moreover, Nigeria is a very strategic country in sub-Saharan Africa. With half of the population in the West African sub-region residing in Nigeria, investigation of the attitudes, perceptions and e-learning readiness of distance education students in the country would make an important contribution to existing knowledge, as findings could determine to a large extent the future of communication technology-mediated distance education delivery in the sub-region.

This research study on students' readiness for technology-mediated learning examined the current levels of technology usage of distance education students and students' perceptions of communication technologies, students' attitudes to technology-mediated learning, and students' experiences of study centre distance education delivery methods in Nigeria.

In this study, quantitative survey instruments were used to measure the current levels of technology usage by distance education students in Nigeria. At the same time, students' readiness was further examined through students' perceptions, attitudes and experiences of communication technology using qualitative interview instruments from two to four distance education students in Nigeria. The reason for combining both

quantitative and qualitative data methods was to provide better understanding and validation through triangulation of research findings.

Significance of the Research

An investigation of the attitudes, perceptions and e-learning readiness of distance education students in Nigeria would make an important research study, since research findings may show students' perceptions of the usefulness, ease of usage and direct relevance of current communication technology in distance education. Therefore, the insights gained from this study, will to a large extent inform the need for future adoption of communication technology-mediated distance education delivery in Nigeria.

"Distance education is planned learning that normally occurs in a different place from teaching, requiring special course designs, instructional techniques, communication through various technologies, and special organizational and administrative arrangements" (Moore & Kearsley, 2008, p. 2). Consequently, distance education has always been driven by some form of technology and in recent times by computer technology and the Internet. This has produced ground-breaking experiences in teaching and learning at a distance (Moore & Kearsley, 2008). Emerging communication technologies such as mobile telephones are also making it possible more than ever before for greater number of students to take advantage of online learning and education at a distance.

It is not surprising, therefore, that in recent years distance education and open learning have continued to grow in scale, significance and acceptance (Moore & Kearsley, 2008). These phenomena have occurred generally due to the effect of new and emerging distance education technologies (Bates, 2000) on the one hand and the development of positive attitudes by students, faculty and policy-makers (Tella, 2007) on the other. Globalization and its effect on education have empowered students even in developing countries to begin to demand higher quality educational standards and more modern

delivery methods in the sector. According to Bates (2000), "integrating these technologies into the teaching and learning environment is one obvious way of helping students develop such skills and competences" (p.17) for global competitiveness.

Furthermore, major learning theories like behaviourism and constructivism try to explain the nature of knowledge and how we come to know things. Behaviourism emphasizes that an individual's response or learning is strongly associated with environmental stimulus or cues (Skinner, 1958). Alternatively, constructivism emphasizes social negotiation, group interaction and rich learning environments as critical factors that influence meaningful learning (von Glaserfeld, 1984). People learn through access to well designed instructional materials, individual experiences and collaborative interactivity (Rosenberg, 2001). Greater opportunities are being created by communication technologies for knowledge acquisition, interaction and collaboration, thereby enhancing both individually and collectively the creation and consumption of information (Koole, 2006). The role of the Internet in particular, in providing better learning environments for cognitive and social presence, cannot be overemphasized, as online networking media tools are providing better opportunities for effective dialogue as well as bridging the transaction distance within the community of learners (Johnson, 2008).

On the individual level, effective and successful autonomous learning is highly dependent on students' dispositional characteristics, such as self-regulation, self-discipline and self-motivation. These characteristics are even more relevant in a technology-mediated learning environment. The theoretical basis for Technology Adoption Model (TAM) is explained by the concept of reasoned action (Ajzen & Fishbein, 1980), which argues that beliefs, views or perceptions affect attitudes, attitudes influence intentions and intentions eventually determine behaviours. Therefore, self-regulation, self-direction and self-motivation are factors that are appropriate for independent learning and should be

evaluated when considering e-learning readiness and e-learning methods in distance education.

Other factors that could influence students' readiness and motivation towards embracing newer technologies are students' perception of the usefulness of the technology, ease of use, confidence and familiarity with some communication technology. Consequently, students' readiness for and motivation towards the adoption of communication technology could be instigated and sustained by their perception of the usefulness, the ease of use and familiarity with current communication technology. However, if students would benefit from the ICT developments and their potential for greater access to educational opportunities, there is the need to conduct more in-depth research studies into perceptions, attitudes and e-learning readiness of distance education students in Sub-Saharan Africa and especially in Nigeria.

Research studies on ICT in education in sub-Saharan Africa have always been encouraged by UNESCO (2011) and in Nigeria a few studies exist. In 2009, an investigative study of ICT in education which discussed status, potentials and levels of infusion into the Nigerian educational system was carried out (Iloanusi & Osuagwu, 2009). In many countries, studies on the impact of information and communication technology in distance education have been well researched and widely available, but in sub-Saharan Africa and Nigeria in particular, studies on newer technologies or current web-based educational technologies in distance education is sparse (Yussuf & Falade, 2005). Despite the relatively long history of distance education research in Nigeria, there is little in literature on the use of current web-based technology, or newer ICTs, in distance education (Yussuf & Falade, 2005).

However, in recent times, we are beginning to see a few studies. Yussuf and Falade (2005) have argued that most of the literature about distance education in Nigeria deals

with theoretical issues such as distance education learners and their socio-physical conditions (Oguntonade, 1979), and challenges of access to university education, and concluded with a strong case for open and distance learning (Moti, 2010). Also, there are studies on the state of physical facilities in Nigerian universities (Fabiyi& Uzoka, 2009), among others. Yussuf and Falade (2005) have dealt with the use of media in teachers' distance education program, but there is little reference to students' perception and attitudes to web-based learning, little evidence of students' reactions to technology-mediated learning as compared to study centre learning, and research studies on e-learning readiness, adoption, implementation and use of current educational technologies by students of distance education have not been sufficiently carried out in the country.

Furthermore, higher education enrolments in Sub-Saharan African universities have grown considerably (UNESCO, 2007). Indeed, enrolments have tripled between 1991 and 2005, expanding at an annual rate of 8.7 percent, making it one of the highest regional growth rates in the world (New World Encyclopaedia, 2012). Strategically, Nigeria is an important country in the sub-Saharan region. It is the most populous country in Africa, with a land mass of 910,771 square kilometres and a population of over 140 million people. According to UNESCO, University Education Participation Rate (UEPR) for fast developing countries should be between 25-45%. Therefore, with a critical mass of about 34% of Nigeria's population between the ages of 10 and 24, about 47 million young people may be demanding higher education in the next six to ten years. Moreover, with half of the population in the West African sub-region residing in Nigeria, investigation on the attitudes, perceptions and e-learning readiness of distance education students in the country would make an important research study, as findings could contribute to future decisions on communication technology-mediated distance education delivery in the sub-region.

Research Questions

This exploratory study focussed on the levels of communication technology usage in formal and informal education by distance education students in Nigeria, and their perceptions, attitudes and experiences of web-based learning in Nigeria. The following research questions have been adopted in this concurrent mixed method research study.

Central Questions

- What is the level of communication technology usage by distance education students in Nigeria?
- What are the perceptions of distance education students to distance education delivery methods in Nigeria?

Sub-Questions

- What are the challenges facing a distance education student in Nigeria studying via the Internet?
- What are the challenges facing a distance education student in Nigeria studying through the study centre?
- In students' experience, how do the following two distance education experiences compare: via study centre and web-based learning methods?

Limitations

Perception is the visual acquisition of knowledge about a contemporary object, situation, or event, while attitudes are meanings or judgments individuals attribute to impressions (New World Encyclopedia, 2012). Therefore, the use of quantitative methods, producing numbers and figures, may not adequately examine elements of perceptions, attitudes or voices of the participants. Quantitative methods may not sufficiently convey detailed understanding of the perceptions and attitudes of participants (Neuman, 2006), in a way that will achieve a good degree of acceptability and validity of the research findings.

Consequently, qualitative methods have also been deployed concurrently in the research study to make up for the inadequacies of the quantitative methods. However, considering the limited resources available for a master's level research work, qualitative research methodology that would adequately convey these perceptions may require more than two to four interviewees or research participants. Therefore, this number may be quite limited and may not allow for generalization or the extrapolation of research findings to a wider population.

Delimitations

This research study is intended to investigate only distance education students undertaking studies at the Distance Learning Institute of the University of Lagos (DLI) and the National Open University of Nigeria (NOUN). This study is not intended to address the other challenges, such as poor communication technology infrastructure, and the attitudes of decision makers to web-based learning in the country. Web-based learning can only be successful in an appropriately conducive environment that is enabled by adequate infrastructure, good administrative policies, strong management support and an enthusiastic faculty (Rosenberg, 2001). However, the issues above and their effects on technology-mediated learning are no less important, and while beyond the scope of this study could make interesting topics for future research.

Summary

Chapter I introduced the topic of the thesis, the purpose and significance of the research study. The topic is e-learning readiness of distance education students in Nigeria. The purpose of the research study is to explore students' level of current technology usage and the perceptions and attitudes to web-based learning among distance education students in Nigeria. The significance of the research study is to contribute this information towards

future design decisions for technology-mediated education delivery in Nigeria in particular, as well as, by extension, across the sub-region.

Furthermore, the chapter also discussed the research questions, limitations, and delimitations of the research study. Under limitations of the research study, it was mentioned that quantitative methods may not adequately convey the voices of the participants and the limited size of the participants involved in the qualitative study may also limit generalization of the research findings to a wider population. This research study does not cover attitudes of academic and management staff or the state of physical infrastructure on ground in the two institutions studied.

Organization of the Thesis

This thesis consists of five chapters, beginning with the introduction covered in Chapter 1 above. Chapter 2 deals with a review of related literature on the concepts, theories, and principles of the field of distance education, and the importance of information and communication technology adoption in the delivery of distance education. Chapter 3 provides the research design employed in the research study. It covers the research methodology, sites and participant population, research instruments, data collection and data analysis. Also Chapter 3 covers validity, authenticity and ethical issues of the study. Chapter 4 presents results and discussions and lastly, Chapter 5 provides conclusions and suggestions of the research study.

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter reviews related literature dealing with concepts, theories and principles of the field of distance education, the importance of information and communication technology in distance education, and the future of technology-mediated distance education in sub-Saharan Africa and Nigeria in particular. The literature review is divided into eight subsections, beginning with definition of distance education; then continuing on to a discussion of communication technologies in distance education, communication technologies and learning theories, communication technology and learners' interactivity, and communication technology infrastructure in sub-Saharan Africa. The review of the literature also covers other topics such as e-learning and students' motivation, e-learning and level of technology adoption, and e-learning readiness.

Introduction

Distance education is a system of learning where teachers and students are separated by place and/or time, and it has always been driven by some form of technology - correspondence, broadcast media, and in recent times by computer technology and the Internet. As defined by Moore and Kearsley (2008), "distance education is planned learning that normally occurs in a different place from teaching, requiring special course designs, instructional techniques, communication through various technologies, and special organizational and administrative arrangements" (p.2).

Communication Technologies in Distance Education

Historically, there are at least four "generations" of distance education, beginning with correspondence education, radio and television broadcast, audio/video

teleconferencing (multimedia), and asynchronous/synchronous computer conferencing distance education systems (Rumble, 2003). The first generation distance education began with correspondence study that used printed text delivered by the postal system. The invention of cheap and reliable postal system in the early 1880's encouraged correspondence instruction which was referred to as home or independent study. The second generation followed in the early to mid 1900's with the emergence of a new technology in broadcasting – the radio and television media tools. The decision to establish the UK Open University using the organizational structures of the industrial age constituted another revolutionary era in distance education referred to as the third generation. Using all available technologies, the barrier to higher education was effectively removed, consequently opening up access to high quality education for all. Lastly, the fourth generation is characterised by unprecedented developments in communication technology and the Internet. This has produced ground-breaking experiences in teaching and learning at a distance (Moore & Kearsley, 2008). Emerging communication technologies such as mobile telephones are making it possible more than ever before for greater number of students to take advantage of online learning and education at a distance. Therefore, mobile technology represents a significant opening for ICT in developing countries and provides potentials for poorer countries to skip over technologies for development (UNESCO, 20011).

In recent years, distance education and open learning have continued to grow in scale, significance and acceptance. These phenomena have occurred generally due to the effect of new and emerging distance education technologies on the one hand and the development of positive attitudes by students, faculty and policy makers on the other. More than ever before, there have been great leaps in accessibility, flexibility and affordability - the hallmarks of distance education and open learning everywhere in the

world (Moore & Kearsley, 2008; Nichols, 2008). Consequently, communication technologies have made possible the emergence of several mega-universities globally. Among such institutions around the globe are CCTVU Network, China – 852,000; Turkey Anadolu University, Turkey – 600,000; University Terbuka, Indonesia – 353,000; Sukothai Thamatirat OU, Thailand – 350,000; Indira Ghandi NOU, India – 1,800,000+; UNISA, South Africa – 220,000+; and more recently NOUN, Nigeria - 150,000+; as represented by data from institutional sources.

Communication Technologies and Learning Theories

Globalization has made education an international service which is empowering students even in developing countries to begin to demand higher quality educational standards and more modern delivery methods in the sector. According to Bates (2000),

> "It is becoming increasingly difficult to accept people as being fully educated if they do not know how to use the Internet to communicate with other professionals, if they do not know how to find websites that will provide relevant and reliable information in their field of study or if they do not know how to develop their own multimedia reports for communicating their knowledge and research" (p.16).

The capability provided by emerging technologies and mobile phones allow people at distributed locations to communicate and collaborate with each other (UNESCO, 2003). For UNESCO, knowledge societies are a source of development for all, especially the least developed countries.

It is generally accepted that communication technologies create opportunities for cognitive and social presence in virtual learning environments (Garrison, Anderson & Archer, 2000; Kanuka & Anderson, 1999; Kenny & Pahl, 2008; Lajoie, 2000). The community of inquiry model developed by Garrison and Anderson (2003), a research project conducted in the area of learning postulates that collaborative interactions could

create “distance presence” that could influence positively, individual and collective learning, and could foster the emergence of an effective community of inquiry (Jézégou, 2010). Accordingly, communication technology has become an important medium in distance learning, enhancing individual knowledge construction, collaborative learning and social interaction (Brown, et al., 1993; Jonassen & Reeves, 1996).

Furthermore, teaching and learning processes are defined by epistemological considerations, that is, the reality of what is, and the “how(s)” of knowledge acquisition. These philosophical beliefs also deal with behaviour moderating factors such as ethics, values and aesthetics (Banathy & Jenlink, 1996). Therefore, major learning theories like behaviourism and constructivism emphasize the importance of the learning environment as a critical factor that influences effective teaching and learning.

Learning, observable behavioural change, or performance is brought about by environmental stimuli, and sustained by response, negative and positive reinforcements. In other words, behaviour is understood in terms of environmental cues and results, and influenced by antecedents and consequences (Skinner, 1958). On the other hand, constructivism emphasizes knowledge as a social construct; hence, knowledge is an outcome of problem-based learning and the result of complex and relevant learning environment (von Glaserfeld, 1984).

In the past decade, the popularity of learning theories of constructivism and the effectiveness of rich learning environments in teaching and learning have led to changes in the development of pedagogy and modifications of instructional materials in terms of structure and dialogue in distance education. Moore’s theory of transactional distance (Moore, 1993) discusses the critical issues of relationships, effective dialogues, interactivities, and the need to bridge gaps in understanding and communications. The importance of effective interaction between teacher-learner, learner-learner and learner-

instructional materials, within the community of learners has also been highlighted (Moore & Kearsley, 2008). This heralded calls in recent times for the provision of rich e-learning environments for distance education students, and students in conventional classroom and face-to-face learning environments (Suradi, 2005). This was to enable students to take advantage of the enormous possibilities and benefits that modern communication technologies provide in the education sector. Also, online networking creates opportunities for cognitive and social presence in technology-mediated learning environments which promote effective dialogue as well as bridging the transaction distance within the community of inquiry (Johnson, 2008). It also, offers better prospects for enhancement of understanding and communication between learner-instructor, learner-learner and learner-instructional materials in the field of distance education.

Communication Technology and Learners' Interactivity

Communication technology promotes students' interactivity, collaboration and social networking. Effective cognitive and social presence are created in technology-mediated learning environments; consequently, opportunities for effective dialogue and bridging of the transaction distance within the community of inquiry (Johnson, 2008) are promoted and better prospects for enhancement of understanding between learner-instructor, learner-learner and learner-instructional materials in the field of distance education are possible.

According to Peters (2000), the unprecedented technology changes have offered three basic forms of learning – self-learning, mobile-learning and social interaction. The important role of communication technology in the creation and consumption of information both individually and collectively cannot be over-emphasized. The issues of mobile telecommunication devices, learners and social interactivity have been comprehensively discussed by Koole (2006) in her Framework for Rational Analysis of

Mobile Education (FRAME). The model describes mobile learning as a process resulting from the convergence of mobile technologies, human learning capacities, and social interaction (Koole, 2006). In the FRAME model, individual and collective information acquisition, creation, consumption, sharing, and learner interactivity could be effectively mediated by mobile telecommunication devices. Being able to benefit from the advantages offered by different communication technologies available for the delivery of distance education in Nigeria, and across the sub-region, is one major reason for this exploratory research study. Therefore, this study will assess the current level of communication technology usage, the perceptions of students to technology-mediated learning methods and thereby determine the e-learning readiness of distance education students in Nigeria.

Communication Technology Infrastructure in Sub-Saharan Africa

Over the last decade, UNESCO (2010) and the World Bank (2011) have consistently encouraged higher institutions to implement Internet-based distance education programs mainly to expand educational infrastructure in the sub-Saharan region. However, poor communication technology infrastructures, negative perceptions of faculty members, uncooperative attitudes of decision-makers and negative responses of students have continued to been adjudged as reasons for the slow adoption and implementation of online learning methods in the region (Asunka, 2008; Yussuf & Falade, 2005). The state of Internet connectivity in tertiary institutions in Africa can be summarized by three characteristics – too little, too expensive and poorly managed (Gakio, 2006).

However, the infrastructural problems facing higher education in sub-Saharan Africa are not insurmountable (Mbarika, et al. 2002). According to Butcher (2003), to enable the seamless integration of ICTs in distance education, it is necessary to align with the view that there is need for strong leadership and for improvement in the distance education systems and institutions in Africa through collaborative efforts. Such

collaborative efforts could mobilize the communication technology infrastructures needed for the delivery of distance education in the sub-region. Available resources could be efficiently and effectively utilized to achieve better results in the education sector, thus lending credence to the suggestion that the reason for students' failure to adopt technology for learning is not from an intrinsic lack of readiness on their part but because educational institutions and funding agencies ignore the problem of internet inaccessibility (Baggaley, 2008). This is another area of significance for the implementation of the study undertaken here.

In an age of information and communication technology, it is a matter of concern that policy-makers and administrators are still putting their scarce financial resources into building more "brick and mortar" distance education infrastructures, even as UNESCO (2010) and the World Bank (2011) have continued to encourage the adoption of ICTs in education. To effectively take advantage of opportunities offered by technology-mediated learning, it is imperative for policy-makers to carry out institutional e-learning readiness appraisals, in terms of availability of ICT infrastructure, current levels of technology usage by stakeholders (staff, students and administrators) and their perceptions to web-based learning.

The use of ICT in education is at a particularly dynamic stage in Africa. There are new developments and announcements happening on a daily basis somewhere on the continent (Farrell, Isaacs & Trucano, 2007). Therefore, the issues of web access, connectivity and web skills of users are dynamic and vary greatly from one locality to another (Thakrar, Zinn & Wolfenden, 2009). Moreover, mobile phones are providing an interesting example of how countries can sometimes skip over technologies (UNESCO, 2011), thereby enabling them to gain rapid strides in the adoption of newer technologies. For example, in February, 2010, UNESCO launched a US$12 million project to boost

information and communication technology (ICT) capacity by creating a regional virtual library network for universities in the West African sub-region.

In recent times, there has been rapid growth in the telecommunication sector in Nigeria. In 2000, the country recorded an increase of 42 lines per 100 inhabitants from a paltry number of 0.4 lines per 100 habitants hitherto. However, since 2008, Nigeria had achieved an impressive active subscriber base of more than 59 million (mobile and wireless) lines. The Nigerian telecommunications market is the fastest growing telecommunications market on the African continent (Ndukwe, 2008). According to the Nigerian Communications Commission (NCC, 2011), total installed capacity of wireless and mobile is now about 165 million lines and still on the rise.

These new technologies can effectively create access to virtual libraries, accelerate exchanges and promote research within the community of learners (UNESCO, 2010). ICT development is providing unique opportunities for equal and universal access to knowledge and therefore, raising hopes of a new era of re-thinking of the teaching and learning process. The Program Director at the National Institute of Adult Continuing Education (NIACE) in the United Kingdom, winner of the 2010 UNESCO King Hamad bin Isa Al Khalifa Prize for the use of ICTs in Education says: "Educators need to take a positive stand in ensuring that citizens can have the skills and understanding to make technology work to meet their needs and to deliver individual and collective dreams" (UNESCO, 2010). He goes further to state that "digital technology has become an essential element of our lives, the digital divide represents a threat to both social cohesion and economic development and people on the wrong side of the divide tend to be the most marginalized groups". Definitely, students in developing countries, sub-Saharan Africa and Nigeria in particular, should not be left out in this widening digital inclusion. There is the need to discover, through this exploratory study, the technical skills, independent

learning skills and the situational characteristics of distance education students in the sub-region. The research findings could provide information that will assist decision-makers in taking steps that would address digital inclusiveness and promote students' empowerment for competition in a globalized world of the 21st century. Consequently, educators in sub-Saharan Africa need to re-think and re-engineer education in such a way to make it more learner-centred, more creative and more appealing, thereby providing opportunity for improved students' motivation and positive attitudes towards technology-mediated learning in the sub-region.

E-learning and Students' Motivation

While it is important to have a receptive environment and the support of an adequate infrastructural base, the attitudes, perceptions and personal profile of the end user - the student- is also of key relevance (MacKeogh, 2003). According to Harasim (1997) students' perceptions, dispositional and situational characteristics are important factors that determine levels of motivation and meaningful learning in any educational environment, especially in a technology-mediated learning environment.

On an individual level, readiness could be determined by learners' ability to adopt new technology; adapt to technological challenges; adjust to self-paced learning and collaborative activities in technology-mediated learning environments. Also, e-readiness could depend on students' motivation and discipline, self-drive and ability to respond effectively to online coaching, training and instructions (Schreurs, Gelan & Sammour, 2005).

As defined by Schunk (1990), motivation is the process whereby goal-directed behaviour is instigated and sustained. Motivational learning theory places emphasis on factors that influence stimuli, persistence and sustenance of learning behaviours. Keller's "ARCS" model describes motivational factors and strategies in terms of gaining and

sustaining *attention*, enhancing *relevance* of the task, building *confidence*, and generating *satisfaction* in the learner. The elements making the ARCS model have been described as follows:

Attention. Gaining and sustaining learner curiosity and interest. Curiosity is or can be short-lived; therefore, lasting curiosity could be sustained by well designed instructional materials presented in diverse forms of media (Driscoll, 2005)

Relevance. "Relevance in its most general sense, refers to those things which we perceive as instrumental in meeting needs and satisfying personal desires, including the accomplishment of personal goals" (Keller 1987). There seems to be an "ends-oriented" and a "means-oriented" aspect to motivation in Keller's statement. Firstly, for students to be motivated, they must recognize that their efforts will lead to an achievement of their personal goals. Secondly, finding ways and means to successfully engage students can be effective in the motivation of the learner. Relevance could also include familiarity with the materials and media employed in the facilitation of teaching and learning (Driscoll, 2005).

Confidence. Learners must recognize that they can achieve their goals. The importance of self-efficacy as it relates to learners' confidence and their willingness to engage in some learning activity cannot be ignored. Fear of the unknown raises anxiety, erodes confidence and jeopardizes the learning process (Driscoll, 2005). This could be overcome by guided assistance, as proposed in the "zone of proximal development" (Vygotsky, 1978). Furthermore, situated cognitive theory typically emphasizes distributed expertise which promotes collaborative learning. Students who come to the learning task with different interests and experiences are provided the opportunity within the community to learn different things from one another. Therefore,

social interaction would help learners gain the needed self-confidence for the new task at hand (Brown, et al., as cited in Driscoll, 2005).

Satisfaction. The feeling of pleasure that you get when you achieve or obtain something that you want (MacMillan Dictionary, 2012). Satisfaction is a natural and positive consequence or feeling accompanying newly acquired knowledge for immediate application for tackling real-world problems (Keller, 1987). Satisfaction also comes from learning outcomes that are consistent with learning expectations and learning objectives which were well established at the beginning of the learning activity (Driscoll, 2005).

The four elements of the ARCS model (Attention, Relevance, Confidence and Satisfaction) have specifically focused on students' motivation as a critical factor of the teaching and learning process. Most theories of motivation attempt to account for and explain certain expectancy factors about an individual's abilities, about the task to be performed, and about the value of the task performed or achieved (Driscoll, 2005). Motivation plays a vital role in human learning and determines to large extents, the amount of effort and direction of a learner's behaviour or performance (Keller, 1993). Relevance of acquired knowledge, in terms of effective independent learning skills, ease of use and successful usage of technology in one area will likely result in confidence in the use of the knowledge or technology in another situation, thereby enhancing motivation for the new task to be performed. It is always fulfilling when acquired skills can be applied to new knowledge or learning and Keller (1987) refers to this as the natural consequence of learning. Therefore, students who have acquired independent learning skills, technical and computer skills are likely to exhibit high motivation towards e-learning and are likely to possess positive attitudes to web-based learning in distance education.

E-learning and levels of Technology Adoption

Educational institutions are increasingly adopting modern communication technology in the delivery of distance education worldwide. Technology adoption deals with issues of technology selection and usage by individuals, groups or institutions. Multinational corporations are usually interested in understanding the factors that affect adoption of new technologies in emerging and different markets across the globe.

In the United States of America, the Technology Adoption Model (TAM) (Davis, Bagozzi & Warshaw, 1989) has become the most effective model for understanding the adoption of technology. Acceptability of TAM (Venkatesh, Morris, Davis & Davis, 2003) is based on its simplicity and general ability to explain factors that influence the adoption and usage of new technologies. This model posits that users acquire perceptions based on the understanding of the usefulness and the ease of use of technology, and that users' perceptions are affected by attitudes which are eventually influenced by behavioural intentions.

Consequently, the TAM ultimate goal is to explain the degree of actual usage of new technologies. The theoretical basis for TAM rests upon the theory of reasoned action (Ajzen & Fishbein, 1980), which argues that beliefs, views or perceptions affect attitudes, attitudes influence intentions and intentions eventually determine behaviours. However, the two principles of TAM, which are perceived usefulness of technology and perceived ease of use, are subject to external variables such as technology compatibility and technology innovativeness. Technology compatibility is the degree of fit and consistency with the users existing learning situation, learning style and learning environment, while technology innovativeness deals with the users dispositional characteristics towards the value attached to new technologies over prevailing technologies.

It is generally accepted that new technologies create improved learning environments which in turn create opportunities for enhance individual and collaborative learning outcomes. Therefore, the level of technology usage and attitudes to web-based learning by distance learning students could enhance technology adoption in individual and collaborative learning environments in Nigeria and the sub-Saharan region.

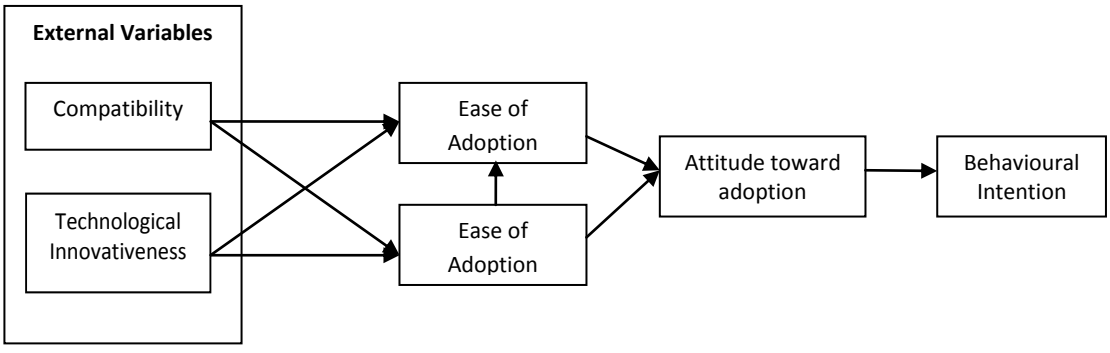

Figure 1: Technology Adoption Model (as cited in Ajzen & Fishbein, 1980, p.4)

Educational institutions are continuously adapting technology to meet the needs of administrators, faculty and students in their peculiar environments. ICT can have transformative effect on education regardless of the economic conditions - in very advanced school systems as well as in poorly resourced ones (UNESCO, 2003). In developing countries, socio-cultural factors are also expected to have major influences on the adaptability of new educational technologies (Hakanson & Nobel, 2000; Kedia & Bhagat, 1988) in the teaching and learning process. This means administrators have to constantly take decisions about appropriate technology for teaching and learning, and the "E" in e-learning should not be overlooked, since it could also stand for an "Exciting" teaching and learning environment.

According to Bates and Poole (2003), selection of appropriate media tools has become an important step in the process of a successful adoption and implementation of

distance education technologies. SECTIONS (Bates & Poole, 2003) are models that have fully addressed the criteria for technology selection and adoption in an educational setting, especially, in distance education. In Table 1, SECTIONS stands for Students, Ease of use, Costs, Teaching and learning, Interactivity and user-friendliness, Organizational issues, Novelty and Speed.

Table 1:

Technology Selection Model – SECTIONS

Alphabets	Description
S-student	Student Characteristics, demographics, diversity, access and learners' differences
E-ease of use and reliability	How easy and user-friendly for both students and teachers
C-costs	Costs of the technology and the cost per student.
T-teaching and learning	What is the best technology that supports teaching and learning, in terms of learning needs and instructional approaches
I-interaction	Learning environment affordances of the technology
O-organization issues	Organizational requirements and barriers of the technology for both teachers and students
N-novelty	How new is the technology and motivational issues for both teachers and students
S- speed	How quickly can the technology be deployed or changed

Table 1: Technology Selection Model (Bates & Poole, 2003, p. 79)

The first "S" element of SECTIONS has shown that this model considers especially students issues – access, flexibility, perceptions and attitudes as important factors in the selection and implementation of communication technologies in distance education. All eight elements in fact have given the student a significant consideration in the selection and usage of technology in education.

Therefore, organizations should conduct considerable up-front analysis to assess their e-learning readiness in order to fully benefit from technology-mediated teaching and learning process (Aydin & Tasci, 2005; Psycharis, 2005). While faculty members and managers are more likely to be given special consideration, it has been suggested that, "in the extensive and on-going discussions on the potentials of information communication technology (ICT) in the education sector, one major stakeholder is often overlooked, the student" (MacKeogh, 2003). This research study seeks to explore some students' issues of technology adoption in distance education by using relevant questions that address the level of current technology usage, students' perceptions on ease of technology usage, motivation for independent learning and students' attitudes to e-learning methods in the sub-region and Nigeria in particular.

E-learning Readiness

Existing literature and relevant information on organizational e-learning readiness, faculty members and institutional e-learning readiness emanating from research studies around the world are well documented. Studies on e-learning readiness provide a good opportunity for institutions and companies to evaluate institutional preparedness before the implementation of new technologies because of the high investment costs on both the financial and the organizational side (Schreurs, Gelan, & Sammour, 2003). That is why it is important for institutions and their policy-makers to know if they are e-learning ready.

Furthermore, keeping in mind a broader view of e-learning readiness, its importance and implications, the Economist Intelligence Unit, in co-operation with IBM embarked on a study of 195 countries in 2003, which investigated the availability and use of the Internet at work, at school, in government and throughout society. The study explored various sectors such as Government, Industry, Education and Society using e-readiness criteria comprising of the 4 "C" components, which are Connectivity, Capability,

Content and Culture. The research findings produced e-Learning Readiness Rankings of 185 countries (Economist Intelligence, 2003).

This research study is also significant because there is paucity of such studies in sub-Saharan Africa. However, the body of literature in the field shows that a few studies exists; for example, studies at the University of Botswana investigated the institution for e-learning readiness, the attitudes of academic staff and students' perception towards e-learning (Tella, 2007). Also, in Ghana there was a study on students' experiences and perceptions of online learning which reported that students had negative attitudes to web-based learning (Asunka, 2008). Meanwhile, a study at the Obafemi Awolowo University, Ile-Ife, Nigeria showed a positive attitude of students to web-based learning. The research findings showed that about a quarter of students had personal computers, 87% had access to computers even they had no personal computers, about 91% used e-mails and the Internet, and 41% were comfortable with the quality of Internet services provided by private cybercafés (Awoleye & Siyanbola, 2008). Another study on the use of media by distance education students in Nigeria, indicated that face-to-face contact and print-based media were the major distance education delivery methods used for teaching and learning in the country and in the Sub-Saharan region (Butcher, 2003; Yussuf & Falade, 2005). These discrepancies need to be investigated further if students are to benefit from the rapid ICT developments and their potentials for creating greater access to higher education in Nigeria. If distance education and indeed CBHE would create greater opportunities in higher education through technology-mediated learning, there is the need to conduct more in-depth investigation into e-learning readiness of students, their present level of technology usage and their perceptions and attitudes to web-based learning in sub-Saharan Africa and Nigeria in particular.

E-learning Readiness Scales. Online learning is not for every student but it is a good option for independent learners who possess good organizational and technical skills. Before students embark on online learning, there is the need for students to do self-assessments to determine whether they possess suitable characteristics for successful online learning. Online learning readiness scales allow students rate themselves in several important aspects of web-based learning, such as ability to avoid distractions, knack for adoption of new technologies, good goal setting capabilities, etc. There are e-learning readiness assessment tools for evaluating institutional readiness – students, staff and facilities, etc., for online learning. For example, "Teaching and Learning with Technology: Student Readiness for Online Learning Self-Assessment" is an assessment tool developed and deployed by Pennsylvania State University (Williams & Pennsylvania State University, 2008) and has been employed also by other educational institutions in the US (Madison Area Technical College, 2010). Consequently, before embarking on technology-mediated learning, it is proper to evaluate students' e-learning readiness, in terms of their organizational, computer and technical skills that are appropriate for online learning, and by using quality assessment tools developed to meet industry standards. Therefore, this study seeks to evaluate students' readiness for e-learning in Nigeria using assessment scales modified and developed by the researcher to meet industry standards (Williams and Pennsylvania State University, 2008).

Summary

Chapter 2 covered an overview of related literature on some of the concepts, theories and principles of distance education as reviewed during the thesis research. Beginning with a brief description of distance education, the eight sub-sections presented the theoretical perspectives and conceptual basis for this research. These sub-sections covered communication technologies in distance education, communication technologies

and learning theories, communication technology and learners' interactivity, and communication technology infrastructure in sub-Saharan Africa. Also covered are e-learning and students' motivation, e-learning and level of technology adoption, and e-learning readiness.

Distance education has been described as planned learning that normally occurs in a different place from teaching. Historically, distance education has always been driven by one form of technology or the other. Consequently, the study considered the place and implications of communication technologies in distance education, especially in regard to providing greater accessibility and flexibility. In addition, communication technologies define learning environments, and are considered critical in cognitive and social presence by learning theories, as these theories seek to explain the nature of knowledge and the process of knowing. Therefore, communication technology infrastructure, student motivation, and their implications on e-learning readiness by distance education students have been extensively discussed in this chapter.

The chapter concluded with the significance of the research study on the future adoption of information and communication technology in distance education delivery in Nigeria and sub-Saharan Africa in general. Therefore, a proper investigation by such a significant research study would require a research design and methodology that would examine quantitatively and qualitatively the current level of communication technology usage by distance education students, their independent learning skills, their motivation, perceptions, and attitudes to technology-mediated learning in the delivery of distance education in Nigeria.

CHAPTER III

RESEARCH DESIGN

Introduction

This chapter begins with a summary of the research study, a description of the research methodology, an identification of the sample population and the target sites selected for the research study. Furthermore, the quantitative survey instrument and qualitative interview protocols deployed for data collection are discussed, and data analysis is presented. The chapter also covers a description of validity strategies and ethical issues considered for the research study.

Synopsis of the Research Study

Higher education enrolments in Sub-Saharan African universities have grown considerably over the years (UNESCO, 2007). There are huge shortfalls in tertiary education provision, and higher education systems have been overstretched (Fabiyi & Uzoka, 2009). Most higher education institutions are operating far beyond their carrying capacities. This has resulted in the growth of private universities, open and distance education systems, and increased demand for Cross-Border Higher Education (CBHE).

In recent years distance education and open learning have continued to grow in scale, significance and acceptance. These phenomena have occurred generally due to the effect of new and emerging distance education technologies on the one hand and the development of positive attitudes by students, faculty and policy makers on the other. According to UNESCO (2010), this situation may have serious implications on students, academic staff, educational programs, and higher educational institutions. Historically, distance education technologies have provided opportunities for open and distance education. Current communication technologies are providing significant opportunities for

improved educational access, improved student achievements, increased efficiencies and reduced costs, and are preparing young people for global competiveness (UNESCO, 2011). Therefore, there is the need for policy makers to explore institutional e-learning readiness in greater detail. This study begins the process with an investigation into students' e-learning readiness based on their current level of motivation, technical and study skills in distance education, and also their perceptions and attitudes to web-based distance education in Nigeria.

The following research questions consisting of two central and three sub-questions have been adopted for this research study.

Central Questions

- What is the level of communication technology usage by distance education students in Nigeria?
- What are the perceptions of distance education students to distance education delivery methods in Nigeria?

Sub-Questions

- What are the challenges facing a distance education student in Nigeria studying via the Internet?
- What are the challenges facing a distance education student in Nigeria studying through the study centre?
- In students' experience, how do the following two distance education experiences compare: via study centre and web-based learning methods?

Research Methodology

Research methodology is a systematic process of acquiring, organizing and extending knowledge about the social world. This entails asking of questions, finding answers through pre-determined steps, methodologies, techniques, etc., in order to create

knowledge for the improvement of the human society (Neuman, 2006). Research methodologies such as quantitative, qualitative or mixed methods are some systematic processes and strategies deployed in social science research.

Quantitative Method. Quantitative method has been defined as a classical scientific research technique that combines a rigorous systematic observation of the social world with careful and logical thinking that could produce new knowledge about human beings, including their relationships and activities. Usually, a quantitative approach would involve no intervention or manipulation by the researcher other than what is required to administer the instruments needed to collect the necessary data (Shulman, 1997, p. 10).

Qualitative Method. While the objectivity of the quantitative method is important, there is also the need for subjectivity and value judgment which is largely emphasized by the qualitative method. This is crucial for the construction of social meaning and the achievement of a sense of social reality in the understanding of human activity.This method is commonly used by social science researchers and it involves the documentation of real events, the recording of what people say (words, gestures, and tones), the observation of specific behaviours, studying of written documents, and examination of visual images (Neuman, 2006). Qualitative data may be rough, imprecise and voluminous, but are usually context-embedded. Qualitative data analysis involves examining, sorting, categorizing, evaluating, comparing, synthesizing and contemplating the coded data as well as reviewing the raw and recorded data. The researcher, once fully immersed in the data, usually through a rigorous process, is able to recognize what he or she is looking for, in such a way that meaning is often obtained, ideas formed, themes, motifs and transferability made apparent. A qualitative researcher spins a web of interlocking details from data, while also providing sufficient texture and details that would make readers feel that they were present, that is, right there in the setting. This

method gives voice to the participants who have first-hand experience with the phenomenon being explored (Neuman, 2006).

Mixed Methods. Shulman (1997) argues that, "what distinguishes one method from another is not just the procedure that is followed but the type of questions they tend to raise" (p. 9). Furthermore, the selection of the research method most appropriate for a particular inquiry is one of the most important and difficult responsibilities of a researcher. Therefore, "the choice requires an act of judgment grounded in knowledge both of the methodology and of the substantive area of the investigation" (p. 17). The appropriateness of the methodology approach selected for this study was determined largely by the researcher's perspective and the nature of the research question.

For this research study, data collection was directed by the concurrent triangulation strategy of mixed method design, as discussed by Creswell and Plano Clark (2007). "This model generally uses separate quantitative and qualitative methods; a means to offset the weaknesses inherent within one method with the strengths of the other" (Creswell, 2009, p. 213). Each method has its strengths, merits, and limitations and therefore the choice of both methods for this study was topic-specific. Deploying a concurrent mixed method as represented in Figure 2 was expected to provide good triangulation strategy, better validation and proper substantiation of research findings (Creswell, 2009). This design is also referred to as confirmation, disconfirmation, cross-validation or corroboration.

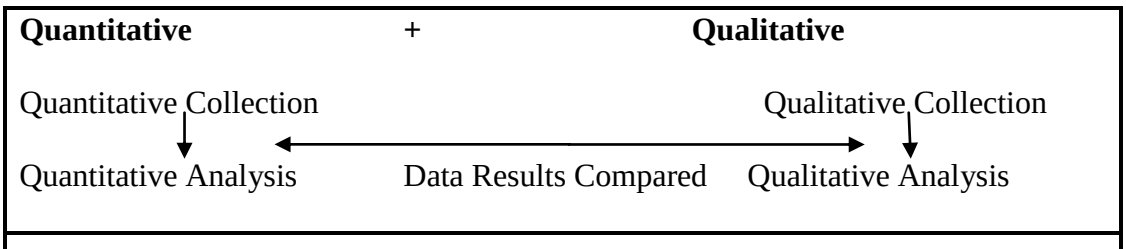

Figure 2: Concurrent Triangulation Design (Creswell, 2009, p. 210)

Use of the concurrent mixed method approach strengthens the inherent weakness within the quantitative alone, by giving full expression to the perceptions and attitudes of participants. The incorporation of some qualitative techniques also supplements the limited participant numbers in the quantitative survey.

To determine, therefore, the e-learning readiness of distance education students in Nigeria, two central questions and three sub-questions were employed in the research study. Table 2 shows the research questions and the research methodology deployed for each research question of the study.

Table 2:
Research Questions and Research Methodology Applied.

	Questions	Research Methodology
Central Questions		
1	What is the level of communication technology usage by distance education students in Nigeria?	Quantitative Methods
2	What are the perceptions of distance education students to distance education delivery methods in Nigeria?	Quantitative and Qualitative Methods
Sub-Questions		
1	What are the challenges facing a distance education student in Nigeria studying via the Internet?	Qualitative methods
2	What are the challenges facing a distance education student studying in Nigeria through the study centre?	Qualitative Methods
3	In students' experience, how do the following two distance education experiences compare: via study centre and web-based learning methods?	Quantitative and Qualitative Methods

Exploratory research carried out in this study mostly addressed "what" questions. "What" questions are better answered using qualitative data gathering methods that are open-ended, creative and flexible (Neuman, 2006). In addition, the survey questionnaire was employed to determine quantitatively, with facts and figures, the level of communication technology usage and the preference or choice of distance education delivery methods by distance education students surveyed. As discussed in Chapter 2, the survey questionnaire (Appendix C) was based on online learning readiness assessment tools developed by Williams and Pennsylvania State University (2008) and has been modified to suit the needs and context of this study. Specifically, Section C was adapted in order to adequately assess the e-learning readiness of students and to identify their level of independent learning capabilities appropriate for e-learning.

Question 1 was addressed using a survey (Appendix C), which addressed the issue of rigorous systematic evaluation (Neuman, 2006) of students' ICT experience and nature of Internet access (Appendix C, sections D and E), showing with facts and figures the current level of technology usage of distance education students in Nigeria.

Question 2 was addressed using the survey questionnaire (Appendix C) of students' experiences, preference, costs of transportation, costs of cybercafés etc., to evaluate students' perceptions of study centre and online learning methods in Nigeria. Question 2 was also addressed using a qualitative research methods (Appendix D) in order to convey in clear terms the different experiences and perceptions of the individuals, thereby giving full expression to their views and making it possible for a rich and complete picture to be effectively obtained (Creswell, 2007).

Sub-questions 1 and 2 were addressed using qualitative research methods in order to convey the different experiences and perceptions of the individuals, thereby giving full

expression to their views and also making it possible for a rich and complete picture to be effectively obtained (Creswell, 2007).

Sub-question 3 was addressed using both quantitative and qualitative methods in order to present comparative results with facts and figures and to qualitatively give full expression and voice to the participants who have first-hand experience with the phenomenon being explored (Neuman, 2006). Responses for sub-question 3 are already stated in question 2 above.

Validation and Authentication Strategies

The research study sought to address questions on e-learning readiness of distance education students in Nigeria and their level of current communication technology usage. These questions were explored using quantitative assessment tools developed and deployed by the researcher, guided by quality assessment survey templates and guides that meet industry standards (Chapnick, 2000; Williams & Pennsylvania State University, 2008).

Validation strategies for qualitative side of this study included rigorous data collection procedures with a focus on participants' views, adequate data summarization, confirmation of data, triangulation of data, identification and citation of standard procedures and guidelines (Creswell, 2007). Furthermore, Creswell (2007) states that rigour should also be employed in the data analysis and report writing. This study has attempted to conform to Creswell's stipulations through a report that is clearly, accurately, persuasively and engagingly written in such a way that the reader can experience "being there" on the ground.

Ethical Issues

All necessary ethical issues were considered throughout this research to ensure credibility and integrity of research findings. Ethics approval was obtained from Athabasca

University Ethics Committee before the commencement of research activities. A copy of the letter of approval has been included (Appendix E). Professionalism was not undermined especially as the research topic and questions are non-threatening and non-sensitive in nature. The volunteer (a staff member of the study centre) was introduced by the study centre manager. The volunteer was then given a briefing by the researcher to ensure that participants were made aware that they were free to not participate or withdraw at any time without any repercussions. All recordings, paper documents and subsequently converted to electronic documents were accessible to the researcher only, who is responsible for secure storage and proper disposal of documents in four years (2016), that is, from the time of completion of the research study.

It is important to note at this point that this researcher was once a student of a distance education institution in Nigeria. However, due to frustrations, the study center learning method was abandoned for web-based learning. Although the researcher had experienced the phenomenon, it was not discussed during interviews, and therefore did not affect the research data. This experience was effectively bracketed and did not in any way compromise the data collection process or results of the research survey, as "bracketing" was essentially maximized in the data collection process.

Sites and Participant Population

Students from two of the five distance education institutions in Nigeria were studied. A total of 30 survey questionnaires were distributed to participants in NOUN, a single mode distance education institution and DLI – a dual mode institution, respectively. These institutions were chosen because of proximity, the cost implication for a master's level research study, and because data from both institutions would provide rich information for the study.

The quantitative component was conducted using a convenience sample collected from fifty (50) distance education students. According to Neuman (2006), a convenience sample is a non-random sample in which the researcher selects participants that fit specific criteria and are accessible. This convenience sampling method was adopted for easy access to participants, which Neuman (2006) describes as a cheap and quick sampling method. Convenience sampling is particularly useful when the survey is not looking at a whole population of hundreds or thousands of possible participants. Since the target population for this survey is criteria specific, that is, all participants are distance education students from specified institutions and mostly within the same age bracket, there is little chance for distortion of views or serious misrepresentation of the population (Appendix F). Interestingly, participants from both institutions returned an equal number of datasets, 25 samples respectively, making a total of 50 datasets that were collected.

Purposive sampling involving three participants was adopted for the concurrent qualitative method dimension of the mixed methods design. A purposive sample is a non-random, purposeful, criteria-specific sampling method, valuable for exploratory research (Neuman, 2006). Purposive sampling is appropriate for selecting unique cases that are specialized, especially informative or from a difficult-to-reach population (Neuman, 2006). In this study, only distance education students in Nigeria, who had experienced the phenomena being researched, that is, those who had experienced both study centre and web-based distance education delivery methods, were eligible for participation in the individual in-depth interview.

Research Instruments

The concurrent mixed method approach used two research instruments, a quantitative research survey questionnaire (Appendix C) and a qualitative interview instrument (Appendix D).

The six-page survey questionnaire had six sections (A - F), covering the following subjects: bio-data, general information on distance education, e-learning readiness, ICT proficiency, ICT access and general students' perceptions of both study centre and web-based distance learning methods. Some survey questions had Likert scales (Neuman, 2006, p. 207), which measured an individual's feelings and thinking about ideas or issues. Likert scales are additive scales for measurement of intensity, level and direction of variables that are ranked along a continuum. Variables such as beliefs, attitudes and perceptions were represented by five scoring items ranging from strongly agree (1) to strongly disagree (5) in the survey questionnaire (Appendix C, Section C). In addition, some qualitative open-ended questions were included in the survey questionnaire.

A two-page qualitative interview instrument had open-ended questions on students' experiences and challenges in both study centre and web-based learning methods in distance education. Also, a comparison of the two learning experiences: via the Internet and learning via the study centre was also covered.

Data Collection

Data for the two research questions and three sub-questions were gathered by the use of a survey questionnaire (Appendix C) and structured interview protocols (Appendix D). This concurrent mixed method strategy provided proper validation and triangulation of the research results in order to increase the acceptability of the research findings.

Authorisation and permission for data collection were obtained from the officials of the targeted educational institutions (Appendix G and H) about three months before the time for entering into the field. This researcher, through the assistance of the study centre managers who acted as gatekeepers of the target distance education institutions, engaged a volunteer at the study centre of each of the institutions (NOUN and DLI). The volunteer initiated rapport with students who were present on the premises and asked for their voluntary participation in the survey.

Students voluntarily participated in the data gathering process through responses to paper and pen survey questionnaires without any coercion from the researcher. Participants devoted a maximum of 30 minutes to respond to the survey questionnaire. The researcher was responsible for the distribution of the questionnaire and collection from participants with the assistance of the volunteer, as described earlier. Confidentially was not compromised as the volunteer only provided access to the participants in order to complete the survey and also provided a familiar presence to prevent insecurity that might have been felt by the participants. The volunteer had no time, access or opportunity to go through the returned survey questionnaires. The consent forms (Appendix I) accompanying the survey questionnaire instruments were duly signed by the participants, prior to their participation.

In addition, some qualitative open-ended questions were included in the survey questionnaire, which provided an opportunity for participants to further express their general perceptions of study centre and web-based learning methods.

The interview procedure for the qualitative research method was carried out using open-ended questions that were in the research instrument (Appendix D). Three participants were involved in the individual interview process using pen and paper responses to the interview instrument, and followed up with individual telephone interviews where further clarification was required by the researcher.

Data Analysis

The quantitative data were carefully coded by hand, and the codes were then entered into a Microsoft Excel spreadsheet. Accuracy is extremely important when coding data (Neuman, 2006), since errors made at this point could ruin the whole research effort. To verify the data coding, a wild code checking procedure involving checking of variables for impossible codes was employed. In this study, for example, the codes 1 and 2 were assigned to female and male respectively; therefore any other code or number found in this

category would indicate a mistake in the coding procedure. The Excel worksheet was exported in the Statistical Package for the Social Sciences (SPSS) and converted into a SPSS data file for analysis. Descriptive statistical procedures were employed in the examination and summarization of the variables. Statistical procedures such as Pearson's Correlation, Analysis of Variance and Wilcoxon's Test were also employed in the data analysis and results were then presented in statistical tables.

Qualitative data analysis was used to examine, organize and interpret data (Neuman, 2006) in such a way that distance education theories were reflected and captured. More significantly, the structures, meanings and forces embedded deep beneath the surface of the data gathered were also captured. This method imposed painstaking efforts on the researcher in the reading and re-reading of transcripts, reflecting on what was read and making assessments predicated on evidence, reason and judgement. Cases and contexts were terms used for the construction of meaning, while making clear the ways students saw, comprehended and recognized the issues of distance learning methods in their environments.

The qualitative data were analysed by hand. Data were reduced and coded into a list of significant statements. The significant statements were then categorised according to the themes identified from the data collected (Creswell, 2007). Descriptions of what participants experienced were reported verbatim. This was to bring to light the salient points, themes and narratives embedded deep within the data gathered. These "personally identifiable data" were reported in quotes and identifiable by alpha-pseudonyms in order to protect the participants and to ensure confidentiality of the data that were gathered in the interviews. The two databases were examined, summarized, analyzed and compared to determine convergence, differences or some combination (Creswell, 2009).

Summary

Chapter 3 began with an introduction of the various sections covered by the research design. A rigorous and systematic research design adopting a concurrent mixed methodology was deployed in the research study. A synopsis of the research study was presented to give an overview of the study, leading to the research questions and the justification of the research methodology adopted to address the research questions. The chapter also described in detail the research sites and participant population, and the justification of the convenience sampling method. The inherent drawback of the convenience sample method was reduced to the barest minimum by the adoption of criteria-specific sites and participants. Furthermore, the chapter presented in detail the two types of research instruments, and the rigorous procedures employed for data collection and data analysis in the conduct of the research study. The chapter also discussed validation strategies and ethical issues considered in the conduct of the research study. The next chapter will discuss research results and findings.

CHAPTER IV

RESULTS AND DISCUSSION

Chapter 3 dealt with the design for the research study. The chapter covered the summary of the research study, the research questions and the research methodology adopted for the study, that is, a mixed method approach using concurrent triangulation strategy. It also covered in detail the description of the sites and population, the research instruments and a full presentation of the data collection methodology used in the research study.

This chapter will present the results and findings of the research study. The chapter begins with a review of the purpose of the study and research subjects involved in the study. In addition, following a careful examination of all data collected in the study, the resultant reports of the summaries of the variables, the descriptive statistical analysis, and the qualitative data analysis of the research study will be presented.

Purpose of Study

The purpose of this concurrent mixed methods study was to investigate students' readiness for technology-mediated distance learning in Nigeria and sub-Saharan Africa in general. Students' readiness for technology-mediated learning was defined generally by the current levels of technology usage by distance education students and by the meanings ascribed to students' perceptions of communication technologies, students' attitudes to technology-mediated learning, and students' experiences of study centre distance education delivery methods in Nigeria.

Research Subjects of the Study

A total of fifty (50) subjects participated in the research survey, 25 each from the two institutions (DLI and NOUN) surveyed. Criteria specific convenient sampling was

adopted in the conduct of the survey. The age composition of the participants, as presented in Table 3, showed that 76% of the population surveyed were between the ages of 18 and 35, and 24% were above 35 years of age. Table 3 also showed that 42% of the participants were females, while 58% were males. Therefore, there was no deliberate gender discrimination.

Table 3:

Age and Gender Composition

Composition		**No**	**%**
Age	18-35 yrs.	38	76%
	>35 yrs.	12	24%
Gender	Female	21	42%
	Male	29	58%

In this study, only distance education students in Nigeria, who had experienced the phenomena being researched, that is, those who had experienced both study centre and web-based distance education delivery were eligible to participate in the in-depth interview. Unfortunately, the three students who met the purposive criteria for the selection were all from NOUN. During the course of the study, it became clear that DLI participant population, with only undergraduate student population could not present students with experiences of the two learning methods being considered in the study. However, NOUN offers a wider range of programs including graduate studies, making it more feasible for students at NOUN to meet the criteria for the purposive selection. It must also be mentioned here, that web-based learning is a new phenomenon in Nigeria; therefore it took a lot of effort to identify the three purposive participants.

The three purposefully-selected participants were involved in the qualitative data collection through paper and pen interviews and follow-up telephone interviews. The data

gathered were analyzed by hand. The resultant "personally identifiable data" were reported in quotes and identifiable only by alpha-pseudonyms (Student A, B and C) in order to protect the participants and to ensure confidentiality of the data that were gathered from the individual interviewees. Profiles of the individuals interviewed and their summarized responses are here presented as Student A, B and C.

Student A. She was thirty-four years old, a graduate of agricultural economics, working as a sales representative and married with family responsibilities. She decided to enhance her job performance and enrolled for a Master of Business Administration (MBA) in Information Technology at NOUN in 2003. She hoped to take advantage of the merits and opportunities offered by distance education, such as accessibility, flexibility and affordability. In 2011, after eight years of enrolment, she managed to complete her studies. This delay was due to the same challenges faced by all students at the study centre – poor infrastructural facilities, poor facilitation of teaching and learning process, inadequate instructional materials, inflexibility, etc. In the meantime, she completed four online certificate courses offered by World Bank Institute and United Nations Institute of Training and Research, Geneva, Switzerland. She expressed satisfaction with online study methods, although were very expensive.

Student B. He was thirty-eight years old, a university graduate of electrical engineering, a practicing engineer and married with family responsibilities. He decided to upgrade his skills for better job performance by enrolling for a distance education graduate program in Information Systems at NOUN in 2003, hoping to take advantage of the merits of distance education system, which offers accessibility, flexibility and self-regulation. In 2009, six years after he registered for a Master of Information Systems program at NOUN, he had barely commenced his studies. There were several challenges, such as, non-availability of course materials, inadequate physical infrastructural facilities, incompetent

facilitators and inflexibility in terms of study times and location, making self-regulation, self-directedness and self-pacing in distance education almost impossible. With self-motivation running very low, he withdrew from the program opting instead for an expensive web-based Master's degree in the United States of America.

Student C. He was forty-nine years old, an engineer, and married with family commitments. He also enrolled as a student at the NOUN for a Master's degree in Information Systems. He opted for this because of his very busy work schedule and also to take advantage of life-long learning offered by distance education delivery methods. From his perspective, the institution was ill-equipped and ill-prepared for the tasks of providing education to students at a distance. The study center was rowdy and crowded; the facilitators were incompetent, making him wonder why online learning methods were not being adopted in distance education delivery. He could not afford to be at a specific place and time, due to his very busy schedule. He never returned to the study center again. He claimed that no self-respecting individual could learn under such circumstances and no meaningful teaching could take place in such an environment. He has commenced a program at an American online institution. He asks, what happened to online learning in Nigeria?

Research Question 1

This research question sought to determine the current level of communication technology usage of distance education students in Nigeria. This research question was examined from two angles, that is, from the point of view of the students' functional characteristics (computer/technical skills) and the situational characteristics (Internet access) of distance education students in Nigeria.

The six-page questionnaire covered various sections. Section C dealt with e-learning readiness; section D addressed ICT proficiency; section E dealt with ICT access;

and section F addressed general students' perceptions of both study centre and web-based distance learning methods. Therefore, the dependent variable, the levels of students' computer functional/technical skills has been quantitatively measured by students' responses to independent variables, such as degree of computer literacy, frequency of computer usage, involvement in social networking, and ownership of e-mail addresses as shown in Table 4.

The research question on the level of students' adoption of communication technology is addressed in Table 4, which presents students functional, technical skills and competencies in the use of communication technologies. Results emerging from Table 4 showed that 94% of students were computer literate, 93.8% were involved in Internet social networking on Facebook, Twitter, etc., and 92% had e-mail addresses. Also, the statistical summaries showed that students were computer literate at different competency levels (53% expert, 38% intermediate and 8% beginner).

Also in Table 4, 6% of respondents have consistently considered themselves to have no computer skills and competencies and this 6% therefore, has provided a degree of cross-validation for the research data examined. From the limited number of students surveyed, these results seem to show that distance education students in Nigeria can have quite high levels of computer literacy, computer usage, computer skills and computer competencies. Consequently, this could indicate that distance education students in Nigeria are ready for communication technology-mediated learning.

Furthermore, the situational characteristics of distance education students were also factors examined in the determination of the level of technology adoption by distance education students in Nigeria.

Table 4:

Students' Functional Characteristics (Computer Skills)

Questions	**Responses**	**N**	**Valid %**
Computer Literacy	No	3	6%
	Yes	45	94%
ICT skills and competences	Expert	25	53.2%
	Intermediate	18	38.3%
	Beginner	4	8.5%
Computer usage	Always	29	59.2%
	Sometimes	17	34.7%
	Rarely	3	6.1%
Social Networking	Yes	45	93.8%
	No	3	6.2%
E-mail Address	No	3	8.0%
	Yes	46	92.0%

The situational characteristics of students were defined by the degree of access to communication technology as elicited by section E of the research survey. The percentage ownership of computers, home internet access (monthly costs), percentage ownership of smart phones, level of smart phone browsing, level of cybercafé usage and proximity to cybercafés was used to determine the level of communication technology access by distance education students in Nigeria. Research results from the questionnaire on the level of technology usage, students' responses to computer access and the situational characteristics of students are presented in Table 5.

The table shows that distance education students surveyed had a computer ownership rate of 54% with home Internet access of over 55%. Respondents also indicated a 78% smart phone ownership and 66% had access to the Internet with their smart phones. In

addition, 68% of distance education students surveyed use cybercafés and they live and/or work at walking distance from the nearest cybercafés.

Table 5:
Students' Situational Characteristics (Internet Access)

Questions	**Responses**	**N**	**Valid %**
Computer ownership	No	22	46.0%
	Yes	27	54.0%
Home Internet access (monthly costs)	N1,000	6	13.3%
	N5,000	12	26.7%
	N 10,000	6	13.3%
	N/A	21	46.7%
Smart phone ownership	No	9	22.0%
	Yes	39	78.0%
Smart phone browsing	No	15	34.0%
	Yes	33	66.0%
Cybercafé usage	No	15	32.0%
	Yes	34	68.0%
Proximity to cybercafé	Walking	33	68.0%
	Bike	9	18.8%
	Car/Bus	6	12.5%
Proximity to study centre	Walking	2	4.0%
	Bike	10	20.0%
	Car/Bus	38	76.0%

Therefore, access to computers and the Internet is considerable and cannot be considered grossly inadequate, although some hurdles still exist in the provision of communication technology infrastructure in the country. These research findings seem to show that there is considerable level of communication technology access by distance students, at least those living in major urban centres. There is strong evidence therefore,

that students could access e-learning through either home Internet, cybercafés or their smart phones.

It is important to note also that students' proximity to cybercafés is inversely related to proximity to study centres. A possible explanation for this inverse relationship is that this study was conducted in Lagos, a mega-city with about 18 million people. It is, therefore, not surprising that a single study centre location in such a huge city is grossly inadequate in meeting the learning needs of distance education students.

The next section will examine further the level of e-learning readiness of distance education students in Nigeria. A second research question has been employed in this exploratory research study to determine the perceptions and attitudes of students.

Research Question 2

This research question sought to determine the perceptions of distance education students of distance education delivery methods in Nigeria. The research question was examined both quantitatively and qualitatively using the concurrent mixed method strategy, in order to provide additional clarity to the research findings. Question 2 was addressed by three sub-questions employed in the research study and a detailed analysis of students' responses from the survey and individual interviews has been presented as follows:

Sub-Question 1

This research sub-question sought to investigate the challenges facing a distance education student studying via the Internet. According to the research design presented in Chapter 3, this first sub-question was addressed qualitatively and the following results of the responses to sub-question 1 were gathered from three interviewees and have been presented with pseudo-alpha names - Student A, B and C.

High Cost of Online Study. Two interviewees indicated that the cost of online study is high compared to study centre methods, but the third did not quite support this claim.

> *"Online study is more expensive - not only in terms of the fees paid, but payment for internet connectivity or the cybercafé. On the average I spend 1,500.00 Naira a week at the cybercafé". (Student A)*

> *"The cost of internet study is very high, these include the cost of a computer system, internet connection fee and connection charges by the cybercafés. It is very high up to 50% of my annual pay". (Student B)*

> *"Its expensive visiting study centres, especially for candidates living in locations outside of the states or traveling outside of the country. It's very flexible and cost effective if you are not paying for the office internet as your organization is paying". (Student C)*

Communication Technology Infrastructure. All three interviewees alluded to the fact that technology infrastructure is a challenge for students studying in Nigeria via the Internet.

> *"Network failure made it difficult to meet up with the deadlines" (Student A)*

> *."Speed and reliability of the internet connection are also some of the problems faced by the online students. These make it impossible for student to participate in online video classes, conferences and meetings" (Student B).*

> *"Online is well suited for all categories of students but very challenging in the absence of internet access and in the face of power failures" (Student C)*

From the above responses, the challenges facing a student studying via the Internet are poor communication technology infrastructure - power supply, Internet access, and cost of Internet access. Although the sample is small and therefore limited, there is the possibility that students' motivation, perceptions and attitudes to web-based learning could be restricted by the communication technology infrastructure deficit in Nigeria and the sub-region in general.

Sub-Question 2

The second sub-question sought to investigate the challenges facing a distance education student studying via the study centre. As stated in the research design, this second sub-question has also been addressed qualitatively. The following responses were gathered from three interviewees and are here presented as Student A, B and C.

Transportation Challenges due to Location of the study centre. Only Students A and C addressed the problem of study centre location. The institutions have just one study centre in a mega-city such as Lagos with about 18 million people. Transportation challenges exist and cause stress for distance education students.

> *"The location of the study centre makes it difficult to get there on time especially when the traffic is heavy. This often leads to late arrival of most students for their group discussions and thus reduces the scheduled study time for the period. This is a serious challenge especially for students with very busy work schedules who have little or no time to get to the study centre before the closing hours". (Student A)*
>
> *"Its expensive visiting study centres, especially for candidates living in locations outside of the states or traveling outside of the country". (Student C)*

Poor Physical Infrastructure. Interviewees agreed that there are challenges with physical infrastructure at the study centres.

> *"The study centre is usually very crowded as the space provided is not enough for the student population. Most of the spaces used are not designed to be a classroom of study, but just a meeting point. This makes the tutorial sections very boring as there are no boards to write on during the tutorials" (Student A).*

> *"Lack of infrastructural provision at the study centre caused a lot of discomfort for me as a student". (Student B)*

> *"The classrooms were too small for the number of students enrolled and resulted in over-crowdedness and rowdiness". (Student C)*

Poor Facilitation of Study Centre Methods. Students interviewed indicated that study centre methods did not provide quality facilitation of the teaching and learning process in terms of information dissemination, record keeping, poor quality and design of course materials, and general administration of study centres.

> *"They sometimes fail to get the necessary information about studies such as: deadline for submission of term papers, meetings with facilitators, poor student's record keeping, etc." (Student A)*

> *"There is inadequate course materials and infrastructural provision by the study centre. Study centre method is totally time consuming for now. It takes more than six years to complete a two-year program. As a result more than 70% of students in the M.Sc. (Information Technology) program dropped out" (Student B).*

"I was not impressed with the caliber of teaching staff. They were ill prepared for teaching and providing learning guidance". There was a general feeling of un-seriousness which, I think could not sustain any learning activities" (Student C).

In spite of the limited number of participants, the responses above showed there are several challenges facing distance education students in Nigeria. These include poor location of study centres, poor infrastructure, poor learning environment, and poor course facilitation. These factors therefore have negative affects on students' motivation, perceptions and attitudes of study centre learning methods in Nigeria.

Sub-Question 3

The third sub-question sought to compare the two distance education experiences, that is, studying via the study centre and studying via the Internet. This third sub-question was addressed quantitatively and qualitatively as stated in the research design in Chapter 3. The results of the quantitative responses to the questionnaire on study centre experience, students' preferences and reasons for their preferences were used in the comparison of the two learning methods.

Results emerging from section F of the research questionnaire addressed quantitatively sub-question 3 and are presented in Table 6. Results showed that 74% of students prefer online study, 66% believed it is more convenient to study online at home, at the office or at a cybercafé, while 30% indicated various situational constraints and limitations, such as poor access, distraction or lack of privacy at home, the office or at cybercafés.

In comparison, Table 6 also shows that 38% were dissatisfied with study centre methods, 32% were satisfied, 24% were indifferent and 6% did not know because they

were new to distance education. Therefore, more students were in favour of online study as compared to study centre methods.

Table 6:

Students' Perceptions of Study Centre and Online Learning Methods:

Questions	**Responses**	**N**	**Valid %**
Experience with study centre learning method	Dissatisfied	19	38.0%
	Satisfied	16	32.0%
	Indifferent	12	24.0%
	New to DE	3	6.0%
Prefer to study online at the office, home or cybercafé	Yes	37	74.0%
	No	13	26.0%
Major reason(s) for the choice.	Convenience	33	66.0%
	Good Access	2	4.0%
	No Access	8	16.0%
	Distraction	3	6.0%
	Poor Facilities	1	2.0%
	New to DE	3	6.0%
Transportation costs to study centre (monthly)	1 < 2,000	11	23.9%
	2 2,000-4,000	18	39.1%
	3 4,000-8,000	11	23.9%
	4 >10,000	6	13.0%
Cybercafé costs (monthly)	1 < 2,000	15	34.1%
	2 2,000-4,000	21	47.7%
	3 4,000-8,000	6	13.6%
	4 >10,000	2	4.5%
Home Internet access (monthly costs)	1 N1,000	6	13.3%
	2 N5,000	12	26.7%
	3 N 10,000	6	13.3%
	4 N/A	21	46.7%

In addition, a concurrent qualitative method giving expression and voice to this question, is also presented below, in order to provide a deeper understanding of the phenomenon under examination, that is, the comparison of the two distance education experiences - studying via the study centre and studying via the Internet. In response to sub-question 3, the following significant statements were gathered from three individual interviewees and are here presented by the pseudonyms: Student A, B and C.

Comparison of the Two Learning Experiences. The responses from the three interviewees show a clear preference for online learning over study centre learning methods. Although the purposive sample size was small and therefore limited, there is a clear choice made by the interviewees based on their experiences of the two learning methods.

> *"I participated in four on-line certificate courses by World Bank Institute and United Nations Institute of Training and Research, Geneva, Switzerland. These courses exposed me to different methods of learning, developed my ability to work under pressure to meet tight deadlines and made me more focused. Online students-instructor interaction is more interesting and more educative with the students/instructors always present at the on-line forum without any barrier of distance" (Student A).*

> *"My experience with web-based learning at North Central University is very convenient. I don't have to leave my office or house and yet I can still get a world class education even to a doctorate level. To me this is the best thing internet can offer. After spending, about six year in a study centre in Nigeria and three years in an online system. I can confidently say online*

system is much more convenient. Internet-based system has no shortage of study materials and the quality of the study is better" (Student B).

"Its expensive visiting study centres, especially for candidates living in locations outside of the states or traveling outside of the country. Online is well suited for all categories of students but very challenging in the absence of internet access and power failure. It's very flexible and cost effective if you are not paying for the office internet as your organization is paying. It also offers the opportunity for on the job training and capacity building for students who their course of study directly relates to their job descriptions" (Student C).

Comparative Costs of Transportation

Another factor examined was the cost of transportation to study centres and cost of Internet access at home or at the cybercafés. Comparative costs of transportation to the study centres and cost of cybercafé services or home Internet services were found to be statistically insignificant. For most students there were no significant differences, as they paid between the sum of N2,000.00 (two thousand Naira) and N10,000.00 (ten thousand Naira) monthly for these services. The analysis of variance (ANOVA) as presented in Table 7 below confirmed this position – the variance between groups for cybercafé costs is .459, while transportation cost between groups is .560. At a .05 significance level, both are statistically insignificant.

From the analysis of the research data (both quantitative and qualitative) there is strong evidence that students are generally more dissatisfied with the study centre distance education methods. Poor infrastructure, poorly designed course materials, poor information dissemination, record keeping, and general administration of the study centers

were some reasons adjudged as dissatisfying, even though cost-wise they are similar in expense.

Table 7:

Comparative Costs between Cybercafé and Transportation

Cybercafé Costs	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	4.558	7	.651	.982	.459
Within Groups	23.874	36	.663		
Total	28.432	43			
Transportation Costs					
Between Groups	4.813	6	.802	.822	.560
Within Groups	38.057	39	.976		
Total	42.870	45			

Table 7 ANOVA Table

On the basis of a collation of the survey responses and a distillation of more comprehensive responses in the interviews, the following advantages and disadvantages emerged for each of the two approaches: study centre and online learning methods in distance education.

Advantages of Study Centre Methods:

- Preference for face-to-face instruction
- Student interaction

Disadvantages

- High course fees and high transportation costs
- Travelling difficulties
- Lack of flexibility of study time and place

- Lack of commitment by instructors
- Poor learning environment and over crowding
- Poor students' records (scores, results, course registration, bio-data, etc.)

Advantages of Online Study Methods

- Access is available anytime and anywhere
- More convenient for the students who study while working at a job
- Reduced transportation stress to the study centre
- ICT access is cheaper and affordable (if available in the office)
- Takes advantage of Smart phone technology.

Disadvantages

- Lack of access and poor infrastructure
- Low student interaction
- No face-to-face instruction
- Distraction in the office, home or cybercafé
- High costs – fees and Internet connectivity.

The concurrent mixed methods approach provided the necessary triangulation for the research study, as the strength of one (figures) added to the strength of the other (voices), thereby providing cross-validation or corroboration of the research findings (Creswell, 2009, p. 213). Research question #2 (students' perceptions of distance education methods) and sub-question #3 (students' comparison of two distance education experiences) were addressed using both quantitative and qualitative research methods according to the research design in Chapter 3.

A database comparison of both quantitative and qualitative responses of the research study provided some convergence on the learning challenges faced by distance education

students, which included poor infrastructure, high costs of transportation and high costs of Internet access. Therefore, there is a corroboration and confirmation of the fact that students in Nigerian studying via the study centres, and via the Internet, face the same learning challenges. In addition, there was also a convergence of the results of both quantitative and qualitative research approaches in the area of learning preferences for distance education delivery methods. Students generally favoured online learning over study centre learning methods due to the flexibility and convenience the former provides.

Furthermore, from the statistical analysis carried out, there is an indication that distance education students in Nigeria are positively disposed to web-based distance education. Therefore, students in Nigeria who have previously acquired independent learning skills, technical and computer skills and have situational constraints relatively under control are generally likely to possess positive attitudes to web-based learning, and are likely to exhibit high enthusiasm towards e-learning or technology-mediated distance education methods.

E-Learning Readiness

As discussed in Chapter 2, e-learning readiness is influenced by appropriate strategies necessary for independent learning, such as self-regulation, self-direction and self-motivation. These goal-directed behaviours are instigated and sustained by students' dispositional and situational factors (Schunk, 1990). Consequently, emerging from the advantages and disadvantages of distance education delivery methods is the importance of students' dispositional, functional and situational characteristics as factors that affect the level of meaningful learning in any educational environment (Harasim, 1997).

Section C of the questionnaire dealt with e-learning readiness, in terms of strategies appropriate for e-learning, such as independent learning skills. Issues affecting autonomous learning such as self-direction, self-regulation, and the ability to set goals and

study independently were evaluated. Research results showed positive dispositional characteristics towards e-learning and also provided evidence that supports e-learning readiness among students surveyed. The results, presented in Table 8 show that percentages for "strongly agree/agree" were consistently much higher than "strongly disagree/disagree" in items 1 – 5, which indicates that that students have acquired independent learning skills that could be transferred to an e-learning environment. This is a natural consequence of learning according to Keller (1987). Also, the percentage for "strongly disagree/disagree" was much higher than "strongly agree/agree" in item 6, indicating that students are not afraid of new technology and are in fact comfortable with acquiring new skills. Furthermore, the research question in item 6, in that it was presented in reverse order from items 1-5, was designed to ensure that students answered the questions thoughtfully and logically and also to provide cross-validation for items 1- 5.

The results from section C in Table 8 present strong evidence that distance education students believe they have high independent learning skills that are appropriate to technology-mediated learning or e-learning environments, therefore indicating high positive disposition and readiness for e-learning distance education methods by the Nigerian students in this research participant population.

The literature review in Chapter 2 postulated that students' readiness for e-learning is critical to technology-mediated teaching and learning. E-learning can be affected by students' perception of the usefulness or relevance of what is to be learned and the media that would be employed in the learning process. Communication technologies have become important instruments in education and hold great promise both for increasing access and as means of promoting learning (Bransford, Brown & Cocking, 2000; Driscoll, 2005). Confidence level determined by prior knowledge is another factor that could influence any type of learning. Furthermore, confidence could be influenced by fear of the

unknown, which raises anxiety, erodes confidence and jeopardizes the learning process (Driscoll, 2005).

Table 8:

Level of Students' Independent Learning Skills Appropriate for E-Learning

No	Items	Strongly Agree %	Agree %	Do not know %	Disagree %	Strongly Disagree %
1	I am good at setting goals and deadlines for myself.	59.6	38.3	2.1	0	0
2	I learn best by figuring things out for myself	59.2	38.3	2.0	0	0
3	I can ignore distractions around me when I study	47.9	45.8	6.2	0	0
4	Difficulty does not discourage me from learning something new	42.6	38.3	6.4	12.8	0
5	If I need information, I do not hesitate to get it.	31.9	55.3	2.1	6.4	4.3
6	I stay away from new technologies	2.1	6.4	2.1	55.3	34.0

Relevance and confidence could further be affected by dispositional, functional and situational characteristics of students. Also, related to these elements, is the principle of technology adoption as represented in the Technology Adoption Model (TAM), which states that adoption of communication technology could be influenced by student's perception of the usefulness (relevance), the ease of use (confidence) and attitudes (disposition) to communication technology. Consequently, the level of technology usage, ease of use and student's perception of web-based methods could affect the level of e-learning readiness of students.

Table 9 shows a strong correlation (.878) between e-learning readiness and ICT usage, meaning there is a strong relationship between the two. This could, therefore, imply that distance education students have adopted communication technologies, are highly technically competent in the use of communication technologies and are, thus, technically ready for e-learning.

Table 9:

Relationship between E-Learning Readiness and ICT Usage

		ICT Usage
Readiness for E-Learning	Pearson Correlation	.878
	Sig. (2-tailed)	.022
	N	50

Table 9 Pearson's Correlation Table

Furthermore, the statistical analysis sought to determine if there were any relationships between age/gender and readiness for e-learning. Tables 10 and 11 show weak relationships between age and readiness for e-learning on the one hand (.226), and negative relationships between gender and readiness for e-learning on the other (-.092).

Table 10:

Relationship between E-learning Readiness and Age

		Age
Readiness for E-Learning	Pearson Correlation	.226
	Sig. (2-tailed)	.115
	N	50

Table 10 Pearson's Correlation Table

There was therefore no evidence from the analysis that age and gender are related to e-learning readiness; and consequently, had no affect on some students' readiness for e-learning in Nigeria is assumed.

Table 11: Relationship between E-learning Readiness and Gender		
	Gender	
Motivation for E-Learning	Pearson Correlation	-.092
	Sig. (2-tailed)	.524
	N	50

Table 11 Pearson's Correlation Table

Table 12 shows that 47 of 50 respondents have positive rankings, indicating that readiness for e-learning in relation to students' level of ICT usage is high. Readiness for e-learning is dependent on the level of ICT usage and at a statistically significant level of .05, some students' attitudes about and students' perceptions of web-based learning were positively correlated. The Analysis of Variance (ANOVA) in Table 13 provided confirmation and cross-validated the results of the Wilcoxon test in Table 12.

Table 12:

Correlation between E-Learning Readiness and ICT Usage

		N	Mean Rank	Sum of Ranks
E-Learning Readiness – ICT Usage	Negative Ranks	2[a]	6.25	12.50
	Positive Ranks	47[b]	25.80	1212.50
	Ties	1[c]		
	Total	50		

	Test Statistics [b]	
a. Readiness < ICT Usage	Readiness – ICT Usage	
b. Readiness > ICT Usage	Z	-5.979[a]
c. Readiness = ICT Usage	Asymp. Sig (2-tailed)	.000

a. Based on negative ranks. b. Wilcoxon Signed Ranks Test

Wilcoxon Test Table

In order to provide the justification for the research results, three advanced statistical analyses were employed. Pearson correlation was used in Table 12 above, because of its applicability and best fit for data measured at interval or ratio level (Neuman, 2006).

Table 13:

E-Learning Readiness and Student's Level of ICT Usage

E-Learning Readiness	ANOVA				
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	220.674	7	31.525	3.084	.010
Within Groups	429.326	42	10.222		
Total	650.000	49			

Table 13: ANOVA Table

A Wilcoxon non-parametric test was adopted because it allows for limited and less stringent assumptions about the underlying distributions of the data, especially for relatively small samples (Norusis, 2008). ANOVA statistical analysis was used to cross-validate and confirm research results produced by the Wilcoxon test.

Summary

This chapter addressed the research results and discussed the meanings of the findings of the concurrent mixed methods research study on the e-learning readiness of distance education students in Nigeria. The chapter also re-visited the purpose of the research study and a description of the research subjects.

The purpose of this concurrent mixed methods study was to investigate the readiness for technology-mediated distance learning of students in Nigeria. A stated in Chapter 1, an existing study on students' experiences and perceptions of online learning in Ghana reported non-readiness and students' negative attitudes to web-based learning in sub-Saharan Africa (Asunka, 2008). In contrast, another study on students' preparedness

for web-based learning in a conventional university in Nigeria reported positive attitudes to web-based learning (Awoleye & Siyanbola, 2008). Due to this discrepancy and the need to investigate distance education students in particular, this exploratory research study was carried out. The research study adopted two central questions, namely: (1) What is the level of communication technology usage by distance education students in Nigeria? (2) What are the perceptions of distance education students to distance education delivery methods in Nigeria? Three sub-questions were also deployed: (1) What are the challenges facing a distance education student in Nigeria studying via the Internet? (2) What are the challenges facing a distance education student in Nigeria studying through the study centre? (3) In students' experience, how do the following two distance education experiences compare: via study centre and web-based learning methods?

This exploratory research study used quantitative survey instruments to measure the current levels of technology usage by distance education students in Nigeria, while qualitative interview instruments were used to examine students' perceptions, attitudes and experiences of communication technology. The use of a concurrent mixed method approach in this study has provided good understanding, cross-validation and triangulation of research findings as reported in the descriptive statistics presented in Tables 4 – 8 above. Table 4 presented the current level of students' functional and computer technical skills, while Table 5 reported the situational characteristics in terms of computer and Internet access. Students' perception of study centre and web-based learning methods were reported in Table 6. Table 7, showed comparative costs of transportation, cybercafé and internet costs and the current level of students' readiness for e-learning were presented in Table 8.

Furthermore, the study also deployed advanced statistical analysis to measure relationships between some variables, such as, correlation between e-learning readiness

and ICT usage, correlation between age and readiness for e-learning, and correlation between gender and readiness for e-learning. Also, analysis of variance (ANOVA) was used for cross-validation and triangulation of the research results and findings, and these were clearly presented in Tables 9 – 13. The emergent results and findings from the systematic data analysis consistently reported high communication technology usage, high ownership of smart mobile phones, high ownership of personal computers and high positive response for online learning methods among other positive indicators.

In addition, the responses from the qualitative data analysis showed that the distance education students in this study, in spite of deficits in communication technology infrastructure and relatively poor Internet access, still preferred web-based learning methods to study centre methods. Furthermore, the results and findings from the quantitative and the qualitative analysis of research data, showed some convergence in the positive attitudes and positive perceptions of distance education students to web-based learning over study centre learning methods, thereby providing confirmation, cross-validation and triangulation of the results and findings of the research study.

Consequently, from the above research results and findings, there is strong evidence that distance education students who participated in this study are enthusiastic about communication technology adoption. They seem to possess the necessary strategies for independent learning, are positively disposed towards e-learning and are ready for e-learning in Nigeria. The next chapter follows logically, the presentation of conclusions and recommendations resulting from this concurrent mixed methods exploratory research study.

CHAPTER V

CONCLUSIONS AND SUGGESTIONS

Chapter 4 presented the results and findings of the research study. The chapter began with a review of the purpose of the study and research subjects involved in the conduct of the study. In addition, following a careful examination of all data collected in the study, the resultant reports of the summaries of the variables, the descriptive statistical analysis, and the qualitative data analysis of the research data were also presented and comprehensively discussed in Chapter 4.

Introduction

As discussed in the introductory section in Chapter 1, the Nigerian educational system has been overwhelmed in recent years by the ever-growing demand for higher education in the country (Moti, 2010). Inadequate infrastructural facilities, slow human capital development, finance and a host of other factors have led to the present stagnation in the educational sector (UNESCO, 2007). The rapid developments in communication technologies in Nigeria (NCC, 2011; Ndukwe, 2008), provides the basis for the introduction of technology-mediation in open and distance education systems in Nigeria, and also provides justification for introduction of technology to cross-border higher education models in Nigeria. Therefore, there was the need to explore institutional e-learning readiness in greater detail, which has begun already with this investigation into the current level of technical skills and competencies, independent study skills of distance education students, and their perceptions and attitudes to web-based distance education in Nigeria.

The purpose of this concurrent mixed methods study was to investigate students' readiness for technology-mediated distance learning in Nigeria. As stated in Chapter 1,

existing studies on students' experiences and perceptions of online learning are sparse and have also reported conflicting results. Therefore, there was a need to conduct this exploratory research study on the current level of technology usage by distance education students, their perceptions of communication technologies, their attitudes to technology-mediated learning, and their experiences of online learning and study centre distance education delivery methods in Nigeria.

The literature review in Chapter 2 covered the definition of distance education, communication technologies in distance education, communication technologies and learning theories, communication technology and learners' interactivity, and communication technology infrastructure in sub-Saharan Africa. Also reviewed was e-learning and level of technology adoption and the evaluation template for e-learning readiness in distance education.

The research design outlined in Chapter 3, adopted two central questions: (1) What is the level of communication technology usage by distance education students in Nigeria? (2) What are the perceptions of distance education students to distance education delivery methods in Nigeria? Three sub-questions were also deployed: (1) What are the challenges facing a distance education student in Nigeria studying via the Internet? (2) What are the challenges facing a distance education student in Nigeria studying through the study centre? (3) In students' experience, how do the following two distance education experiences compare: via study centre and web-based learning methods?

Conclusions

The results and findings of this exploratory research study have shown a high usage of communication technology by a select sample of distance education students in Nigeria. The research findings also showed considerable positive perceptions and attitudes of this sample of distance education students to web-based learning.

Although, the research results have shown that these Nigerian distance education students have positive attitudes and perceptions to web-based learning, there are indications that technical constraints and situational limitations exist and need to be addressed if web-based learning in distance education is to be encouraged, adopted and become sustainable in the country and in the sub-region.

It is important to state again, that the infrastructural problems facing higher education in sub-Saharan Africa are not insurmountable (Mbarika, et al. 2002). This lends credence also to the suggestion that the reason for students' failure to adopt technology for learning is not from an intrinsic lack of readiness on their part but because policy-makers, educational institutions, funding agencies and governments at all levels do little about the problem of Internet inaccessibility (Baggaley, 2008) and poor infrastructure.

While it is imperative to have a receptive environment and the support of adequate infrastructural base, the attitudes, perceptions and personal profile of the end user - the student - is also of key relevance (MacKeogh, 2003). Students' dispositional, functional and situational characteristics (Harasim, 1997) play vital roles in the determination of levels of readiness in any educational environment, especially in technology-mediated learning environments. Therefore, it seems that e-learning readiness is determined by learners' ability and readiness to adopt new technologies; adapt to technological challenges; and to embrace self-regulation in a technology-mediated learning environment.

The research results (Tables 8, 9, 12 & 13 in Chapter 4) have shown that the level of enthusiasm and readiness by students for e-learning is high. Pearson's correlation, Wilcoxon's non-parametric test and the Analysis of Variance (ANOVA) suggest strong positive relationships between ICT usage and readiness for e-learning. These positive relationships can be explained by the level of students' access to the Internet through

personal computers, mobile phones, proximity to cybercafés, and by the level of students' computer skills and competencies.

Chapter 2 reviewed related literature dealing with concepts, theories and principles of the field of distance education, the importance of information and communication technology in distance education, and the future of technology-mediated distance education in sub-Saharan Africa and Nigeria in particular. The literature reviewed factors that affect technology-mediated distance education such as situational, functional and dispositional characteristics of students such as self-discipline, self-drive and the ability to respond effectively to online coaching, training and instructions (Schreurs, Gelan & Sammour, 2005). The research results presented have shown high levels of technology usage and adoption by the distance education students who participated in the research study. Therefore, there is evidence indicating that distance education students in Nigeria have the technical skills, possess the necessary strategies for independent learning, and are ready for e-learning.

Suggestions for E-Learning Adoption and Improvement

As a result of the findings of this study, several suggestions for expansion and improvement can be proposed to encourage the uptake and to further the effectiveness of e-learning in Nigerian distance education. It should be emphasized that these areas of recommendation are based on the relatively limited number of participants involved in this study. However, these areas are essential and therefore, important for improvement and change in the delivery of distance education in Nigeria. These identified areas will be discussed below under the following categories: mobile learning, Internet services, cybercafé services, faculty members, and decision makers.

Mobile Learning. As stated previously in Chapter 1, "Africa is the fastest growing mobile market in the world. Africa achieved this milestone as mobile penetration reached 649

million connections in 2011, having first exceeded 50 per cent mobile penetration in 2010. Of these Nigeria has about 93 million mobile lines" (GSMWorld, 2012). To underscore these facts and figures, the research results showed that distance education students in Nigeria had a 78% smart phone ownership and that 66% had access to the Internet with their smart phones. Therefore, the enormous spread of mobile phones and mobile networks could stimulate a huge interest in mobile learning and the possibility of successfully overcoming the challenges of poor connectivity, poor electricity supply, and personal computer availability. Mobile learning could become the means of opening up access to education for remote or rural communities, when eventually there is a breakthrough in the development of instructional materials for mobile phones and their deployment as distance education technologies.

Internet Services. Over the years, the use of available technology has effectively opened up access to high quality education for all. Rapid developments in communication technology and the Internet has produced ground-breaking experiences in teaching and learning at a distance (Moore & Kearsley, 2008), making it possible more than ever before for greater numbers of students to take advantage of education at a distance. The rapid communication technology developments could allow poorer countries to skip over older technologies and significantly improve access to higher education, thereby speeding up the rate of socio-economic development in developing countries (UNESCO, 20011). Internet services, as shown in the study, may be relatively poor, slow and costly. Nevertheless, students find web-based learning more convenient than the study center learning methods. One factor significantly responsible for their inclination towards technology-mediated learning is the availability of high quality instructional materials on the web. Furthermore, travelling difficulties, limited supply of learning materials in physical formats, and poor learning environments at the study centers are challenges that

have negatively influenced the attitudes of students to study center learning methods. In addition, the research results showed that distance education students had a computer ownership rate of 54% with home Internet access of over 55%. The findings also showed that students are willing to pay more for Internet services and are more readily disposed to coping with connectivity constraints in order to benefit from the advantages of technology-mediated distance education.

Cybercafé Services. Young people in Nigeria are benefiting from the services offered by cybercafés within their neighbourhoods. A number of private enterprises are entering into the information and communication technology for education (Pillay & Hearn, 2009). Private enterprises in Nigeria are involved in the provision of computer infrastructure, computer skills and competencies to young people towards sustainable ICT development and usage (Akpan-Obong, 2009, Nwabueze, & Ozioko, 2011). The findings of this study showed that 68% of distance education students in Nigeria use cybercafés and they live and/or work at walking distance from the nearest cybercafés. These positive developments should be recognized and leveraged by policy makers towards a sustainable re-engineering of technology-mediated teaching and learning in distance education in the country.

With the establishment of "model" technology centers patterned after cybercafé services by NOUN, the fact is underscored that cybercafé providers are playing a significant role in the development and provision of communication technology infrastructure in the country. Partnerships between educational institutions and cybercafé providers could encourage web-based learning in Nigeria. Therefore, there seems to be a need for policy makers to explore in greater depth public/private partnership frameworks in technology-mediated open and distance education in Nigeria.

Faculty Members. The way knowledge is acquired has changed over the years; learning has become increasingly seen in terms of social negotiation, social construct, and

something that happens in a social context and environment (von Glaserfeld, 1984). To appreciate this change, educators have to re-evaluate and re-structure the teaching and learning process in order to stay current in a constantly changing technological and pedagogical environment. Teaching with technology requires technical skills and the training of faculty members. Bearing in mind the comments about instructors and materials made by students interviewed in this study, faculty members should be challenged to avail themselves of the training opportunities available to them, in spite of the possible fear of technology - "technology fright" or technophobia. Institutional investment in professional development of faculty should be encouraged by embedding technology training into course development processes and providing a greater level of technical support (Bates, 2000). Administrators should allocate resources in such a way as to promote professional development of faculty that will yield good returns on investment (ROI) on the long-run, thereby providing overall institutional development of technical skills and competencies needed for web-based teaching and learning. Furthermore, the high level of student' enthusiasm and readiness for web-based learning, as presented by the research results, should encourage faculty to be more involved in the production of learning resources and courseware rather than hoping to consume imported resources that may be lacking in local considerations that are important to students.

Institutional Decision-Makers. Distance education institutions need to pay more attention to other important components of distance education delivery, such as special course design, instructional techniques, and special organizational and administrative arrangements (Moore & Kearsley, 2008) required for the provision of quality online education. Decision makers need to know that students are ready for web-based learning and should take necessary action in the development of comprehensive institutional learning strategies, plans and implementation. As demonstrated by the findings in this

study, one of the factors limiting access to higher education is inadequate physical infrastructure. Distance education technologies can, in fact extend present "brick and mortar" facilities beyond expectations, thereby, providing increased access to higher education in the country.

The immediate implication of the issues discussed above is that several pertinent questions have been raised. Could governments, educational institutions, and other stakeholders accelerate investment in technology in order to improve infrastructure, reduce costs, and make this mode of learning even more attractive? Could the costs of improving Internet delivery compare favorably with further development of physical structures (brick and mortar paradigm)? Could a technology-mediated distance education paradigm provide better, cheaper and more effective solutions? Although some of these issues have been addressed by Bates (2000), nevertheless, further in-depth investigations into these issues could provide distance education institutions in Nigeria, and the sub-region more broadly, with the basis for allocating their limited resources more efficiently. It is sad that, in this time and age, decision-makers are still investing their limited resources on new "brick and mortar' distance education infrastructure (Appendix J).

Suggestions for Future Research

The Nigerian educational system has been overwhelmed in recent years by the ever-growing demand for higher education in the country. Inadequate infrastructural facilities, slow human capital development, finance and a host of other factors have led to the present stagnation in the educational sector. Therefore, it has become critical for higher educational institutions in the country to consider seriously the adoption of distance education technologies and web-based learning methods as means of expanding educational opportunities in Nigeria.

The first step in this process is to determine the e-learning readiness of distance education students in Nigeria. Findings of this mixed methods research study on e-learning readiness of a small sample of distance education students in Nigeria have shown quite considerable positive attitudes to web-based learning and high levels of communication technology usage.

However, this research study investigated distance education students from only two institutions, that is, the Distance Learning Institute (DLI) at the University of Lagos and the National Open University of Nigeria (NOUN), and both from the same geographical zone in Nigeria. In addition, only three students were interviewed using qualitative research methodology. Consequently, there is the need to conduct more extensive studies in the future that would involve more students, more institutions of higher learning and covering other geographical zones in the sub-region and the country as a whole. This would provide a more accurate representation of the level of communication technology usage and a clearer picture of the perceptions of distance education students to web-based learning methods in Nigeria and elsewhere in the country.

Finally, web-based learning can only be successful in an appropriately conducive environment that is enabled by adequate infrastructure, good administrative policies, strong management support and an enthusiastic faculty (Rosenberg, 2001). These critical elements and their effects on technology-mediated learning are no less important, and therefore, could make productive and useful topics for future research in this region.

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APPENDIX A

A Political Map of Nigeria
New World Encyclopaedia (http://www.newworldencyclopedia.org/entry/Map)

APPENDIX B

A political map showing Sub-Saharan Africa in green
New World Encyclopaedia (http://www.newworldencyclopedia.org/entry/Map)

APPENDIX C

SURVEY QUESTIONNAIRE - QUANTITATIVE

This questionnaire is part of an investigation into the preparedness of Nigerian distance education students for e-learning. As an anonymous participant in this effort, you will be contributing to possible improvements in the delivery of technology mediated learning in Nigeria and Africa.

I assure you of full confidentiality of the information that you will be giving. The information you provide by filling out this paper questionnaire will be accessible only to the researcher and to the research supervisor for data verification only. All documents would be securely stored during the period of the study. Electronic data will be deleted from my computer storage and paper copies will shredded and properly disposed at completion of this research study. Please be aware that you are free to decide not to participate or withdraw at any time without any repercussions. You may contact me for more information (see contact address below).
Please check boxes and be sure to answer all the questions to the best of your ability.
Thank you.

Research Topic:
Greater Access to Higher Education through Communication Technology in Sub-Saharan Africa: E-learning Readiness by Distance Education Students in Nigeria.

Research Questions:
Central Questions:

- What is the level of communication technology usage by distance education students in Nigeria?
- What are the perceptions of distance education students to distance education delivery methods in Nigeria?

Sub-questions:

- What are the challenges facing a distance education student in Nigeria studying via the Internet?
- What are the challenges facing a distance education student in Nigeria studying through the study centre?
- In students' experience, how do the following two distance education experiences compare: via study centre and web-based learning methods?

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A *Bio-data*

1. Age: ☐18-35 ☐Above 35

2. Sex: ☐Female ☐Male

3. Institution: ☐DLI ☐NOUN

4. Educational Program: ☐M.Sc. ☐B.Sc.

☐Diploma

B *General Information on Distance Education*

1. Are you happy studying as a distance education student? ☐Yes ☐No

Why/why not? (Please give brief reasons)_____

_____

_____

2. What is the mode of instruction at your institution?

S/No	Items	Always	Sometimes	Rarely
1	Face to Face			
2	Online			
3	Both			

3. How often do you meet with others in the learning community?

S/No	Items	Daily	3-4 times a week	1-2 times a week	Hardly ever
1	How often do you visit the study centre				
2	How often do you contact your instructor				
3	How often do you meet with other students				

4. By what means do you make contacts with the learning community (instructors and students)?

S/No	Items	*Very Often*	*Often*	*Do not know*	*Not Often*	*Not at all*
1	Face-to-face	☐	☐	☐	☐	☐

2	Telephone	☐	☐	☐	☐	☐
3	SMS	☐	☐	☐	☐	☐
4	E-mail	☐	☐	☐	☐	☐
5	Online – chats, social network forums, etc.	☐	☐	☐	☐	☐
6	Others (please specify)	☐	☐	☐	☐	☐

5. What is your mode of transportation to the study centre?

S/No	Items	Always	Sometimes	Rarely
1	Walking			
2	Motorbike			
3	Car/Bus			
4	Others (please specify)			

6. How much (in Naira) does it cost weekly on the average to get to the study centre?

☐ Below 500 ☐500-1000 ☐1000-2000 ☐Above 2000

C. E-learning Readiness

Identifying the level of independent learning strategies appropriate for e-learning (from strongly agree to strongly disagree)*

S/No	Items	*Strongly Agree*	*Agree*	*Do not know*	*Disagree*	*Strongly Disagree*
1	I am good at setting goals and deadlines for myself.	☐	☐	☐	☐	☐
2	I learn best by figuring things out for myself	☐	☐	☐	☐	☐
3	I can ignore distractions around me when I study	☐	☐	☐	☐	☐
4	Difficulty does not discourage me from learning something new	☐	☐	☐	☐	☐
5	If I need information, I do	☐	☐	☐	☐	☐

	not hesitate to get it.					
6	I stay away from new technologies	☐	☐	☐	☐	☐

*Developed based on Williams and Pennsylvania State University (2008)
. http://ets.tlt.psu.edu/learningdesign/assessment/onlinecontent/online_readiness

D. ICT Experience:

S/No	*Items*	*Always*	*Sometimes*	*Rarely*	*Never*
1	*Do you use the computer?*				
2	*Do you browse the Internet?*				

3. Do you have an e-mail address? ☐Yes ☐No
4. Are you on any social networks?

   ☐Facebook ☐Twitter ☐Other (s) Please

   specify:_____

5. Do you consider yourself computer literate? ☐Yes ☐No

If yes, how would you rate your level of computer usage?

S/No	Items	Beginner	Intermediate	Expert
1	*What is your overall level of computer skills and competency?*			
2	*Word Processing Package e.g. MS Word*			
3	*Spread Sheets e.g. MS Excel*			
4	*Databases e.g. MS Access*			
5	*Graphics Packages e.g. Photoshop, CorelDraw*			
6	*Browsers e.g. Internet Explorer*			
7	*Google Applications*			
8	*Yahoo Messenger*			
9	*Wikipedia*			
10	*Social Networks e.g. Face book, Twitter, etc.*			

E. What is the nature of your ICT Access?

S/No	Items	YES	NO
1	Do you own a computer?		
2	Do you use the services of the cybercafés?		
3	Do you do all-night browsing?		
4	Do you have a smart mobile phone?		
5	Do you use your mobile phone to download information from the Internet?		

6. How far is the closest cybercafé from your home or office?

☐Walking distance ☐ By Motor bike ☐By Car/Bus

7. How much (in Naira) does it cost weekly on the average to use the cybercafé?

☐ Below 500 ☐500-1000 ☐1000-2000 ☐Above 2000

8. How much (in Naira) do you pay monthly for a home internet service?

☐ 1,000 ☐5,000 ☐10,000 ☐N/A

F. Perceptions of study centre and web-based learning methods.

1. In brief summary, state your experience of study centre learning method in distance education:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

2. In brief summary, state your experience of web-based learning method in distance
education:

_____

_____

_____

_____

_____

_____

_____

1. Overall, do you prefer to study online at the office, home or cybercafé?

☐Yes ☐No

7. Please give a brief summary of main reason(s)

_____

_____

_____

_____

If you have experienced both study centre and web-based learning, please indicate your willingness to participate in an individual interview as a follow-up to your responses in this questionnaire by providing your name and phone number below.

Thank you for your time and for participating.

Name:_____ Tel: _____

Charity Fakinlede
Student Researcher

APPENDIX D

QUALITATIVE INTERVIEW PROTOCOL

These are proposed questions only therefore, additional or slightly different follow-up questions could be asked depending on the interviewee's responses at the time of the interview.

This interview is a follow-up to a survey questionnaire into the preparedness of Nigerian distance education students for e-learning. As a volunteer participant in this effort, you will be contributing to possible improvements in the delivery of technology mediated learning in Nigeria and Africa.
I assure you of full confidentiality of the information that you will be giving. The information you provide will be accessible only to the researcher and to the research supervisor for verification purposes only. The documents would be securely stored during the period of the study. The electronic data will be deleted from my computer storage, paper copies will shredded and properly disposed at completion of this research study. Please be aware that you are free to decide not to participate or withdraw at any time without any repercussions.
Also, audio recordings will be employed during the interview in order to guarantee the accuracy of information to be taken in the handwritten notes. All audio recordings will be destroyed at the end of the research study. Would you allow the use of an audio recorder?

☐Yes ☐No Please be assured that your participation in this interview will not be affected in any way and the interview will proceed in spite of your response, whether you allow or disallow the presence of a voice recorder.
Please be sure to answer all the questions to the best of your ability. Thank you.

1. What is your experience studying in Nigeria through the study centre?

_____

_____

_____

2. What are your challenges studying in Nigeria through the study centre?

_____

_____

_____

3. What is your experience studying in Nigeria via the Internet?

_____

_____

_____

4. What are your challenges studying in Nigeria via the Internet?

_____

_____

_____

5. In students' experience, how do you compare the study centre and web-based learning experiences?

_____

_____

_____

6. Overall, do you prefer to study online at the office, home or cybercafé?

   ☐Yes ☐No

7. Please give a brief summary of main reason(s) _____

   _____

   _____

Thank you for your time and for participating.

Charity Fakinlede
Student Researcher

APPENDIX E

RESEARCH ETHICS BOARD APPROVAL

MEMORANDUM

DATE:	July 11, 2011
TO:	Charity Onovughakpo Fakinlede
COPY:	Dr. Debra Hoven (Research Supervisor) Janice Green, Secretary, Research Ethics Board
FROM:	Dr. Simon Nuttgens, Chair, Research Ethics Board
SUBJECT:	**Ethics Proposal #11-22** ***"Expansion of Higher Education Opportunities in Sub-Saharan Africa: E-learning Readiness by Distance Education Students in Nigeria"***

Thank you for your revised application arising from the Research Ethics Board's "Conditional Approval" memo of June 22, 2011. Your cooperation in addressing the outlined items was appreciated.

On behalf of the Athabasca University Research Ethics Board, I am pleased to confirm that this project has been granted **FULL APPROVAL** on ethical grounds, and you may proceed with participant contact as soon as the additional minor revision noted below has been incorporated.

For file purposes only (no further review required), **please make revisions and resubmit the entire application,** showing changes on the documents by highlighting in yellow.

- **B2-1, B2-4, and Appendix F**: For protection of participant confidentiality, you indicated real first names only would be used in reporting.

  The use of either alpha or numeric pseudonyms would be safer than using real first names. Therefore, please change your answers in B2-1 and B2-4 to reflect that pseudonyms will be used, and change Appendix F to reflect this also.

The approval for this study "as presented" is **valid for a period of twelve months** from the date of this memo**. A final Progress Report (form) is to be submitted when the research project is completed.** Reporting forms are available online at http://www.athabascau.ca/research/ethics/.

As you progress with implementation of the proposal, if you need to make any changes or modifications please forward this information to the Research Ethics Board as soon as possible. If you have any questions, please do not hesitate to contact rebsec@athabascau.ca

APPENDIX F

DISTANCE EDUCATION STUDENTS AT A STUDY CENTRE

APPENDIX G
SUPPORT FOR ACCESS TO PARTICIPANTS

NATIONAL OPEN UNIVERSITY OF NIGERIA
14/16, Ahmadu Bello Way, Victoria Island

(Office of the Registrar)

Ref: NOUN/REG/HR/GEN/052

14th April, 2011

Mrs. Charity Fakinlede
6A, Ransome Kuti Road
University of Lagos
Akoka, Yaba
Lagos

Dear Mrs. Fakinlede,

RE: APPLICATION FOR AUTHORISATION FOR DATA COLLECTION

Please refer to your request dated 4th April, 2011 on the above subject matter.

I write to inform you that approval has been granted for you to gather relevant data from students of National Open University of Nigeria (NOUN).

However, you are advice to conduct yourself in an orderly manner as you gather your data.

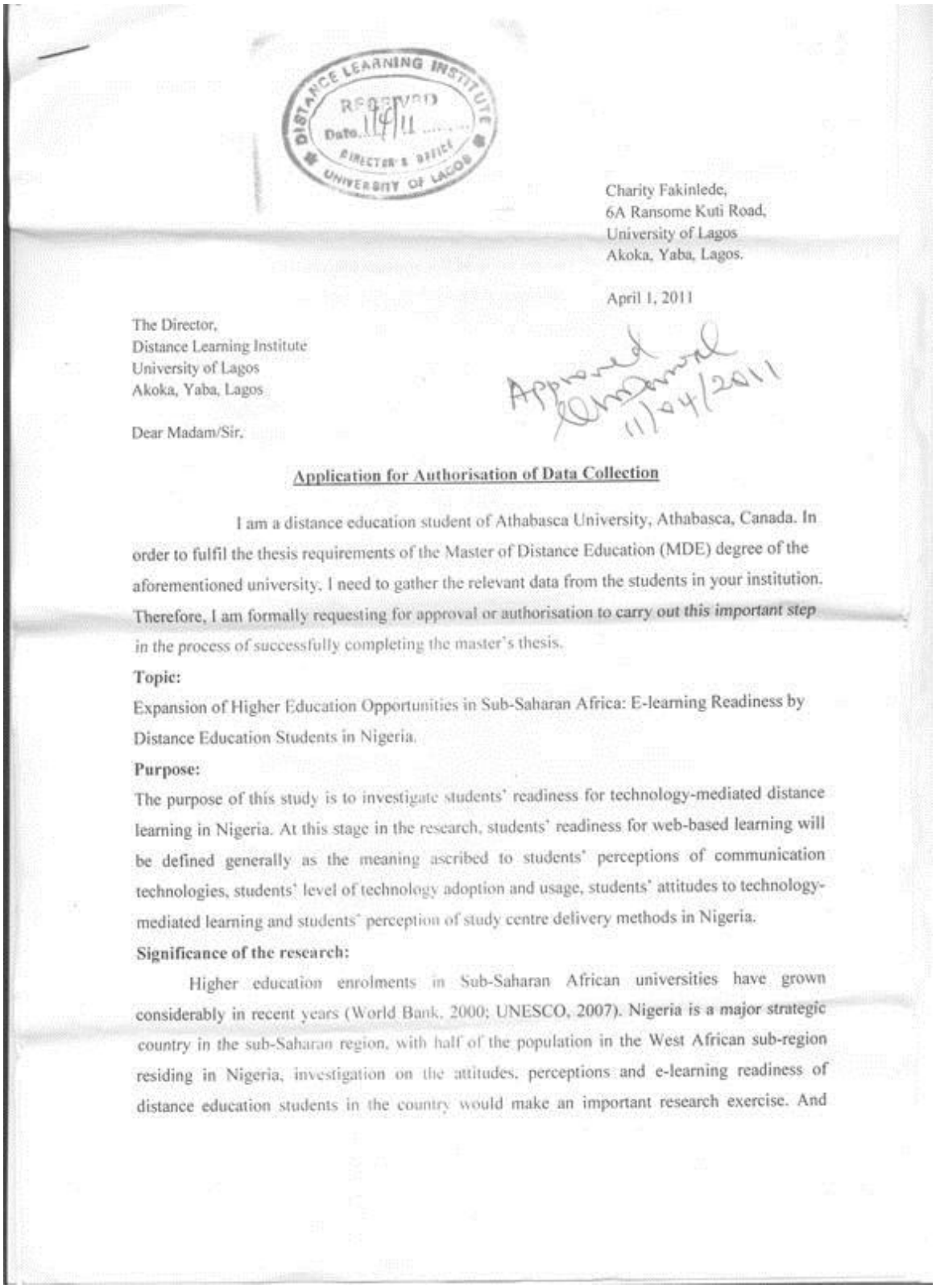
Management wishes you success in your research work.

Thank you.

John J. Ubaji
Deputy Registrar (HR)
For: Registrar

APPENDIX H:

SUPPORT FOR ACCESS TO PARTICIPANTS (UNIVERSITY OF LAGOS)



DISTANCE LEARNING INSTITUTE
RECEIVED
Date 11/4/11
DIRECTOR'S OFFICE
UNIVERSITY OF LAGOS

Charity Fakinlede,
6A Ransome Kuti Road,
University of Lagos
Akoka, Yaba, Lagos.

April 1, 2011

The Director,
Distance Learning Institute
University of Lagos
Akoka, Yaba, Lagos

Approved
11/04/2011

Dear Madam/Sir,

Application for Authorisation of Data Collection

I am a distance education student of Athabasca University, Athabasca, Canada. In order to fulfil the thesis requirements of the Master of Distance Education (MDE) degree of the aforementioned university, I need to gather the relevant data from the students in your institution. Therefore, I am formally requesting for approval or authorisation to carry out this important step in the process of successfully completing the master's thesis.

Topic:

Expansion of Higher Education Opportunities in Sub-Saharan Africa: E-learning Readiness by Distance Education Students in Nigeria.

Purpose:

The purpose of this study is to investigate students' readiness for technology-mediated distance learning in Nigeria. At this stage in the research, students' readiness for web-based learning will be defined generally as the meaning ascribed to students' perceptions of communication technologies, students' level of technology adoption and usage, students' attitudes to technology-mediated learning and students' perception of study centre delivery methods in Nigeria.

Significance of the research:

Higher education enrolments in Sub-Saharan African universities have grown considerably in recent years (World Bank, 2000; UNESCO, 2007). Nigeria is a major strategic country in the sub-Saharan region, with half of the population in the West African sub-region residing in Nigeria, investigation on the attitudes, perceptions and e-learning readiness of distance education students in the country would make an important research exercise. And

APPENDIX I

INVITATION AND CONSENT LETTER

Research Topic:
Greater Access to Higher Education through Communication Technology in Sub-Saharan Africa: E-learning Readiness by Distance Education Students in Nigeria.

Student Researcher: Charity Fakinlede

Dear Participant,

You are invited to participate in this research because of your experience in distance education.

The purpose of this study is to investigate readiness for web-based distance learning by distance education students in Nigeria. At this stage in the research, students' readiness for web-based learning will be defined generally as:

- the meaning ascribed to students' perceptions of communication technologies,
- students' level of technology adoption and usage,
- students' attitudes to technology-mediated learning and
- students' perception of study center delivery methods by distance education students in Nigeria.

This investigation on the attitudes, perceptions and e-learning readiness of distance education students in the country would make an important research study, because research findings could determine to a large extent the level of current educational technology adoption and therefore, the future of communication technology-mediated distance education delivery in Nigeria.

Quantitative data on the level of technology adoption and usage by distance education students will be collected using a paper survey questionnaire containing six categories of questions with each category consisting of about six sub-questions. These questions cover personal bio-data, level of computer access, literacy and usage, and general information on experiences in distance education.

The quantitative data for the research will be conveniently collected from at least fifty (50) distance education students from two of the five distance education institutions in the country. Data will be collected from students of the Nigerian Open University of Nigeria (NOUN), a single mode distance education institution. Secondly, data will also be gathered from distance education students in a dual mode institution – University of Lagos which operates a Distance Learning Institute.

In addition to quantitative methods, you are invited to participate in the qualitative data gathering process. The researcher will also be gathering qualitative data from two to four distance education students who indicate their willingness to participate in an individual follow-up interview. These students will be those who have experienced both study centre and web-based learning methods and to tell their stories about their own experiences with the phenomenon being explored in the study.

The existence of the research will be listed in an abstract posted online at the Athabasca University Library's Digital Thesis and Project Room; and the final research paper will be publicly available. Personal identifiable data will be reported in quotes to be identified by alpha-pseudonyms only, in order to protect your identity. Your full name will not be associated with the research findings in anyway. Your full identity will be known only to the researcher and to the research supervisor for data accuracy verification only. There are no known risks and uneasiness linked with this study. Do not hesitate to ask any questions about the research study before participating or any time during the period that you are participating.

All recordings in paper formats and subsequent conversion to electronic formats will be accessible to the researcher only, who will be responsible for secure storage and proper disposal of documents at the completion of the research study.

The following information is provided for you to decide whether you wish to participate in the above stated research study. Please be aware that you are free to decide not to participate or withdraw at any time without any repercussions. Participants who volunteer are expected to commit about thirty minutes of their time to respond to a questionnaire. Those who indicate their willingness to participate in the follow-up individual interview may need to commit at the most another thirty minutes to providing detailed information of their experiences on study centre and web-based learning methods in distance education.

Please sign below to give your consent and to indicate that you have read and fully understood the purpose and implications of participating. A copy of this consent letter will be handed over to you for your personal records.

_____ _____

Participant's (signature) Date

Thank you for offering to participate.

Student Researcher: Charity Fakinlede
Master of Distance Education,
Athabasca University, Alberta, Canada
conofak@yahoo.com

Supervisor: Dr. Debra Hoven
Centre for Distance Education,
Athabasca University, Alberta, Canada
debrah@athabascau.ca

This study has been reviewed by the Athabasca University Research Ethics Board. Should you have any comments or concerns regarding your treatment as a participant in this study, please contact the Office of Research Ethics at 1-780-675-6718 or by e-mail to rebsec@athabascau.ca

APPENDIX J

NEW CLASSROOM BLOCKS AT A STUDY CENTRE