OPPORTUNITIES AND CHALLENGES OF INTEGRATING ICTs IN EDUCATION DELIVERY IN THE INSTITUTE OF CONTINUING EDUCATION AT THE OPEN UNIVERSITY OF TANZANIA

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION IN ADMINISTRATION, PLANNING AND POLICY STUDIES OF THE OPEN UNIVERSITY OF TANZANIA

2013

CERTIFICATION

The undersigned certifies that he has read and hereby recommend for acceptance by the Open University of Tanzania a dissertation titled **"Opportunities and Challenges of Integrating ICTs in Education Delivery in the Institute of Continuing Education at the Open University of Tanzania"** in partial fulfillment of the requirements for the degree of Master of Education in Administration, Planning and Policy Studies [M.ED (APPS)] of the Open University of Tanzania.

Signature ……..

Dr. Kassimu A. Nihuka

(Supervisor)

Date.……

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DECLARATION

I, Herbert Maridiani Ngimi, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature…….

Date……

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DEDICATION

I dedicate this work to my late Grandmother Karnoya Dadigwa and my late father Mr. Maridiani Ngwedade Mungoli.

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Foremost, I thank God for his blessings, giving strength in all ways, keeping me safe and in good health. Through Him everything is possible and that is why I am now forwarding my Licentiate report. I also thank my supervisor, Dr. Kassimu Ali Nihuka from Institute of Continuing Education (ICE) of the Open University of Tanzania for his challenging but yet supportive guidance during the entire period of designing, implementing and writing this dissertation. I thank all those who participated in this research particularly students and Lecturers from the Institute of Continuing Education at the Open University of Tanzania. Their willingness to participate in this research has contributed to the success of my study and writing of this dissertation. I also register my sincere thanks to Director of ICE at Open University of Tanzania, Dr. James L. Kisoza for his valuable support and assistance during data collections. I again thank the Education Department Office at Mkuranga District for their important support, is without which this dissertation would have not been successfully completed.

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ABSTRACT

The purpose of this study was to investigate the opportunities and challenges for integrating ICTs in education delivery in the Institute of Continuing Education at the Open University of Tanzania. Specifically, the study investigated lecturers' and students' perceptions about ICTs, competence in ICT application and access to ICTs facilities. The study used multiple holistic research design. Structured questionnaires were used to collect data from 10 lecturers in ICE and 200 students drawn randomly from five selected regional centers (Ilala, Temeke, Kinondoni, Tanga and Morogoro). The findings revealed that there are several opportunities for successful integration of ICT in education delivery in ICE, which include positive perception of lecturers and students towards integration of ICTs in education delivery, possession of competency in basic ICTs applications and availability of access to basic ICT facilities such as computer and internet in offices, library internet cafes and at home for some of the lecturers and students. However, several challenges were identified to constrain successful integration of ICTs in ICE. These included lack of pedagogical competences by majority of lecturers, lack of ICT technical support at the institute level and access to ICTs due to inadequate infrastructure in the institute. Specific recommendation as related to policy formulation, enhancement of actions (practices) and for further research are suggested based on the findings of this study.

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LIST OF ABBREVIATIONS

CD	Compact Disk
DPTE	Diploma in Primary Teacher Education
DVD	Digital Versatile Disc
ICE	Institute of Continuing Education
ICT	Information and Communication Technology
LAN	Local Area Network
MOODLE	Modular Object-Oriented Dynamic Learning Environment
MS	Microsoft
OUT	Open University of Tanzania
PC	Personal Computer
SD	Standard Deviation
SDL	Self Directed Learning
SPSS	Statistical Package for Social Sciences

CHAPTER ONE

1.0 INTRODUCTION

1.1 Overview

This chapter introduces the study about the opportunities and challenges for integrating ICTs in education delivery at the Institute of Continuing Education (ICE) at the Open University of Tanzania. The chapter is organized into several parts which include back ground of the study, statement of the problem, significance of the study, purpose of the study, research questions, and limitation and delimitation.

1.2 Background of the Study

The Institute of Continuing Education is "the arm" of the Open University of Tanzania, charged with the mandate of providing opportunities for continuing education. For instance, through Foundation Courses (OFC), ICE provides a bridge that has open chances for those who would not have had opportunity to participate in conventional institutions of higher education. Also among others, ICE offers diploma in primary teachers' education (DPTE) as a response to the urgent need for quality diploma teachers in Tanzania's primary education system. The course promotes primary school teachers'' knowledge and skills in various techniques of interactive teaching and learning that are student centered.

Despite the fact that over 19344 student spread all over Tanzania has enrolled in ICE (OUT, 2012), program delivery in the institute is still traditional dominated by print study materials (Nihuka &Voogt, 2011; Nihuka 2011). There is limited

integration of ICT in the institute although the institute is leading in terms of having soft copies of study materials in CDs in the University. For example, only two courses have at least been uploaded in Moodle Learning Management System (i.e. ICT Instructional Materials and ODL Professional courses). In addition, only a few lecturers use technologies such as e-mail, CDs and mobile phones in their teaching.

Nihuka and Voogt (2011) and Nihuka (2011) found that ICTs such as Moodle, e-mail and mobile phones enhance: Flexible delivery and access to courses, provision of feedback to students, interaction and communication between lecturers and students' academic outcomes. The study reported in this dissertation, investigated opportunities and challenges of integrating ICTs in education delivery in the Institute of Continuing Education at the Open University of Tanzania. The knowledge generated would inform decisions regarding ICTs choices and strategies to be used for successful integration of ICTs in education.

1.3 Statement of the Problem

ICE is an important bridge that opens opportunities to majority who would have not otherwise accessed higher education. It also, contributes to the development of primary school teachers for quality primary education delivery. However, education delivery in the institute has remained traditional, characterized with printed materials. Evidence shows that ICT is used only to a limited extend in delivery of education in open and distance education institutions. The study investigated the opportunities and challenges of integrating ICTs in education delivery in the Institute of Continuing Education (ICE) at the Open University of Tanzania (OUT).

1.4 Purpose of the Study

The purpose of this study was to investigate the opportunities and challenges of integrating ICTs in education delivery in the Institute of Continuing Education at the Open University of Tanzania.

1.4.1 Specific Objectives

Specifically, the study sought to investigate the following objectives;

1. Perceptions of lecturers and students about ICTs integration in education delivery in the Institute of Continuing Education at the Open University of Tanzania.
2. Competences of lecturers and students in using ICTs in the Institute of Continuing Education at the Open University of Tanzania.
3. Lecturers and students access to ICTs, in the Institute of Continuing Education at the Open University of Tanzania.

1.5 Research Questions

The following was the main research question of the study: What are the opportunities and challenges of integrating ICTs in education delivery in the Institute of Continuing Education at the Open University of Tanzania? The following sub-research questions were formulated for the study;

1. What are lecturers and students perceptions about ICTs integration in education delivery in the Institute of Continuing Education?
2. What are lecturers' and students competences in using ICTs?
3. What kinds of ICTs do lecturers and students have access to?

1.6 Significance of the Study

As pointed earlier, the study integrated the opportunities and challenges of integrating ICTs in education. Specifically, the study sought to investigate lecturers and students perceptions regarding ICT integration in education, their knowledge about basic applications and issues related to their (lecturers and students) access to ICTs. The findings of this study have provided detailed description about the opportunities and challenges for integrating ICTs in education delivery in the Institute of Continuing Education at the Open University of Tanzania.

Moreover, the study has contributed to the existing knowledge about perceptions of lecturers and students regarding ICT integration, knowledge about lecturers and students knowledge about basic ICT applications such as Microsoft word, excel, PowerPoint etc and knowledge about access to ICTs among lecturers and students.

Particularly, the study has contributed to the existing knowledge about opportunities and challenges of integrating ICTs in education delivery in the Institute of Continuing Education at the Open University of Tanzania.

The study has identified areas for further research on application of ICTs in education. When pursued, such researches can contribute further to the available knowledge. It has also provided recommendations that policy makers can consider during policy formulation and implementation. It has furthermore generated recommendations in relation to improvement of lecturers' practices and for further research in the area of ICT integration in education.

1.7 Limitation of the Study

The following were some of the limitations of the study: First, dispersion of students in Regional centers made it difficult to reach them all. The study had to include only those who were reachable and available for the study. Also, there were some bureaucratic procedures which caused delay during data gathering. Lastly but not least, it was somehow difficult to get information from some respondents because some of them were hiding the information. To reduce this weakness, the study triangulated questionnaires and observation during data collection process.

1.8 Delimitation of the Study

The study was delimited in only one Institute of Continuing Education at the Open University of Tanzania which might not be the proper representative of other faculties and Institute at the Open University of Tanzania or in other Universities in our country. Also, the sample made very small proportion compare to population whereby only 210 respondents participate in the study. Lecturers were 10 and students were 200 from five regional centers of Temeke, Ilala, Kinondoni, Tanga, and Morogoro. The reason behind these centers is that; all centers chosen have big number of students, and is expected to give real picture as a sample. Hence the sample cannot permit generalization of the findings of the entire population.

CHAPTER TWO

2.0 REVIEW OF LITERATURE AND CONCEPTUAL FRAMEWORK

2.1 Overview

This chapter reviews literature on the opportunities and challenges of integrating ICTs in education delivery. The chapter uses the WST (**W**illingness or perceptions, **S**kills or Competences and **T**ools or Access to Technology) model as proposed by Knezek, Christensen, Hancock and Shoho, (2000) to discuss the influence of perceptions, competence and access to technologies on the application of ICT in education. According to Knezek et al. (2000) ICTs integration in education is successful, when a lecturer and students have the will, skills, and access to ICTs.

2.2 Review of Literature

2.2.1 Perceptions of Students and Lecturers on ICTs

2.2.1.1 Perceptions of Students on ICTs

The views of students and lecturers about technology are very diverse (Nihuka, 2011). According to Hiltz, Johnson, and Turoff, (1991), students are positive in using ICTs when working together online. Hilts et al (1991) found that there is differential use of ICT between the younger and older students. The younger students use Internet more for playing games and chatting, while the older students use it more for e-mail. This gives a clue that the use of ICT for leisure may be due to its earlier incorporation in lives, although the age differences in this population are minimal.

On the other hand, there are no excessive differences in the perception of university students regarding the uses, advantages and difficulties of ICT between students due to their gender or age group. For example, women mention more advantages related to autonomy and learning, such as having access to complementary material and establishing their own study time table (Azcorra, Bernardos, Gallego, & Soto, 2001; Jorge, Acosta, Garcia,& Diaz, (2003). Some women also mention more concerns or difficulties of a technological nature (not knowing how to use the Internet) and of a "communicative" nature (not "seeing" the teacher and classmates).

Although many students' satisfaction surveys have been conducted on the use of ICTs, it is still unclear whether or not students fully perceive the potential of ICTs and use them effectively (Noss & Pachler, 1999). Galanouli, Murphy, & Gardner, (2001) reported that students perceive three main barriers to their perceptions of ICT use during learning practice: teachers' attitudes, lack of resources and lack of time. Although lack of appropriate equipment was considered an important factor when students were unable to use ICT in their learning, it was also clear that teachers' uptake of ICTs and attitudes towards ICTs' use played the most crucial role in the success or failure of their teaching and learning. This concurred with Lee, Hong, Ling, (2002) who found that student perspective on using computers and their attitude played an important role for determining the success of its use.

In a study to examine students' perceptions of ICT integration by faculty at a Midwest public university, Keengwe (2007) reported that students lack computer skills in various computer applications that are necessary to support and enhance

their learning experiences. This implies that college students do not necessarily possess the much needed skills to conform to the process of ICT integration, but could benefit from direct technology-specific instruction by their faculty.

2.2.1.2 Perceptions of Lecturers on ICTs

Murphy and Greenwood (1998) reported that younger lecturers show a significantly higher level of confidence than older ones in the use of computers in teaching due to the fact of having positive perception on using ICT. The large majority of lecturers describe their teaching as being student- centred with the use of ICTs; that is, they provide opportunities for their students actively to search for the ways of learning, make choices about their own learning methods, and self-evaluate their learning progress. Furthermore, Lecturers beliefs about how using ICTs can impact on teaching and learning do vary greatly according to students' learning outcomes. Some lecturers feel comfortable in moving away from a traditional lecturer-centered teaching method to a more integrated approach using ICT (Yang, 2008).

According to Bakkabulindi (2008) and a Report by the Republic of Uganda (2002, 2007), most institutions of higher learning in Uganda, both tertiary and universities, depend on manual systems, with little use being made of computers in teaching, admission, examination, registration, students‟ records, finance and accounting. Waite (2004), cited in Malcolm and Godwilly, (2008) indicate that even though lecturers show great interest and motivation to learn about the potential of ICTs, in practice, the use of ICT is relatively low and it is focused on a narrow range of applications, with word processing being the predominant use. A study revealed

that student–oriented pedagogical approach, positive attitude towards computers, computer experience, and personal entrepreneurship of lecturers have a direct positive influence on the innovative use of ICT by the lecturers (Waite, 2004). Research has also shown that lecturers' attitudes towards ICT influence their acceptance of the usefulness of ICT and its integration in teaching (Huang & Liaw, 2005). According to Fraser and Fisher (1982) inconsistency between lecturers' actual use of ICT and perception can be attributed to inadequate supply of ICT resources, lack of access to the right kinds of technology, inadequate ICT pedagogical training and insufficient administrative support.

2.2.2 Competences of Lecturers and Students on ICTs

2.2.2.1 Students' Competences on ICTs

Studies conducted at the Open University of Tanzania (e.g. Nihuka, 2011) show that students have lower competences on basic computer and internet application, which is very basic in distance learning process. in learning process; however students are competent in using word processing, and writting email, while situation was worse on sending documents as attachments and on database and PowerPoint presentation.

Rae (2004) in his study reports that students are confident in their use of a Word processor, and an e-mail program. The percentage of students who rated their ability to use the following applications decreased from the 79.9% confident with a Web browser down through Spreadsheet, On-line bibliographic database, Database, Image program, Chat program, Presentation manager, to the 22.3% confident with a

Web authoring program.

Hellens, Nielsen, Clayton. & Beekheyzen, (2009) found that students in Singapore are using computers regularly so they are not unfamiliar with them. That can be a great start to enter ICT sequences of changes at a tertiary level. They also appear to like using computers, as many of them spend many hours a week on them. In Singapore students were reported to have high competencies in basic ICT skills and perceived themselves to be frequently engaged in self-directed learning (SDL) and collaborative learning (CoL) using ICT. Their perception of SDL revolved around achieving better academic results, and they tended to adopt a divide-and-conquer strategy for CoL.

2.2.2.2 Lecturers Competences on ICTs

Instructors require to be enriched by ICT so as to be competent in Moodle Learning Management system in their teaching (Heinich, 1989; Nihuka, 2011). According to Nihuka (2011), instructors have basic skills and competences on basic ICT application. His concern however related to whether or not such knowledge help lecturers to use technologies such as Moodle in their teaching for better learning of students. Evidence reveal that lecturer's mastery in ICT skills is critical to successful integration of ICT in teaching (Rosenfield & Martinez-Pons, 2005). In a study conducted by Murphy and Greenwood (1998), it was reported that lecturers feel that, compared to their students, they are not well-trained and adequately exposed to ICT. Furthermore, Mooij and Smeets (2001) in the study aimed to

investigate the implementation of ICT and its support within learning institutions in Holland found that lecturers‟ competence and confidence in their skills were one of the main factors that influence lecturers’ willingness to integrate technology in their teaching-learning process.

They claimed that lecturer’s lack of knowledge is a serious hindrance to integrate ICT into education delivery. Lecturers should attain and maintain an assured degree of technological competence to make instructional strategies more effective**.** This is supported by Albirini (2006) who stated that ICTs competence comprises not only of ICT knowledge, but also the skills and experience essential to put them into use. ICT competency allows the lecturers to turn into most efficient individuals in dealing with daily tasks such as to communicate with student’s parents; to keep records; to do research in their specific and main domains; and to prepare presentations (Priscilla, M. Nida, M. Khambari, M. & Wong 2008). Computer competence, therefore, can be observed in terms of teachers‟ beliefs concerning their knowledge, basic skill, and capability of performing essential functions using the computer.

Lecturers’ competence presupposes positive attitudes to ICT, understanding of educational potential of ICT, ability to use ICT effectively in the curriculum and ability to manage ICT use in the classroom. However, Bauer and Kenton (2005) stated in their study that lecturers’ with sufficient skills, and innovative and do easily overcome obstacles, they do not integrate technology consistently both as a teaching and learning tool. Reasons being outdated hardware, lack of appropriate

software, technical difficulties and student's computer skills levels.

The level of competence of ICT is influenced by computer training whose duration ranged from two weeks to six months. Specifically, 48.4% (36) got training from former teacher training colleges and schools, 15.4% (11) from private computer centers, and 3.8% (3) self-taught and 3.8% (3) taught by friends, while 28.6% (21) did not receive any training at all. The respondents who had received some form of computer training displayed more use ICT in various areas than those who did not receive any training (Mwalongo, 2011). The result is in agreement with Jegede, P. Odusola, D. & Ilori, M. (2007) and Lau and Sim (2008) who found that teachers were more proficient in word processing than the other computer applications.

This indicates that professional development has a significant influence on how well ICT is embraced in the classroom (Nihuka, 2011; Zwaneveld & Bastiaens, 2007). Zwaneveld and Bastiaens, (2007) identify five competences that lecturers should have when they want to integrate ICT in their teaching practice;

i) Individual media-competencies, this includes the basic knowledge and skills for handling the required hard-and software.
ii) Critical media-competencies, this includes the skills to select critically the media in the learning process of learners.
iii) A lifelong learning competence, this means that teachers have to be aware of all the new technologies that are developed and can be integrated in the daily teaching and learning practice.
iv) "Supervising learning process"-competencies, this contains that teachers can optimize the learning processes of learners. Communication is a core

element in learning. Learners in groups are more and more located at different places and locations. ICT makes it possible to maintain these learners. It is a competence for lecturers to know this and have the necessary skills to organize these kinds of communication and manage and enhance the learning process.

v) Educational-design competencies, this competence includes to develop in a right way the necessary teaching and learning resources. Teachers need follow–up training sessions to ensure that they keep abreast with current ICTs and have a clear understanding of what to change as well as how to change.

In order for ICT to be effectively integrated in teaching and learning, professional development of lecturers is critical, lecturers need to have a strong comfort level with, and consistently implementation on technological tools such as Moodle Learning Management System, mobile phones, and other ICTs in courses they are assigned to teach.

2.2.3 Lecturers' and Students' Access to ICTs

Tinio (2002) argues that lecturers' and students' access to ICT depends on their use of ICT as well as the cost of owning computer and network connectivity. Large numbers of lecturers and students in developing countries, Tanzania in particular, have less access to internet due to factors such as ICT illiteracy, computer viruses and sufficiency of internet cafes (Nihuka, 2011; Kozma 2000).

Also developing countries, have problems of poor supply of power, lack of internet connectivity, the most affected places are the rural areas. Learners in remote areas where they have no access to ICT equipments, have to travel long distances for the services. According to Mbwette (2008 &2009) and Bakari (2009) Open University of Tanzania has already made installation of ICT laboratories up to the regional center so that instructors and students can have access on it and apply them to search learning materials through Moodle learning management system.

One critical challenge however, is narrow bandwidth which affects internet speed in most developing countries as reported by (Gakio, 2006) summarizing that the state of internet connectivity in tertiary institutions in Africa is: "too little, too expensive and poorly managed; as a result internet technology becomes even less useful for research and education purposes, (p. 41)'' . Another challenge is maintenance of ICT infrastructures. For example, institutions of higher learning like Makerere University, Kyambogo University, Mbarara University of Science and Technology, Uganda Martyrs University, Nkozi University have tried to integrate ICT into teaching and learning environments, but they have faced a problem of high costs in purchasing ICT tools and maintenance (Farrell, 2007).

According to Boakye and Benini (2008) and Nihuka, (2011) lecturers integration of ICTs in education depend on whether they are actively engaged through an effective professional development programme such as Moodle learning management system. The study described in this dissertation sought to investigate opportunities and challenges of integrating ICTs in education delivery in the Institute of Continuing Education. The knowledge that has been generated will inform

decisions regarding strategies to be used to help lecturers integrate technology successful in their teaching.

2.2.4 Research Gap

The review of literature has indicated that universities worldwide and in some developing countries such as Tanzania are already attempting to integrate ICT in teaching and learning processes. This is because most of such studies have observed among other things that most lecturers have ICT pedagogical knowledge, there is access to ICT technical support and that there are adequate infrastructure that are required by lecturers and students in the institution. Therefore the aim of the study was to investigate challenges and opportunities that lecturers and students in the Institute of Continuing Education at the Open University of Tanzania have that can make it feasible to integrate ICT in teaching and learning process.

2.3 Conceptual Framework of the Study

The study was guided by the framework as suggested by Knezek,; Cristensen,; Hancock.; & Shoho, 2000) model of interactive learning so as to examine lecturers and students perceptions, competences, and access to ICT integration in education delivery in ICE at OUT. The model offers the way of conceptualizing the opportunities and challenges of integrating ICT in education delivery through investigating Lecturers and Students perceptions (willingness), competences (skills), and access to ICT. The model suggested that if Lectures and Students are positive about ICTs, are competent in using ICT and have access to ICT, then integration of ICT in education delivery process is likely to be successful.

The framework in Figure 2.1 shows the components that are essential to be considered when integrating ICTs in education delivery, which are perception, competence, and access. Many literature have shown that perception of students for integrating ICTs in education delivery are hindered by lecturers attitudes, lack of ICTs resources and lack of time to integrate learning management system in education. In most cases second years students are those who use ICTs in e-learning than first years. Lecturers themselves perceive ICTs in education delivery positively especially in developed countries while in developing countries lecturers prefers application of manual systems of education delivery.

In the areas of students competences in integrating ICTs in education delivery literatures shows that students have low competences in ICTs application in deferent percentages which affects academic results. Lecturers on their side are enriched with knowledge about how to use some ICTs programs in education delivery especially in using learning management system where by some of them use it fluently while others prefers traditional teaching methods.

Students who accessed ICTs for education delivery are affected by the ICTs cost bandwidth which affects internet speed and power supply. Computer lab are not the proper location that learning occurs smoothly because sometimes in computer lab you should wait some minutes to find the free computer, than mobile phone accessibility. Also Lecturers access ICTs mostly in University or regional centers.

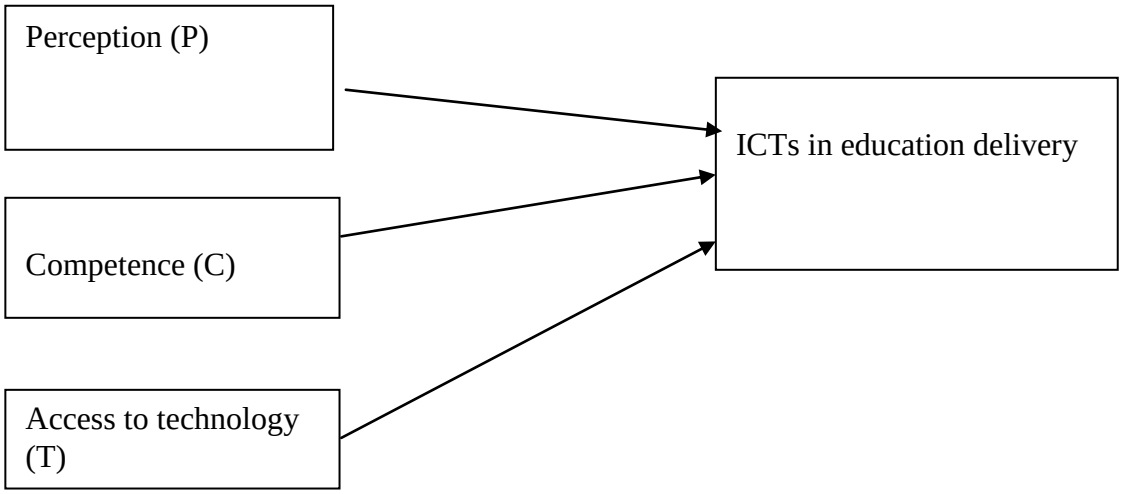

Figure 2.1: Conceptual Framework

Source: Knezek et al., (2000)

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Overview

This chapter describes the methodology that was used during the study on the opportunities and challenges for ICTs integration in the education delivery in the Institute of Continuing Education at the Open University of Tanzania. The chapter describes the research design, area of study, sample and sampling techniques, data collection techniques and ethical considerations.

3.2 Research Design

Research design is the conceptual structure within which research is conducted. It is a logical sequence in which the study is carried out, and constitutes the blue print for collection, measuring and analysis of data (Kothari, 2004). In this study, multiple holistic *case* research design was employed. A holistic multiple-case study refers to research with more than one case study but with only one unit of analysis. Multiple cases are examined because they provide more evidence than a single case and add confidence to the findings (Yin, 2003).

The case was the Institute of Continuing Education within the context of Open University of Tanzania. Lecturers and students formed the units of data analysis. The study sought to understand opportunities and challenges from lecturers and students perspectives regarding ICTS integration in education delivery at ICE. This understanding is critical in helping the University to make decision and plan on the best ways on how to help lecturers and students integrate ICT educationally.

3.3 Area of Study

The research study was conducted at the Institute of Continuing Education at the Open University of Tanzania. The study involved the following centres: Temeke, Ilala, Kinondoni, Tanga, and Morogoro as centres with significantly high numbers of students. Another reason why these centres were chosen was mostly logistical, that it was convenient for the study to reach students in the identified centres because of high numbers of student in these centres most of whom were studying with the Institute of Continuing Education.

3.4 Sample and Sampling Techniques

Both, lecturers from the Institute of Continuing Education and the students who were studying in the ICE from the selected centers were involved in the study. Precisely, 20 lecturers were drawn from the Institute of Continuing Education to participate in the study. Also; a total of 250 students drawn from five regional centers have invited to participate in the study. The distribution of students in the centres was as follows; Temeke 40 students, Ilala 70 students, Kinondoni 90 students, Morogoro 20 students, and Tanga 30 students. These students were in different years of study at the Institute of Continuing Education.

Stratified random sampling was used to select students sample size, from homogenous subgroups in the Institute of Continuing Education which forms several segments or strata in terms of sex and years of studying. Random sampling was then used to select students from each stratum. The names of students were written using pieces of papers and a simple lottery was applied, the selected names

formed up to the required sample group. The methods help to reduce biases and prejudice in selecting the sample. There were two strata's made up of 100 male and 100 female students selected from five regional centres. The regional centre's were selected by using non probability; purposive sampling procedure out of the 27 regional centres.

A non-probability; purposive sampling procedure was also employed to select a sample for 20 lecturers from Institute of Continuing Education at the Open University of Tanzania to participate in the study. This sampling technique helps to increase utility of findings (Kothari, 2004).

3.5 Data Collection Techniques

Structured questionnaire was used to collect quantitative data for the study. Most of quantitative data related to perceptions about ICT, competence in the use of ICT facilities, level of access to ICT facilities and usage of internet. The primary data was collected through structured questionnaires for lecturers and students. The questionnaires that were used to measure perceptions, competences and access to ICTs was adopted from previous studies by .Nihuka, (2011), and Knezek, (2000). The structured questionnaire was used to collect data from lecturers and students. Many items in the questionnaire were common for both lecturers and students, but some were specific to each sample.

The instruments were pilot tested and this helped in providing clarifications and improvements / revision of some of the items in the instruments that seemed to be ambiguous. The structured questionnaires used were comprised of yes-no type and

scaled questions with 5-point Likert scales. These closed questions were included as the instruments because it keeps the respondents to the subject of concern and to their objectivity (Best & Kahn, 2006:313).

3.6 Ethical Considerations

The study took into consideration all ethical issues that are critical for conducting research. These included first, the researcher had not been association with information that respondents provided which were not related to research topic. Secondly the permission letter from the Open University of Tanzania's authority was solicited aid provided to researcher. Thirdly, the researcher made sure that the respondent's privacy and confidentiality of the information provided were observed, these encouraged respondents to provide information more freely.

3.7 Data analysis Techniques

Data analysis is a process that entails editing, coding, classification and tabulation of collected data (Kothari, 2004). It involves organizing what the researcher has seen, heard and read so that the sense could be made of what the researcher has learnt (Glesne and Peshkin, 1992). All data were analyzed using a Statistical Package for Social Sciences (SPSS) program (version 17). Mostly statistics such as Means, and Standard Deviations, were computed in order to answer specific research questions.

CHAPTER FOUR

4.0 PRESENTATION OF FINDINGS

4.1 Overview

This chapter presents findings of the study. The chapter consists of three major parts namely: perceptions of lecturers and students about using ICTs, lecturers' and students' competences in using ICTs in education and lecturers' and students 'access to ICTs.

4.2 Perceptions of Lecturers and Students About Using ICT in Education

In this section lecturers and students were asked to express their perceptions about ICT integration in education delivery in distance learning. Findings related to perceptions of lecturers on using ICT in education (Table 4.1), pedagogical use of ICTs (Table 4.2), perceived benefits of using ICT in the distance learning (Table 4.3) and perceptions of students towards using ICT in their learning (Table 4.4) are presented.

4.2.1 Perceptions of Lecturers on Using ICT in Education

One of the research questions of this study investigated about lecturer's perceptions of using ICTs in education. Findings related to lecturers' perceptions about general use, pedagogical use and benefits of ICTs are presented in Means and Standard Deviations in Tables 4.1, 4.2 and 4.3. Findings show that generally majority of lecturers agree that ICTs are useful in education (Means ranging from 1.80 to 2.30).

Specifically, lecturers agree that using ICT in education delivery makes learning more interesting and fun (M = 2.30; SD = 1.30). Also, lecturers agree on the fact that using ICT improves presentation of materials (M = 1.80; SD = 0.92) and that

there is problems of hardware and software that interrupt learning (M = 1.90; SD = 0.32).

Table 4.1: Lecturers Perceptions on Using ICTs in Education

Lecturers perceptions		**Responses (N =10)**	
	N	**Means**	**SD**
Using ICT makes education delivery more interesting	4	2.30	1.30
Using ICT makes education delivery more fun	4	2.30	1.30
Using ICT improves presentation of materials	5	1.80	0.92
Using ICT makes education delivery more difficult	6	3.50	1.08
Using ICT reduces students motivation	3	3.13	0.80
Using ICT makes teaching more difficult	9	3.90	0.88
ICT makes the lesson more difficult	10	4.00	0.00
ICT makes preparation of the lesson more difficult	10	4.00	0.00
Hardware and software problems often disrupt the learning	9	1.90	0.32
Using ICT in teaching is very difficult in distance education deliver	10	4.00	0.00

Note: Scale; 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, 5 = strongly disagree.
Source: From field data (2012)

Moreover, findings reveal that lecturers disagreed that using ICT makes education delivery more difficult (M = 3.50; SD = 1.08). Moreover lecturers disagree that using ICT makes teaching more difficult to control the class, makes lesson more difficult (M = 4.00; SD = 0.00). Lecturers disagree that ICT makes preparation of lessons more difficult (M = 4.00; SD = 0.00) and that majority of lecturers disagreed that using ICT in teaching in distance education delivery is very difficult (M = 4.00; SD = 0.00).

Regarding lecturers perceptions on pedagogical use of ICT, findings in table 4.2 show that generally lecturers are receptive of pedagogical use of ICTs in distance education (Means ranging from 1.80 to 4.00).

Table 4.2: Lecturers' Perception about Pedagogical use of ICT in Education

Lecturers perceptions		**Lecturers (N =10)**	
	N	**Means**	**SD**
ICTs can improve my teaching	2	1.80	0.42
ICTs can influence student achievement	3	2.30	1.25
ICTs can replace teacher role in the face to face teaching	7	2.60	0.97
ICTs are very useful in courses implementation	5	3.00	1.05
ICTs reduce quality of material	8	3.60	0.52
Using ICTs in the distance education not safe as using other teaching materials	8	3.60	0.52
Students know more about using ICTs, so it embarrassing using ICTs in distance learning.	10	4.00	0.00

Note: Scale; 1= strongly agree, 2= Agree, 3= Neutral and 4= Disagree.
Source: From field data (2012)

Findings in Table 4.2 indicate that lecturers agree on the assertion that pedagogical use of ICT in education delivery can improve teaching (M = 1.80; SD = 0.42) and that ICT can influence students achievements (M = 2.30; SD = 1.25).Also majority of lecturers disagree on the following use of ICTs: ICTs reduce quality of materials (M = 3.60; SD = 0.52), using ICT in distance education is not safe as using other teaching materials (M = 3.60; SD = 0.52) and lastly, they disagree that students know more about using ICTs that it is embarrassing using ICTs in distance learning (M =4.00; SD = 0.00).

Table 4.3: Benefits of using ICTs in Teaching and Learning as Perceived By Lecturers And Students

Benefits		**Lecturers (N =10)**		**Students (N =200)**		
	N	**Means**	**SD**	**N**	**Mean**	**SD**
Students can access course, assignments, courses outline e.t.c regardless of location and time (flexibility in education).	10	1.00	0.00	186	1.14	0.35
Course delivery is improved and enhanced (efficiency)	8	1.20	0.42	183	1.13	0.50
Enhances students learning (effectiveness)	8	1.20	0.42	169	1.13	0.50
Improvement of students support services	8	1.20	0.42	170	1.26	0.69
Improvement of feedback to students.	8	1.20	0.42	158	1.22	0.44
Improvement of communication and interaction between lecturers and students and among students	8	1.20	0.42	187	1.06	0.50
Education processes can be more adaptable to the learning styles of students	7	1.30	0.48	146	1.45	0.86
Students acquire more responsibility for their learning	6	1.40	0.52	164	1.23	0.53
The relationship between theory and practice is strengthened (e.g. simulation)	6	1.40	0.52	172	1.14	0.35
Learning becomes fun	4	1.70	0.69	100	2.30	0.64

Source: Field data

Note: Scale; 1= Very large benefit, 2= Large benefit, 3= Small benefit and 4= No benefit

Table 4.3 examined the perception of lecturers and students whether there is a benefit of using ICTs in teaching and learning and generally they all agreed that there is larger benefit of using ICTs in teaching and learning. The arguments are supported by the range of Means between 1.00 and 1.45 for majority.

Overall, lecturers and students felt that there is a very large benefit of using ICT in teaching and learning because according to students ICT help them access courses, assignments and course outlines regardless of location and time (M =1.14; SD = 0.35) and students (M =1.00; SD = 0.00).

Specifically, lecturers and students felt that ICT is beneficial in the various ways such as (i) course delivery is improved and enhanced (M =1.13; SD = 0.50), (M =1.20; SD = 0.42), (ii) enhances students learning (M = 1.13; SD = 0.50),(M =1.20; SD = 0.42), (iii) improvement of students support services (M = 1.26; SD = 0.69), (M =1.20; SD = 0.42), (iv) improvement of feedback to students (M = 1.22; SD = 0.44), (M = 1.20; SD = 0.42, (v) improvement of communication and interaction between lecturers and students and among students (M =1.06; SD = 0.50), (M = 1.20; SD = 0.50), (vi) students acquire more responsibility for their learning (M = 1.23; SD = 0.53), (M =1.40; SD = 0.52), (vii) the relationship between theory and practice is strengthened (M =1.14; SD = 0.35), (M =1.40; SD = 0.52). Also lecturers and students felt that there is large benefit of using ICT in terms of the following (i) education processes can be more adaptable to the learning styles of students lecturers expressed (Lecturers: M = 1.30; SD = 0.48; Students M = 1.45; SD = 0.86). Findings also show that both lecturers and students perceive the Learning becomes fun as among large benefits of using ICT (M = 2.30; SD = 0.64), (M =

1.70; SD = 0.69).

4.3 Lecturers and Students competences in using ICTs.

The second research question investigated lecturers and students competences in using ICTs for education delivery. Findings of this research question are presented in the Table 4.4, 4.5, 4.6, 4.7, and 4.8.

Table 4.2.1shows the findings about competency levels among lecturers and students. Generally both lecturers and students are competent in using majority of ICT applications with Mean range of (M = 1.00 – 1.20) for lecturers and (M = 1.26, - 1.37) for students. However findings show that both lecturers and students are incompetent in few applications such as Moodle Learning Management System.

Table 4.4: Lectures and Students Competences in Basic ICTs Application

Applications		**Lecturers (N =10)**			**Students (N =200)**	
	N	**Mean**	**SD**	**N**	**Mean**	**SD**
Word processors (e.g. word program)	10	1.00	0.00	126	1.37	0.48
Database (e.g. excel program)	1	1.90	0.32	104	1.48	0.50
Presentation program (e.g. power point)	10	1.00	0.00	92	1.54	0.50
E-mail	10	1.00	0.00	148	1.26	0.44
Send a document as an attachment	10	1.00	0.00	136	1.32	0.47
World Wide Web (e.g. Internet explorer) to find education recourses.	8	1.20	0.42	142	1.29	0.46
Moodle learning management system	0	2.00	0.00	0	2.00	0.00

Source: Field data

Note: Mean Scale; 1= Yes, 2= No

Specifically, findings indicate that lecturers are competent in using program such as Microsoft word processors (M =1.00; SD = 0.00) and power point presentation (M = 1.00, SD = 0.00). They also can use e-mail (M =1.00, SD = 0.00) and can send document as an attachment (M = 1.00). However, only a few lecturers have competency in using database (M = 1.90; SD = 0.32) and World Wide Web (e.g. Internet explorer) to find education recourses (M = 1.20; SD = 0.42). Majority of the lecturers are not competent in using Moodle Learning Management System (M = 2.00; SD = 0.00).

On students' side in Table 4.4, findings show that about more than a half of them are competent in using email (M = 1.26; SD = 0.44), World Wide Web (e.g. Internet explorer) to find education recourses (M =1.29; SD = 0.46), Send a document as an attachment (M= 1.32; SD = 0.47), Word processors (M = 1.37; SD = 0.48), and database (M = 1.48; SD = 0.50). Also, less than a half of students are competent in Presentation program (e.g. power point) (M = 1.54; SD = 0.50), while no competent student in using Moodle Learning Management System (M = 2.00; SD = 0.00). However in comparing students and lecturers, results show that all of them are not competent on Moodle learning management system.

Furthermore, lecturers were asked to identify pedagogical support that they require for delivery of courses to students using ICTs. Findings indicate that majority of lecturers needs to be supported on designing of ICT courses (M = 1.00; SD = 0.00), on how to make course available online (M = 1.00; SD = 0.00), on how to deliver courses using appropriate technologies (M = 1.00; SD = 0.00) and on how to facilitate students learning using technologies (M = 1.00; SD = 0.00).

Table 4.5: Pedagogical Supports Needed by Lecturers

Pedagogical Support Needed		**Lecturers (N = 10)**	
	N	**Mean**	**SD**
Support on designing of ICTs courses.	10	1.00	0.00
Support on how to make courses available on line	10	1,00	0.00
Training on how to deliver courses using appropriate technologies	10	1.00	0.00
Support on how to facilitate students learning using appropriate technologies	10	1.00	0.00

Source: Field data

Note: Scale; 1= Yes, 2= No

Findings in table 4.6 generally shown that majority of students investigated responded that they are regularly competent in using email in communication, searching materials, word processing and other ICT applications**.**

Table 4.6: ICTs Programs Which Students are Competent and Often use it

Programs		**Students (N =200)**	
	N	**Mean**	**SD**
Communication (through e- mail)	73	2.06	1.01
Searching for materials	62	2.19	0.99
Word processing / electronic type writing.	73	2.42	0,97
Database / spreadsheet / excel	74	2.98	1.02
Presentations (PowerPoint)	80	2.98	1.03
Learning (through a tutor, moodle, video /audiotapes e.t.c.)	97	3.50	1.00

Source: Field data

Note: Scale. 1=Often, 2= Regularly, 3= Sometimes, 4= Never

Specifically students are competent to use ICT program for; (i) communication through email (M =2.06; SD = 1.01), (ii) searching materials (M = 2.19; SD = 0.99), and (iii) word processing / electronic type writing (M = 2.42; SD = 0.97).

Also, findings show that students are sometimes competent in using ICT for; (i) database/spreadsheet/excel (M= 2.98; SD = 1.02), and (ii) presentation (PowerPoint) (M =2.98; SD=1.03). Majority of students responded that they never learn through the following Learning Management Systems, (Moodle, Tutor, Video/audiotapes (M = 3.50; SD = 1.00).

Students were required to identify the learning support they needed so as to be competent in using ICTs in education. Findings indicate that majority of students demanded training on various areas. [Findings in table 4.7 provides the Mean ranges from (M = 1.13 up to M = 1.29)].

Table 4.7: Students' Learning Needs Require to be Addressed to Students So That They are Competent in Using Through ICTs in Education

Learning needs		**Students (N= 200)**	
	N	**Mean**	**SD**
Basic skills on computer and Internet use	173	1.13	0.34
Orientation on how to use specific technology for learning	153	1.25	0.37
Strategies on how to learn in an e- learning environment	151	1.25	0.43
Student manual on how to access course outline	148	1.26	0.49
Help on how to find information from university website	143	1.29	0.49

Source: Field data
Note: Scale; 1= Yes, 2= No

Finding from Table 4.7, specifically indicate that majority of students strongly agree that, they are willing to learn the following applications so as to be competent in using ICT (i) basic skills on computer and internet use(M = 1.13; SD = 0.34),
(ii) Orientation on how to use specific technology for learning (M = 1.25; SD = 4.37), strategies on how to learn in an e- learning environment (M = 1.25; SD = 0.43), student manual on how to access course outline (M = 1.26; SD = 0.44), help on how to find information from university website (M = 1.29; SD = 0.45).

Generally, lecturers and students in table 4.8 agreed to get technical support for effective use of ICT so as to be competent in distance learning. Findings from table 4.8 show that lecturers need more technical support than students. These findings are specifically supported by lecturers' comments that they need technical support in (i) designing learning materials (M = 1.00; SD = 0.00), (ii) pedagogical support in production of learning (M = 1.00; SD = 0.00), (iii) establishment of the mobile programming lab (M = 1.00; SD = 0.00), (iv) establishment of website for information and dissemination of channels (M = 1.00; SD = 0.00) and (v) web development skills (M = 1.00; SD = 0.00).

Also, findings show that both lecturers and students shared the opinion.
They strongly need technical support for effective use of ICT in, i.e. (i) trouble shooting (M= 1.18; SD = 0.39), while students results indicates that (M = 1.00; SD = 0.00), (ii) installation of software and hardware (M = 1.22; SD = 0.42), (M = 1.30; SD = 0.48). Also student pointed out the strong desire of getting technical support in connecting computer accessories for effective use of ICT, (M = 1.25; SD = 0.44).

Table 4.8: Technical Supports Needed by Lectures and Students For The Effective Use of ICT

Technical support		**Lecturers (N=10)**			**Students (N =200)**	
	N	**Mean**	**SD**	**N**	**Mean**	**SD**
Trouble shooting	10	1.18	0.39	164	1.00	0.00
Installation of software and hardware	7	1.22	0.42	156	1.30	0.48
Connecting computer accessories				149	1.25	0.44
Designing learning materials	10	1.00	0,00			
Pedagogical support in production of learning materials	10	1.00	0.00			
Establishment of the mobile Programming lab	10	1.00	0.00			
Establishment of website for Information and dissemination of Channels	10	1.00	0.00			
Web development skills	10	1.00	0.00			

Source: Field data *Note:* Scale; 1= Yes, 2= No

4.4 Lecturers and Students Access to ICTs

The third research question of this study investigated places where lecturers and students can access ICT facilities. Majority of lecturers and students indicated that they have access to ICT at different places (Table 4.9). The availability and access to ICT by lecturers show that the Mean range is 1.24 and access to ICT for majority of students is at 1.46.These indicate that ICT physical facilities are available for lectures and students.

4.4.1 Places where lecturers and students access ICTs

Table 4.9 shows various places where lectures and students can access ICTs. Findings show that unlike students, majority of lecturers access ICT in almost all places such as at the Open University of Tanzania's offices and library, internet café, regional centers and at home.

Table 4.9: Places where Lecturers and Student access ICTs

Access places for ICT physical facilities		**Lecturers (N=10)**			**Students (N=200)**	
	N	**Mean**	**SD**	**N**	**Mean**	**SD**
In the office at the Open University/At working places	10	1.00	0.00	93	1.54	0.50
In the library of the Open University	8	1.20	0.42	124	1.38	0.49
At Internet café	8	1.20	0.42	127	1.36	0.48
At home	8	1.20	0.42	108	1.46	0.50
At the regional centre offices	2	1.80	0.42	86	1.57	0.50

Source: Field data. *Note:* Scale; 1= Yes, 2= No

In response to the question which needed to understand access places for ICT physical facilities by lecturers and students, findings as reported in Table 4.9 indicate that lecturers and students have better access of ICT physical facilities in the following areas ;(i) in the office at the Open University of Tanzania (M = 1.00; SD = 0.00), (ii) in the library of the Open University of Tanzania (M = 1.20; SD = 0.42), (iii) at Internet café (M = 1.20; SD = 0.42), (iv) at home (M = 1.20; SD = 0.42) and (v) at regional centre offices (M = 1.80; SD = 0.42). Also findings reported in table 4.9 indicate that, students agree that they have little access to ICT physical facilities as follows;(i) at working places (M = 1.54; SD = 0.50), (ii) in the

library of the Open University of Tanzania (M = 1.38; SD = 0.49), (iii)at internet café (M = 1.3; SD = 0.48), (iv)at home (M = 1.46; SD = 0.50), and (v)at the regional center which indicates very few students agreed for this assertion (M = 1.57; SD = 0.50).

Responses on lecturers and students access to various ICTs are presented in Table 4.10.

Table 4.10: The ICTs Equipments and Programs which Lecturers and Students have Access to

ICT Equipments		**Lecturers (N=10)**			**Students (N=200)**	
	N	**Mean**	**SD**	**N**	**Mean**	**SD**
Computer	10	1.00	0.00	127	1.36	0.48
Internet / Intranet	10	1.00	0.00	131	1.35	0.48
Mobile telephones (for sending short educational messages to students/lecturers.	10	1.00	0.00	101	1.50	0.50
DVDs and CDs	9	1.10	0.32	98	1.51	0.49
Audiotapes	2	1.70	0.48	77	1.61	0,49
Videotapes	3	1.80	0.42	78	1.61	0.49
Video conferencing technologies	1	1.90	0.32	72	1.64	0.48

Source: Field data.

Note: Scale; 1= Yes, 2= No

Specifically, findings in table 4.10 indicate that majority of lecturers agreed to have the access to; (i) Computer programs (M = 100; SD = 0.00), (ii) internet/intranet (M = 1.00; SD = 0.00), (iii) mobile telephone (for sending short educational messages to students (M = 1.00; SD = 0.00) and for the (iv) DVDs and CDs (M = 1.10; SD =

10.32). However very few lecturers have access the following ICTs programs; (i) audiotapes (M = 1.70; SD = 0.48), (ii) videotapes (M = 1.80; SD = 0.42), and (ii) video conferencing technologies (M = 1.90; SD = 0.32).

Furthermore, findings revealed that students' have minimal access to the following equipments and programs; (i) computer (M = 1.36; SD = 0.48), (ii) internet/intranet (M = 1.35; SD = 0.48), and (iii) mobile telephones (for sending academic short messages to lecturers (M = 1.51; SD = 0.50). Meanwhile, only a few students have access to ICTs such as videotapes (M = 1.61; SD = 0.49), audiotapes (M = 1.61; SD = 0.49) and Video conferencing technologies (M = 1.64; SD = 0.50).

CHAPTER FIVE

5.0 DISUSSION

5.1 Overview

This chapter discusses findings from the study that investigated opportunities and challenges for integrating ICTs in education delivery in the Institute of Continuing Education at the Open University of Tanzania

5.2 Discussion

The study reported in this dissertation aimed to investigate opportunities and challenges of integrating ICTs in education delivery in the Institute of Continuing Education (ICE) at the Open University of Tanzania (OUT). Findings have shown that there are a number of opportunities and challenges around integration of ICTs in education delivery in ICE.

One of the opportunities that makes it possible to integrate ICTs in education in ICE is that lecturers and students had positive perceptions about integrating ICTs in education delivery. For example, according to lecturers using ICTs will make their courses more interesting, fun and will improve presentation of materials. Also lecturers indicated that integration of ICTs will increase students' motivations which will in turn enhance students' achievements. According to Rogers (1995), Watson (1998) and Woodrow (1992), lecturers' positive attitudes toward integration of ICT have been universally recognized as an important factor for the success of ICT integration in education. On the part of students, findings have revealed that integration of ICT in teaching and learning will help them better communicate with lecturers and among themselves, enable prompt feedback from

lecturers and increase their level of engagement in distance education which changes the existing traditional pedagogical approaches (Keengwe, 2007). Furthermore, students accepted the rationale for introducing ICT in the Institute of Continuing Education because it will open new opportunities in distance education in developing countries as reported in Kirkwood and Price (2005).

Another opportunity for ICTs integration in ICE is that both lecturers and students are competent in some basic ICT applications such as Microsoft word processor, e mail, sending document as attachment and World Wide Web. Related findings were also reported in previous studies by Nihuka (2011) and Buabeng-Andoh (2012). According to Thomas and Carswell (2000), most developing countries use e-mails in distance education for communications and interaction between lecturers and students. Therefore, the opportunity of being competent in some ICTs applications makes it possible to think about integrating ICTs in education delivery in ICE.

Another opportunity which is reported in the findings relate to the fact that lecturers and students do access ICT infrastructures in various places. Findings indicate that lecturers and students do access ICTs facilities such as computer, internet / intranet, DVD and CD at the offices / students work places, university library at headquarter of the Open University of Tanzania, internet cafes and at their homes. Quite a few of them reported to have access to ICTs facilities such as audiotapes, video tapes and video conferencing. Similar findings have been reported in previous studies such a Aguti and Fraser, (2006), Bates, (1994); and Meyer – Peyton, *(2000*), Nihuka,*(*2011). Despite opportunities, several challenges for integration of ICTs in ICE were reported, which included lack of ICT pedagogical knowledge among lecturers, lack

of institute-based technical support for lecturers and students, inadequate ICTs infrastructure and lack of access to some ICTs infrastructure.

On the challenge of lack of pedagogical knowledge, findings have shown that majority of lecturers are incompetent in using ICTs such as MOODLE Learning Management System pedagogically. Although the Open University of Tanzania has done several efforts to integrate Moodle as a Learning Management System (Bakari, 2009) findings indicate that majority of lecturers are not competent in using the system which was supported by students who responded that they never learn through the systems.

This challenge is not unique to Open University of Tanzania because it has also been reported to exist elsewhere as well (Hoven, 2000; Kirkwood & Price, 2005 and Smart & Cappel, 2006). This indicates that training of lecturers on pedagogical use of ICTs is necessary in order to make ICT integration in education delivery in ICE successful. Another reported challenge was lack of technical support on how to integrate ICTs in education for both lecturers and students. On the part of lecturers, they indicated they require technical support when designing ICT-based courses, how to put / make courses available in MOODLE so as to enable students' access materials online among others. Students too require technical support when integrating ICT in education delivery as reported in Nihuka (2011) and Albirini, (2006).

Inadequate ICTs infrastructure is another challenge for successful integration of ICTs in ICE. According to Yang (2008); Teo and Lim (1998), that lack of technical

support for lecturers and students is among critical challenges for successful integration of by lecturers and students

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

This chapter provides conclusions of the study and suggests some recommendations which are critical for successful ICT integration in education delivery.

6.1 Conclusions

Based on the research findings, it is concluded that there are several opportunities at ICE that make it possible to consider integrating ICTs in education delivery in Open and Distance Learning at the Open University of Tanzania. Specifically, the following conclusions are drawn:

i) Generally, lecturers and students have positive perceptions about integration of ICT application in education delivery in ICE. Majority of lecturers are receptive to integrate ICTs and are motivated to teach and prepare learning materials using ICTs programs and equipments. Students on the other hand, they also have positive perceptions about integrating ICTs because online learning has a lot of benefits for them.

ii) Both lecturers and students are competent in basic ICT applications such as Microsoft word processor, e-mail, excel and the like. However, majority of lecturers lack competence in pedagogical use of ICTs to enhance education delivery for which they required proper training given to them for successful integration.

iii) Both, lecturers and students do have access to some ICT infrastructure in various places. However, lecturers and students should be given pedagogical and other technical support on ICT in order for them to

effectively integrate ICTs in teaching and learning supported by MOODLE Learning Management System This is likely to contribute to successful integration of ICT in education delivery in ICE.

6.2 Recommendations

6.2.1 Recommendation for Policy Formulation

In order to improve ICT policy in the country, the following recommendations are made: The institutional ICT policy at OUT should acknowledge that since majority of lecturers and students in ICE and OUT in general are generally positive about ICT integration, are ICT competent on some basic applications and can access some ICT facilities in various places, then, ICT implementation in the institution should consider those with such competence first and include the rest in the course of time when implementing any ICT-based innovation in the institution. The Policy should spell out this quite clearly so that ICT implementation in the university is successful.

6.2.2 Recommendation for action

i) The Open University of Tanzania should consider providing more training on pedagogical use of ICTs for delivery of education in distance learning for lectures and students. The university should also encourage lecturers and students to own some ICT facilities themselves such as laptops or desktops.

ii) Lecturers and students should invest their time in learning and training themselves about ICT application in education to acquire more capacity

and reap more benefits of ICT for in education. It is also recommended that every lecturers and student should consider acquiring computer for private use in education so as to enhance access to such facilities.

It is further recommended that for effective and efficient education delivery in distance learning, lecturers and students should use ICT facilities more often, this will give them more experience and further enhance teaching and learning in distance.

6.2.3 Recommendation for Further Research

The study noted several issues and gaps required to be addressed. On this basis the following suggestions are hereby put forward:

i. Since the study was conducted at the Institute of Continuing Education involving only a few regional centers with a limited sample, there is a need to conduct a similar study including other faculties with a larger sample size for generalization purposes.

ii. Similar research can be done to involve several universities in the country in order to determine challenges and opportunities for integration of ICT in education delivery.

iii. Further research should also be designed to investigate experiences of lecturers and students on ICT integration in education delivery in Open and Distance Education at the Open University of Tanzania. This kind of study can only be possible after some lecturers have been trained and shown how to transform their print –based courses into ICT-based courses for delivery using particular ICT such as MOODLE Learning Management System.

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APPENDICES

Appendix A; Questionnaire for lecturers

A. Introduction

Dear Sir / Madam.

B. This interview aims to get your views about the use of Information and Communication Technologies (ICTs) in your education delivery in the institute of continuing education at OUT. In this study ICTs are used to mean Computers, Television, LCDs, DVD, and other related technologies such as *course management systems (e.g. a tutor, moodle, and blackboard e.t.c.), internet/intranet, videotapes, audiotapes, PowerPoint presentations, video conferencing and mobile learning.* . Please feel free to provide your views and be assured that all the information you provide shall be used sorely for the purposes of this study.

C. Biographic data

1. Your age: .....
2. Sex: male[ ], female[ ]
3. Faculty / institute.....
4. Course(s) involved in teaching.....
5. Years of teaching in this university: .....
6. Rank: tutorial assistant[ ], assistant lecturer[ ], lecturer[ ], senior lecturer[ ], professor [ ]

RQ.1:
(a) What is your perception about ICTs integration for education delivery at OUT?

S/N	**Teachers perception about general ICTs application.**	**Responses**				
		SA	**A**	**N**	**D**	**SD**
1	Using ICT makes it more difficult to control class					
2.	ICT makes the lesson more difficult					
3.	ICT makes preparation of the lesson more difficult					
4.	Hardware and software problems often disrupt the lesson					
5.	Using ICTs in teaching is very difficult in distance education delivery					
6	Using ICTs makes education delivery more interesting					
7	Using ICTs makes education delivery more fun					
8	Using ICT improves presentation materials					
9	Using ICTs makes education delivery more difficult					
10	Using ICTs reduces students motivation					
11	Using ICTs makes education delivery more interesting					
12	Using ICTs makes education delivery more fun					

(b). what is your general perception on pedagogical use of ICTs integration for education delivery in distance learning?

S/N	**Lecturers perceptions for ICTs integration in education in the OUT**	**Response**				
		SA	**A**	**N**	**D**	**SD**
1.	ICTs can improve my teaching					
2.	ICTs can replace my role in the face to face teaching.					
3.	ICTs can influence student achievement					
4.	ICTs reduce quality of material					
5.	Using ICTs in the distance education is not safe as using other teaching materials					
6.	Students know more about using ICTs so it embarrassing using ICTs in distance learning.					
7.	ICTs is very usefulness in courses implementation					

(c). what, do you consider as the benefits of using computers and internet in teaching and learning processes in distance education?

Items	**responses**			
	very large benefit	*large benefit*	*small benefit*	*no benefit*
students acquire more responsibility for their learning				
the relationship between theory and practice is strengthened (e.g. through simulations)				
educational processes can be more adapted to the learning styles of students				
learning becomes fun				
students can access courses, assignments, course outlines e.t.c regardless of location and time (flexibility in education)				
enhances students learning (effectiveness)				
course delivery is improved and enhanced (efficiency)				
improvement of students support services				
improvement of communication and interaction between instructors and students, and among students				
improvement of feedback to students				

RQ 2.

(a). Are you competent in using the following applications?

Items	**responses**	
	yes	*no*
word processor (e.g. word program)		
database (e.g. excel program)		
presentation program (e.g. PowerPoint		
e-mail		
send a document as an attachment		
world wide web (e.g. internet explorer) to find educational reso urces		
Moodle learning management system		

RQ2.

(b). What kind of technical support do you need to be able to use computer and internet successfully?

Items	**Responses**	
	yes	*No*
Troubleshooting		
installation of software		
Designing learning materials		
Pedagogical support in production of learning materials		
Establishment of the mobile programming lab.		
Establishment of website for information and dissemination of channels		
Web development skills		

(c).What kind of pedagogical support is desired for you to deliver your course(s) using e-learning technologies?

Items	**responses**	
	yes	*no*
support on designing of e-learning courses		
support on how to make courses available online		
training on how to deliver courses using appropriate technologies		
support on how to facilitate students learning using technologies		
other, namely.....		

RQ3

(a). Do you have access to computer and internet at any of the following places?

Items	**responses**	
	yes	*no*
in your office at the Open University of Tanzania		
at the regional centre offices		
in the library of the Open University of Tanzania		
at home		
at internet café		
other, namely.....		

(b). Do you have access to the following ICTs

Items	**responses**	
	yes	*no*
Computer		
internet/intranet		
Videotapes		
audiotapes		
DVDs and CDs		
video conferencing technologies		
mobile telephones (for sending short educational messages to students)		

Thanks for your time and cooperation

APPENDIX B; Questionnaire for students

A. Introduction

Dear student,

This interview aims to get your views about the use of Information and Communication Technologies (ICTs) in your education delivery in the institute of continuing education at OUT. In this study ICTs are used to mean Computers, Television, LCDs, DVD, and other related technologies such as *course management systems (e.g. a tutor, moodle, and blackboard e.t.c.), internet/intranet, videotapes, audiotapes, PowerPoint presentations, video conferencing and mobile learning.* . Please feel free to provide your views and be assured that all the information you provide shall be used sorely for the purposes of this study.

B. Biographic data

1. Your age: .....
2. Sex: male[ ], female[ ]
3. Faculty / institute.....
4. Regional centre.....
5. Program of study.....
6. Year of study.....

C. Questions

RQ1.

What do you perceive as the benefits of using computers and internet in your distance learning processes?

Items	**responses**			
	very large benefit	*large benefit*	*small benefit*	*no benefit*
students acquire more responsibility for their learning				
the relationship between theory and practice is strengthened (e.g. through simulations)				
educational processes can be more adapted to the learning styles of students				
learning becomes fun				
students can access courses, assignments, course outlines e.t.c regardless of location and time (flexibility in education)				
enhances students learning (effectiveness)				
course delivery is improved and enhanced (efficiency)				
improvement of students support services				
improvement of communication and interaction between instructors and students, and among students				
improvement of feedback to students				

RQ 2.

(a). Are you Competent in working with the following applications?

Items	**Responses**	
	yes	*No*
word processor (e.g. word program)		
database (e.g. excel program)		
presentation program (e.g. PowerPoint		
e-mail		
send a document as an attachment		
world wide web (e.g. internet explorer) to find educational resources		

(b) How often do you use computer for.....?

Items	**Responses**			
	Often	*regularly*	*sometimes*	*Never*
word processing / electronic type writing				
database/spreadsheet/excel				
presentations (PowerPoint)				
searching for materials				
communication (through e-mail)				
learning (through a tutor, moodle, video/audiotapes, e.t.c)				

RQ2.

(c). What kind of technical support is desired for you to effectively use computers and internet for distance learning?

Items	**Responses**	
	yes	*No*
troubleshooting		
installation of software and hardware		
connecting computer accessories/parts		
None		
other, namely.....		

(d). What kind of learning needs will you need to be addressed for you to successfully learn by using ICTs?

Items	**Responses**	
	yes	*no*
orientation on how to use specific technology for learning		
students manual on how to access courses online		
strategies on how to learn in an e-learning environment		
basic skills on computer and internet use		
help on how to find information from university's website		
other, namely.....		

RQ 3

(a) Do you have access to computer and internet at the following places?

Items	**responses**	
	yes	*no*
in the library of the Open University of Tanzania		
at the regional centre offices		
at your workplace		
at home		
at internet café		
Other, namely.....		

(b). Do you have access to the following e-learning technologies

Items	**responses**	
	yes	*no*
Computer		
internet/intranet		
Videotapes		
audiotapes		
DVDs and CDs		
video conferencing technologies		
mobile telephones (for sending short educational messages to students)		

(c). What difficulties do you face when using computer?

Items	**Responses**		
	important constraint	*not so important constraint*	*no constraint*
availability of access points			
slow network			
unsuitable computer (e.g. old computer, technical problems e.t.c)			
experience in computer use			
Other, namely.....			

Thanks for your time and cooperation

APPENDIX C

LETTER OF THE CLEARANCE FOR MR. HERBERT MARIDIAN NGIMI

THE OPEN UNIVERSITY OF TANZANIA

DIRECTORATE OF RESEARCH, PUBLICATIONS, AND POSTGRADUATE STUDIES

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REF: HD/E/627/T.11

Date: 08/05/2012

TO WHOM IT MAY CONCERN

RE: RESEARCH CLEARANCE: HERBERT NGIMI

The Open University of Tanzania was established by an act of Parliament no. 17 of 1992. The act became operational on the 1st March 1993 by public notes No. 55 in the official Gazette. Act number 7 of 1992 has now been replaced by the Open University of Tanzania charter which is in line the university act of 2005. The charter became operational on 1st January 2007. One of the mission objectives of the university is to generate and apply knowledge through research. For this reason the staffs and students undertake research activities from time to time.

To facilitate the research function, the vice chancellor of the Open University of Tanzania was empowered to issue research clearance to both staffs and students of the university on behalf of the government of Tanzania and the Tanzania Commission of Science and Technology.

The purpose of this letter is to introduce to you **Herbert Ngimi,** a masters student at the Open University of Tanzania with Reg. No. HD/E/627/T.11. By this letter the student has been granted clearance to conduct research in the country. The title of his research is **"Opportunities and challenges of implementing ICT in distance education delivery in the Institute of continuing Education at the Open University of Tanzania."** The research will be conducted at ICE, Open University of Tanzania as well as Kinondoni, Ilala, Temeke and Tanga Region Centers of the Open University of Dar es Salaam, from 08/05/2012 to 08/06/2012.

In case you need any further information, please contact the Deputy Vice Chancellor (Academics), The Open University of Tanzania, P.O. Box 23409, Dar es Salaam,Tel: 022-2668820.

We thank you in advance for your cooperation and facilitation of this research activity.

Yours sincerely,

Prof S. Mbogo

For: VICE CHANCELLOR

THE OPEN UNIVERSITY OF TANZANIA