CONTRIBUTION OF INFORMATION AND COMMUNICATION TECHNOLOGY ON DISTANCE LEARNING IN TANZANIA

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By

Luhilabake Adelina Eustace

A Dissertation Submitted in Fulfilment of the Requirements for the Degree
of Master in Business Administration (Corporate Management)
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CERTIFICATION

We, the undersigned certify that we have read and hereby recommend for acceptance by the Mzumbe University, a dissertation entitled: **Contribution of Information and Communication Technology on Distance Learning in Tanzania,** in fulfilment of the requirement of the award of degree of Master of Business Administration (Corporate Management) of Mzumbe University.

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Major Supervisor

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Internal Examiner

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COPYRIGHT

I, Luhilabake Adelina Eustace, 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.

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DEDICATION

This study is dedicated to my beloved mother Leonida Eustace Luhilabake for her continuous devotion, love and encouragement throughout my Master Degree programme. She believed that however hard times may be, one should stand strong.

LIST OF ABBREVIATIONS/ACRONYMS.

CD- ROM   Compact Disc- Read Only Memory.

CMC   Computer Mediated Conferencing.

CPD   Continuing Professional Development

ICT   Information and Communication Technology.

IT   Information Technology.

ITE   Initial Teacher Education

LMS   Learning Management System.

TERNET   Tanzania Education Research Network

OUT   Open University of Tanzania.

UNDP   United Nations Development Programme.

UNESCO   United Nations Educational, Scientific and Cultural Organization.

ABSTRACT

The major focus of the study was to investigate the use/contribution of ICT in distance learning. Specifically, infrastructures used to support distance learning, competence of students and teachers in using ICT tools and the major factors that act as challenges in using ICT tools in distance education.

The data collected was analysed using Statistical Package for Social Science Research (SPSS) and Excel with which frequencies, charts and graphs summarized the results.

It was upon the prediction of this research that improved employee satisfaction and high performance will lead to effective customer care services.

The study realised that, ICT infrastructures (unavailability of tools and poor power supply), Language and Content (Mistrust of their information content), Lack of skills to use the tools (Teachers with ICT Skills), High costs of accessing and using ICT tools, Change Management, Lack of adequate access, and Leadership are factors that act as challenges in using ICT tools in distance education. Moreover, the study also realised that the benefits accrued to the use of ICT tools include; immediacy of information; Access to a variety of learning resource; access to courses; individual topics and performance support resources anytime from the office at home or while traveling; Minimized accrued costs like transport costs; Provides multiple communication channels like e-mails, chat, forum and bogs; Involves and promotes collaborative learning; Facilitating contact and information exchange; Changing the learning process and learning outcome; and Increase flexibility to the learning process by providing instructions in formats that creates interest to the learner. Therefore, the contribution of Information and Communication Technology on Distance Learning in Tanzania can only be evidenced if the obstacles or the factors that hinder the fully implementation are catered for.

The researcher's recommendations suggest that a large part should be played by the Government in collaboration with ICT Stake holders, Learning Institutions, Public and Private Sectors by; cultivating the culture of ICT in early learning and interest among the distance learning students, improving ICT infrastructures, increasing ICT funds, investing in the energy sector and promoting, encouraging and supporting research and development activities in the areas of ICT.

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CHAPTER ONE
INTRODUCTION AND PROBLEM SETTING

1.0   Introduction

This chapter outlines the process which prompts the initiation of the study. It gives a short/brief explanation to the study, statement of the problem, research questions, research Objectives, scope of the study and the significance of the study.

1.1   Background to the Study.

Distance education dates to at least as early as 1728, when "an advertisement in the Boston Gazette. 'Caleb Phillips', Teacher of the new method of Short Hand" was seeking students for lessons to be sent weekly. Modern distance education has been practiced at least since Isaac Pitman taught shorthand in Great Britain via correspondence in the 1840s. The development of the postal service in the 19th century led to the growth of commercial correspondence colleges with nationwide reach. The University of London was the first university to offer distance-learning degrees, establishing its External Programme in 1858. A pioneering institution in Africa was the University of South Africa which has been offering Correspondence Education courses since 1873 (Holmberg, Börje 2005).

ICT in various forms has been used with some success to support the initial acquisition of literacy skills. The possibilities and realisation have differed greatly according to the environment in which programmes have taken place. In well resourced settings in wealthy, developed countries, the picture is not surprisingly different from that in poorer, less developed countries (Harasim, 2000).

Distance learning and ICT have and can have an important role to play in promoting literacy. This includes direct supply to learners of learning resources and opportunities for interaction and practice; production and sharing of learner-generated materials among groups; stimulation, awareness-raising and motivation; support and training of literacy workers; facilitating distribution of materials and

information to resource centres; and gathering feedback from those centres and individual learners regarding the materials and programmes on offer.

Open and Distance Learning in Tanzania has been practised since 1940's by British Tutorial College (BTC), Rapid Results College (RRC) and International Correspondence Schools (ICS) offering Vocational and academic courses in urban areas. Currently, several institutions provide distance education in Tanzania, these include: Open University of Tanzania (OUT), Institute of Adult Education (IAE), Sokoine Agricultural University (SUA) Moshi University of Cooperative Business Studies: Cooperative Education (Marketing), Teacher Education by Ministry of - Education and Vocational training in collaboration with OUT, Health and Sanitation Water (HESAWA) and Centre for Development in Health (CEDHA), South African Extension Unit (SAEU) and Tanzania Global Development learning centre (TGDLC) government World Bank initiative (Mahai, 2008).

The Open University of Tanzania (OUT) supports distance and online learning. OUT was established by an Act of Parliament in 1992. It is a single-mode institution offering certificate, diploma and degree courses (both undergraduate and postgraduate) through distance learning. Following re-accreditation in 2006, the current Open University of Tanzania Charter came into effect in 2007. The university, which has its headquarters in Dar es Salaam, has established a total of 27 regional centers throughout the country (including Zanzibar), but significantly in towns close to Tanzania's international borders after realizing that important markets for its educational programmes are to be found in neighbouring African countries as well as in Tanzania itself (OUT Deputy Vice-Chancellor (Academic), 2010).

In the studies and research reports, little data appears as to the scale of the engagement in use of ICTs, or else the descriptions are of relatively small scale samples for qualitative rather than quantitative assessment of the use of ICTs. So, including in the case of nationally available programmes, the real impact of ICTs overall remains to a large extent an open question. The situation with regard to quantified evidence in developing country, like Tanzania is more limited and

piecemeal, as might be expected, including both descriptions of discrete projects and macro-level estimates of figures such as telecommunications penetration and numbers of ICT tools used, but generally lacking clear descriptions of the proportion of ICT and distance learning and its effect as against the number of literacy learners and potential learners.

1.2   Statement of the Problem

Distance Education is a developing field in Tanzania and is emerging as a significant component of life-long and training. This is evidenced in the number of distance education programmes currently operating. These range from secondary education, teacher training, and vocational education to higher education. (Bhalalusesa, 2004)

It has currently received a great value in the whole education sector in the country. This is highly attributed to the development of ICTs tools in respect to the teaching and learning system.

The pace of change brought about by new technologies has had a significant effect on the way people live, work and play worldwide. New and emerging technologies challenge the traditional process of teaching and learning, and the way education is managed. Information technology, while an important area of study in its own right, is having a major impact across all curriculum areas. Easy worldwide communication provides instant access to a vast array of data, challenging assimilation and assessment skills. Rapid communication, plus increased access to IT in the home, at work and in educational establishments, could mean that learning becomes a truly life long activity-an activity in which the pace of technological change forces constant evaluation of the learning process itself. Thus, the expansion of distance education goes along with the development in ICT. The development of ICT has profound effects on distance education.

Therefore, the study embarked on investigating the use/contribution of ICT in distance learning given the fact that, we are in the era of Science and Technology.

1.3   Research Objectives

1.3.1   General Objective
The main objective of this research is to determine the contribution of ICT on distance learning in Tanzania specifically OUT students and teachers.

1.3.2   Specific Objectives
(i)   To identify the infrastructures and determine the frequency of using ICT tools in distance learning at OUT

(ii)   To assess the competence of teachers and students of OUT in using ICT tools.

(iii)   To identify the major challenges to ICT tools use in distance learning by OUT teachers and students.

1.4   General Research Questions
What are the contributions of ICT on distance learning in Tanzania?

1.4.1   Specific Research Questions
(i)   Are the infrastructures good enough to support distance learning?

(ii)   Are the students and teachers competent in using ICT tools in distance education?

(iii)   What are the major factors that act as challenges in using ICT tools in distance education?

1.5   Significance of the study
The findings will help students and teachers in getting awareness of different ICT tools used in distance learning.

Also, the findings will help in solving different problems as due to ICT use in distance education.

In addition, the findings of the study will enable policy makers to develop policies that foster the expansion of more relevant tools of ICT for distance learning

Moreover, it will provide challenge to researchers in finding possible gaps and thereby conducting further similar researches on the subject in issue for reference purposes.

Furthermore, the findings if implemented will guide into achieving a positive image of OUT and the Government at large.

Finally, through the pertinent information the area of strength and weakness will be realized. This study also will provide the necessary recommendations and suggestions to the Open University of Tanzania on using ICT tools.

1.6   Limitations and Delimitations of the study

1.6.1   Limitations
The study could be better if it had been undertaken in all areas of Tanzania and had involved all the institutions that provide distance education. But due to the funds and time constraints, the study was limited to Dar es Salaam and to teachers and students of the Open University of Tanzania. Although the validity of the findings were limited to the case under investigation, they can be used in assessing any other institution offering distance education. Confidentiality of the student under investigation was observed, but necessary information was exhausted.

1.6.2   Delimitations
The study took the Case of Open University of Tanzania because it is the largest institution in Tanzania that provides distance education and it is the one using the widest variety of technologies in delivering this education. The study was conducted in Dar es Salaam because this region was easily accessible to the researcher and contains most of the distance learning students. Thus considering these factors a rational conclusion can expected.

1.7   Summary

The chapter has covered the general background of the problem, the objectives, significance of the research, as well as limitation and delimitation of the study. The chapter also have discussed the research problem and research questions as well.

CHAPTER TWO
LITERATURE REVIEW

2.0.   Introduction.

This chapter outlines the theoretical and empirical basis in which the study was conducted. It represents the definition of terms used in the research, theoretical perspective on ICT usage and its significance, effective and cost efficient method of instruction, conceptual framework, and research gap.

2.1.   Definition of Terms.

2.1.1. Learning

According to American Heritage, Dictionary of the English Language explains learning as the act, process, or experience of gaining knowledge or skill or learning is the knowledge or skill gained through schooling or study also it says that in Psychology it may be referred as Behavioral modification especially through experience or conditioning (Houghton M, 2000).

According to Illeris, 2000 and Ormorod, 1995 stated that, in psychology and education, learning is commonly defined as a process that brings together cognitive, emotional, and environmental influences and experiences for acquiring, enhancing, or making changes in one's knowledge, skills, values, and world views. Learning as a process focuses on what happens when the learning takes place.

2.1.2. Distance learning, often synonymous with distance education.

Distance Learning can be defined as learning that takes place with the instructor and learner(s) in physically separate locations. It can be either synchronous ('live', meaning interaction between instructor and learners takes place simultaneously, as with videoconferencing) or asynchronous ('not live', meaning interaction takes place at different times, as with posting on an internet discussion board or e-mail).

Distance learning uses both print media and a variety of technologies, including computers, mobile phones, and personal digital assistants. It can also encompass e-

learning, defined as learning that is primarily in an electronic format (i.e., computer-based training), which may or may not involve the internet. (Nartker et al, 2009).

Distance education, also called open or distance learning, is a form of education in which there is normally a separation between teachers and learners. Thus, it incorporates the printed and written word, the telephone, computer conferencing or teleconferencing to bridge the physical gap between the instructor and the learner (UNESCO, 2002).

In the interest of conceptual clarity several attempts have been made to describe the character of distance education. Among these descriptions that of Keegan (1990) stands out. Keegan specifies five decisive characteristics of distance education. These are the following:

- The quasi-permanent separation of teacher and learner throughout the length of the learning process (this distinguishes it from conventional face-to-face education);

- The influence of an educational organization both in the planning and preparation of learning materials and in the provision of student-support services (this distinguishes it from private study and teach-yourself programmes);

- The use of technical media - print, audio, video or computer -to unite teacher and learner and carry the content of the course;

- The provision of two-way communication so that the student may benefit from or even initiate dialogue (this distinguishes it from other uses of technology in education); and

- The quasi-permanent absence of the learning group throughout the length of the learning process so that people are usually taught as individuals and not in

groups, with the possibility of occasional meetings for both didactic and socialization purposes (Keegan, 1990).

This clear definition undoubted Distance Learning covers what is meant by distance education in Europe and most of the Commonwealth (status and trends of distance-education research).

Therefore, the term distance education is generally given to a form of education and training delivery in which students are remote from the institution, and rarely, if ever, attend formal teaching sessions. Some tutorial sessions may be scheduled by phone, internet communications like chat and e-mails and sometimes a compulsory residential seminar is specified particularly where practical skills are being developed and assessed. Distance education is delivered through the use of various learning resources, and supported by teachers using a variety of means of Information and communication technology (Keegan, 1990).

2.1.3. Blended learning

This refers to learning models that combine traditional classroom practice with e-learning solutions. For example, students in a traditional class can be assigned both print-based and online materials, have online mentoring sessions with their teacher through chat, and are subscribed to a class email list. Or a Web-based training course can be enhanced by periodic face-to-face instruction. It is said to be a mixture of the various learning strategies and delivery methods that will optimize the learning experience of the user. (Graham, 2006).

2.1.4. Information and communications technology.

The World Bank Group defines ICT to consist of hardware, software, networks, and media for collection, storage, processing transmission, and presentation of information in the form of voice, data, text, and images. They range from the telephone, radio and television to the Internet (Chen, 2004).

UNESCO (2002), defined Information and communication technology, or ICT, as the combination of informatics technology with other, related technologies, specifically communication technology.

Therefore, the term, Information and Communication Technologies (ICT), refers to forms of technology that are used to transmit, store, create, display, share or exchange information by electronic means.

2.1.5. Information and Communications Technologies tools.

The term is mostly used to refer all tools that are used in Information and Communication Technology which includes such technologies as radio, television, video, DVD, telephone (both fixed line and mobile phones), satellite systems, computer and network hardware and software; as well as the equipment and services associated with these technologies, such as videoconferencing, e-mail and blogs (Anderson, 2008).

2.2.   Theoretical Review.

Tait A. (2000) identified that there are two principles and related dimensions of change at present dominating the re-engineering of distance learning. Firstly, there is the revolution which the Information Communications Technologies (ICT) are presently driving, moving in many cases from print at the core of a variety of media, to the virtual environments carried through the Web, computer-mediated conferencing (CMC), and CD-ROM. And he insists in his theoretical view that ICT presents enormous opportunities to rethink student support in ways that are not yet fully understood, in particular with regard to time and place, and the social dimension of learning which can be enhanced or diminished through CMC.

Umoru-Onuka (2002) observes that the use of ICT resources is affected by their availability and ease of access. Access is affected by factors such as cost and power supply. ICT resources facilitate the success of open and distance learning. These resources were identified as a major component of open and distance learning education.

According to Farrell et al. (2008) he points out that local support infrastructure must be developed and available to schools if they are to continue with the use of ICT. He further mentions that the commitment of senior leadership to the project is another major determinant of success, along with assessment and re-assessment of readiness of educational systems to facilitate interventions of this kind. Clear communication of plans and obstacles, and realistic expectations of scope and timescale for implementation are also essential. Finally, an "e-school model" has to be flexible and adaptable to local context

ICT used in Distance Learning has been shown to increase student perceptions of instructor originality and creativity (Forman, 1997); on the negative side, there is a general discrepancy between the expected and actual integration of technology into the classroom by educators (Fabry & Higgs, 1997).

Leung and Tran (2000) states that in theory, the advantages of face-to-face and distance learning methods complement each other . In classroom learning, face-to-face contact both in and out of class can help motivate and involve students; active learning can engage students in thinking and interaction through questioning, discussion, small-group presentation, role play, and case studies. In distance learning via ICT, technology makes material available anytime and anywhere; multimedia (e.g., video and audio) can engage multiple brain channels; graphics can help understanding of complex concepts; interactive activities can involve students in dynamic learning through a cycle of questions/answers/feedback; discussion and work groups allow students to evaluate their performance against that of peers.

Cutshall (2002); McKavanagh et al. (2002). It is important to note, however, that those two sets of complementary advantages are sometimes only theoretical therefore in practice, both face-to-face and ICT distance programs often rely on transmissionist, teacher-centered provision of information rather than on interactive, student-centered construction of knowledge; students may end up receiving passively both online and in the classroom. Nevertheless, two themes clearly emerge

as the most frequently cited strengths: the personal contact allowed by face-to-face classroom learning and the flexibility allowed by distance learning.

According to Nwizu (2008) the use of ICT resources has broken the barriers of time, distance, and locale, which impeded the growth of formal education, just as Adeyemi (2004) emphasizes that students use these resource to complete major assignments.

Bhalalusesa (2004) shows the significance of ICT in enabling teaming up at a distance in sharing experiences and in conducting researches within distance education institutions and those outside the institutions who are working for a common to curb the challenges of learning within this mode of delivery.

According to findings in research made Results indicate that print-based distance learning is an appropriate and effective modality for Tanzania; it has proven feasible and is currently operational. The main constraint is limited availability of course materials for students because of the cost of printing and the unreliability of the postal service. Computer- and internet-based distance learning modalities face more serious constraints, related primarily to students' poor computer access and limited computer skills, in addition to Tanzania's varying degrees of electricity coverage. The high cost and slow speed of internet access also inhibit the delivery of internet-based courses. (Nartker et al, 2009)

The assessment revealed that mobile phone technology offers increasing potential for training health care workers, especially in the absence of computers and internet access for students. An organization in Tanzania is currently using phones to send tests and quizzes to students. Most students own mobile phones and use them to communicate with classmates and tutors (ibid).

Further, another factor that would increase the effectiveness of ICTs in distance education is to programme them using the mother tongue. In countries with many different languages or global educations this may not always be possible but efforts

could be made to provide, at least, bilingual information and guidance – even when content is in English. (Anderson, 2008)

Lalita Rajasingham (1996) also noted that effective, cost-efficient instruction that can match the needs for skills related to technological change, delivered interactively, at the convenience of the learners. And further that it may be that ICT will lead to more uniformity in global terms in the ways in which services to students are delivered in the future. However, acknowledges that it also remains true for some audiences and in many societies that the new technologies are having a limited impact on the delivery of ODL. (ibid)

Certain quarters would prefer to combine both the electronic enabled learning system and traditional one. Young (2001) suggested that e- learning works best within a blended training solution which incorporates traditional methods and technology-led learning. One method is to utilize it as a method of providing a consistent level of skills within a team of delegates prior to them participating in an instructor-led session so they can get the most out of the training and the instructors' time and knowledge. Eisinger (2000) also mentioned that by combining traditional learning characteristics with the unique environment available on-line, elements that emerge would differentiate excellent e learning, namely the sharing of knowledge.

2.3.   Empirical Review.

Christensen et al (2001), made a study on Distance Learning receptivity and identified that students will have a more positive Distance Learning attitude when using more interactive (e.g., Internet, videoconferencing, chat rooms) than less interactive forms (e.g., videotape, U.S. mail, etc.). They also found that Distance Learning receptivity depends much on (a) perceived usefulness of technology, (b) technological familiarity, and (c) technological accessibility. They concluded that Perceived technology usefulness which is often cited as related to intention to use will be positively related to Distance Learning receptivity. Technology familiarity is also an important factor in a prospective user's evaluation of Distance Learning given that this learning will most likely take place in a technology-mediated manner. Thus

Technological familiarity with Distance Learning technologies will be positively related to Distance Learning receptivity. Finally, technology accessibility is also important in that distance learners will have to have access to the technology of choice used in the Distance Learning course. Technology accessibility will be positively related to distance learning receptivity.

Accessibility impact on the effectiveness of ICT in Distance Education was also explained by Rye S.A and Zuibadan I. (2008) who found that for students who could not access the Internet in an appropriate way, it could not become a significant tool in their learning processes; compared with students with proper access who found it very useful and of significant effect. Nonetheless, the students did not consider the use of Internet a serious problem due to the fact that they did not a have a proper alternative to the new technology. What can be learned from this is that for students in remote areas even a limited and problematic access may represent an advantage. They argue that analyses of Internet access in developing countries should go beyond the limited view of 'have or have-not'.

So, even though the presence of technology is a necessity, it is, as shown in their study, not sufficient to facilitate the students' access to the Internet and other ICT tools; because access to the new technology may not be strictly necessary for following the study programme. It was rather an additional resource for the students' learning process. Making Internet use an obligatory activity may turn out to be a cause of exclusion from higher education rather than a study resource. They support the argument regarding obligatory use of computers as a source for exclusion seems to be valid still, at least in large parts of the developing world. (ibid)

Attitudes on e-learning should be considered. It has been found that even though information technology is considered to be "cool" it is still not regarded as a proper tool for delivering education; it is still second best and not perceived to be 'as good as' traditional face-to-face teaching. This could become a major obstacle if ICT use is not promoted or introduced in a proper way, (ibid).

Tinio V.L. (2002) in his study revealed the four positive effects of ICTS in distance education. These were the following:

The importance of ICT is identified in work place, after study. One of the most commonly cited reasons for using ICTs in the classroom has been to better prepare the current generation of students for a workplace where ICTs, particularly computers, the Internet and related technologies, are becoming more and more ubiquitous. Technological literacy, or the ability to use ICTs effectively and efficiently, is thus seen as representing a competitive edge in an increasingly globalizing job market.

ICTs make distance learning timely unlimited. Online course materials, for example, may be accessed 24 hours a day, 7 days a week. ICT-based educational delivery (e.g., educational programming broadcast over radio or television) also dispenses with the need for all learners and the instructor to be in one physical location.

Additionally, certain types of ICTs, such as teleconferencing technologies, enable instruction to be received simultaneously by multiple, geographically dispersed learners (i.e., synchronous learning). ICTs such as videos, television and multimedia computer software that combine text, sound, and colorful, moving images can be used to provide challenging and authentic content that will engage the student in the learning process. Interactive radio likewise makes use of sound effects, songs, dramatizations, comic skits, and other performance conventions to compel the students. When used appropriately, ICTs—especially computers and Internet technologies enable new ways of teaching and learning rather than simply allow teachers and students to do what they have done before in a better way. These new ways of teaching and learning are underpinned by constructivist theories of learning and constitute a shift from a teacher-centered pedagogy—in its worst form characterized by memorization and rote learning—to one that is learner-centered. (Tinio V.L., 2002)

According to Domingo (2006), ICT resources are credible tools in disseminating distance education. Mcharazo advocates the use of other methods to enhance Distance Education as Libraries are not very effective, not all resources are available, distance etc. ICT resources provide access to a full range of learning and teaching materials (Mcharazo, 2006). Also, King and Bill (2002) assert that ICT resources have enhanced distance education.

According to Adibe (2002) use of ICT resources in distance education is a landmark in its development.

Farrell et al. (2007, p. 17) point out that the integrated use of ICT needs much more incubation time, better access for individual learners, more operational reliability and much more training and support before this outcome can be achieved. Lack of impact may also be due to the initial focus of the programme primarily on the importance of getting schools connected and giving pupils and teachers ICT skills, rather than on using ICT to enhance their wider learning experiences (Unwin, 2005). Despite the rhetoric about teacher training, no comprehensive frameworks were developed at national level to train teachers in the appropriate use of the technology.

Neal (2003) emphasizes the ability of these resources to transcend time and space, which makes asynchronous learning possible. Additionally, certain types of technologies, such as teleconferencing, enable synchronous instruction as well.

In general, students prefer more interactive to less interactive learning environments (Martens et al., 1997), and that ICT technology in Distance Learning, when it is of a more interactive nature, can better create the feeling of a true "class" (Hiltz & Wellman, 1997). Other researchers and writers argue that ICT may not have positive effects on distance education. Anderson (2008) argues that in a setting where e-learning is new and ICT literacy is low the students will be very confused and in need of much guidance (administrative issues, technological issues, how to be an online learner and so forth). The effectiveness of ICT tools in distance education depend on the use of appropriate tools in appropriate places, Anderson (2008) argues

that as for the delivery mode we find that while infrastructure outreach is low and connectivity erratic one should provide alternative means for education delivery, especially for self studying students. The provision of alternative communication channels would greatly improve outreach – e-mails should be supplemented with letters, LMS lectures with CD ROMs and so forth.

2.4.   The Conceptual Framework.

A conceptual framework is used in research to outline possible courses of action or to present a preferred approach to an idea or thought. In this study, conceptual frameworks (theoretical frameworks) are a type of intermediate theory that attempt to connect to all aspects of inquiry (e.g. problem definition, purpose, literature review, methodology, data collection and analysis). It acts like a map that gives coherence to empirical inquiry.

The conceptual framework of this study is geared towards having a proper understanding of the concept of Information and Communication Technology and the roles it plays towards the successful implementation of Distance learning. The concept of successful ICT utilization in distance learning could be supported by effective integration of ICT tools in relation to external and internal environment that support the usage for effective learning.

The conceptual framework of the research was based on the above theoretical background, and was used as the foundation for the evaluation process (see Figure 2.1).

The effective management and application of ICT in distance education (which is a dependant variable) mostly relies on the following independent variables;

- Demographic domain (Geographical size and situation): Large countries with dispersed people and communities have an additional drive or motivation to use communications to deliver educational services cost-effectively.

- Learning culture (Perception, knowledge, technology transfer, attitudes, usage of ICT, changes): this will depend on the particular are of reference for instance who do student and teachers perceive the usage of ICT tools, are the programmes user friendly, is the technology transferable easily, what does the Policy of the country say about telecommunications: The Internet, IT and Education. All these can lead to effectiveness in the usage of ICT thus effectiveness in delivering distance learning.

- Learning environment: where the learning environment is well organized and used flexible to support a range of different interactive teaching and learning approaches. This will enable the use of ICT to be effective thus leading to effectiveness in distance learning.

- External factors comprises of Government and political commitment to ICT is a critical success factor in the bid to use ICT for development and for education. Without government commitment, it is difficult to create conducive environments (political, legal, and regulatory) for ICT to flourish. Moreover, Infrastructure which comprises of telecom, energy sources and connectivity these if are supporting can flourish distance learning.

- Efficacy; this is said to affect the imparting of knowledge in that, this is said to be within teachers' and students' own motivation and capacity for the effective way of delivering is influenced by the teachers and students understanding. Furthermore, the effectiveness of the tools can also influence the ability to receive the required results.

- ICT and distance learning platform and accessibility of resources (tangible & intangible); this includes the availability of funds to support the acquisition of the desired tools further more the availability of the ICT tools for instance computer hardware and software and telephone lines.

Figure: 2.1 The conceptual framework of the study
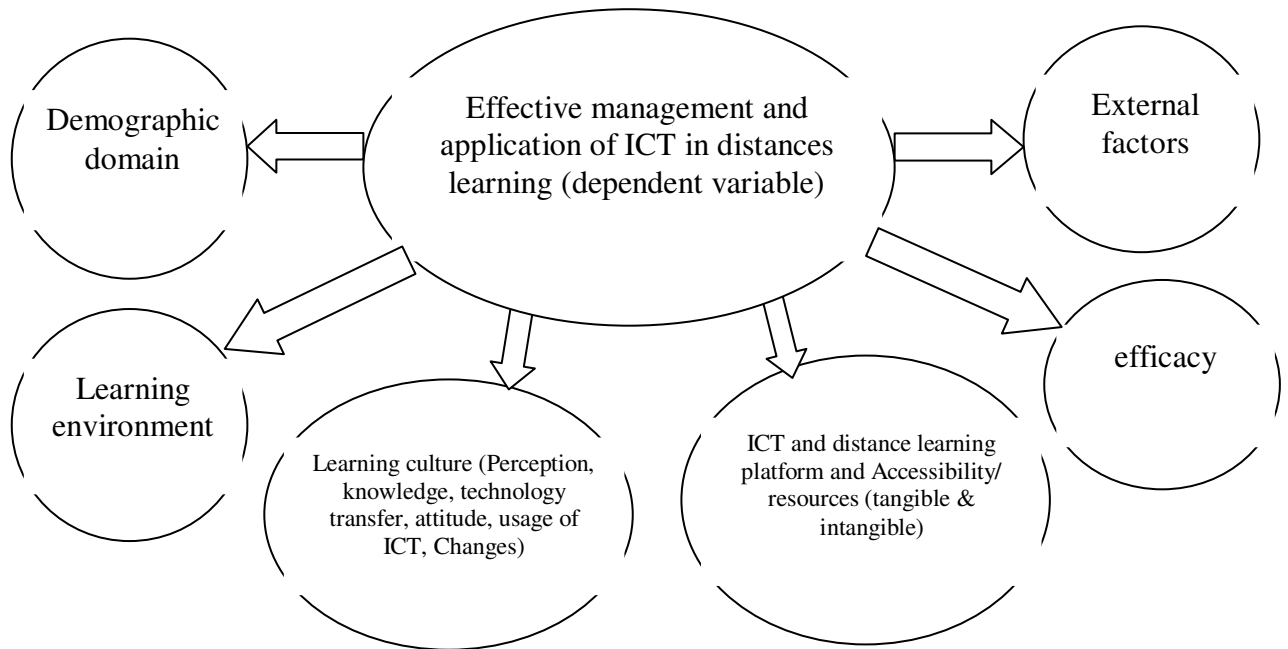
Source: Ian Roffe (2002)

2.5.   Research Hypothesis

There is competence of students and Instructors in the use of ICT.

There is a positive relationship between Infrastructure and Effective management and application of ICT in distance learning.

Factors hindering the effective implementation of ICT are related to the success or failure of Effective management and application of ICT in distance learning.

2.6.   Research Gap

From the literature review, it appears that better research strategies are needed to support the usage of ICT on distance learning process.

Most studies do not provide clear information about the real effects of ICT on distance learning plus lack of comprehensive studies of the complex interactions between various types of ICT implementation and the effects of other factors such as institution-based interventions, socioeconomic status and learners' expenditures. The

link between educational practice, particularly for ICT integration and usage, on Distance learning, and background theory is weak. This study puts more attention to reduce this research gap.

2.7   Summary

The chapter has covered the ways in which the study was conducted. It represents the definition of terms, theoretical review, empirical review, conceptual framework, and research gap.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is the way of systematically solving the research problem. This Chapter outlines the various steps that were used in studying the research problem and with the logic behind them. It is necessary for the researcher to know not only the research methods/ techniques but also the methodology. It represents the Research Design, study area, population of the study, sampling technique and sampling procedure, data collected, data collection method, data collection instrument and data analysis.

3.2 Research Design

Research design normally explains the basic research plan, it can be thought of as a structure of research, as it is explained by different scholars; it is an arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Claire et al, 1962). It is glue that holds together all elements of researcher project Yin, (1984) the research design is the logic that links data to be collected and conclusion to be made to the initial research questions. Thus, it is a systematic procedure of data collection and data analysis. It shows what, when, where, what extent and by what means.

In carrying out this study, the researcher used descriptive design which was mainly qualitative in nature, but there is some few elements of quantitative matters. Descriptive research includes fact-finding enquiries of different kinds.

Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomenon that can be expressed in terms of quantity. This method involves the generation of data in quantitative form which can be subjected to rigorous quantitative analysis in a formal and rigid fashion. (Kothari, 2000).

Qualitative research on the other hand is concerned with qualitative phenomenon, that is, phenomenon relating to or involving quality or kind. (Kothari, 2000).

3.3 Population of the Study

Population refers to an entire group of individuals, events or objectives having observable characteristics. In other words population is the aggregate of all that conform to a given specification (Abed and Olivia 1999).

The target populations for this study were students and instructors of Open University of Tanzania.

3.4 Area of the Study

The study took place at the OUT and included the distance learners and instructors centred at OUT's headquarters, which is located along Ally Hassan Mwinyi road near Biafra Grounds in Kinondoni District, Dar es Salaam. This centre was chosen because it is easily accessible by the researcher and it includes a wider variety of students and instructors using different ICT tools in distance learning.

3.5 Sampling technique and Sampling procedure

Due to the nature of the research, the researcher used non probability sampling out of which, population elements were selected on the basis of their availability because they volunteered or because of the researcher's personal judgment that they were representative of the desired population (Deming, W. E 1966).

Convenience sampling (sometimes known as grab or opportunity sampling) is a type of non probability sampling which involves the sample being drawn from that part of the population which is close to hand. That is, a sample population selected because it is readily available and convenient. This is through meeting the person or including a person in the sample when one meets them or chosen by finding them through technological means such as the internet or through phone (ibid).

The main whole sample size was 65 people out of which 20 were instructors and 45 students.

3.6   Data type and sources.

Data that was used in this proposal was both primary and secondary data. Primary data are original data collected for the purpose of a problem at hand. The primary data in this research was collected by using a well structured questionnaire and interview method. The data were both qualitative and quantitative. The secondary data for this research were obtained from books, journals, articles in newspapers and research paper series in libraries, the internet and various authorities that have already been passed through statistical process.

3.7   Data collection methods.

3.7.1 Questionnaire

The main purpose of the questionnaire is to obtain information that cannot be easily observed or that is not already available in written or computerized form. Evidence from the questionnaire survey is then used for description and explanation. In this study, questions were both open and close ended. The type of questions chosen have implications for the type of evidence that can be obtained and therefore on the method of analysis of the evidence. (Remenyi, D and et al, 2002).

3.7.2 Interview.

This method involves presentation of oral-verbal questions and reply in terms of oral–verbal responses. This method was used through personal interviews, and if possible, through telephone interviews. This was carried in getting qualitative data. Students and instructors were interviewed. The interview was done after returning of the questionnaires in order to check the validity and reliability of the information given during the answering of the questionnaires. Therefore answers from the interviews were compared with answers from questionnaires to supplement the findings.

3.7.3 Content Analysis.

This research used content analysis because it consists of analyzing the contents of documentary materials such as books, magazines, newspapers and the contents of all verbal materials which are spoken then recorded also content-analysis is mostly qualitative in nature whereby it concerns the general import or message of the existing document. (Kothari, 2000).

3.8 Data Analysis.

After collecting the data, the researcher turns to the task of analysing them. The analysis requires a number of closely related operations like establishment of categories, application of categories to raw data through coding, tabulation and then drawing statistical inferences.

Data processing and analysis was done by first pre-coding the responses that were not pre-coded before the interview. The data were then entered and analysed using the Statistical Package for Social Sciences (SPSS) software and MS Excel. The major analytical procedure that was applied is Descriptive Statistical Analysis. This is because the research was mainly descriptive. This mode of analysis, entailed frequency determination; and in some cases found necessary, the cross tabulation were run to merge two variable or parameters together.

3.9 Ethical Issues Consideration

The researcher ensured that the study adheres to human rights and National Policies. Therefore attention was paid to rules and regulations while conducting research in the field. The procedures for conducting research were followed; the research clearance letters were obtained from the office of Vice Chancellor Mzumbe University. Furthermore, the consent of respondents was maintained, they were persuaded to provide information on their own free will; no one was forced to participate in this study.

3.10 Summary

The Chapter has outlined the various steps that were used in studying the research problem and with the logic behind them. It has presented the Research Design, area of the study, population of the study, sampling technique and sampling procedure, type of data collected and source of data, data collection method, data collection instrument, and data analysis.

CHAPTER FOUR
DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter describes the general characteristics of the sample data collected in this study. It deals with analysis of data, presentation, and discussions of research findings which give the implication of findings which govern policy makers and Institutions offering distance learning in their attempts to address challenges in the contribution of ICT for successful implementation of distance learning. The findings are based on the objectives of the study outlined in chapter one of this paper.

The data collected in this study focused on the availability of facilities or infrastructure, technological literacy, usage of the ICT tools, cost factor, benefits and challenges thereto. The findings are based on observation and seventy (70) self-administered questionnaires. The questionnaires extracts can be seen in the appendixes.

4.2 Return Rate

Number of questionnaire distributed for data collection were seventy whereby twenty two (22) of them were distributed to instructors within the OUT campus and forty eight (48) were distributed to students. The total number of questionnaires collected was sixty five (65) that is twenty (20) from instructors and forty five (45) from students making a total percentage of 92.9% responses. Other questionnaires were not returned due to a number of reasons some were; unwillingness to respond to the questions and some questionnaires were damaged therefore not suitable for analysis.

Table 4.1 Number of questionnaires returned

QUESTIONNAIRES	FREQUENCY	PERCENTAGE
RETURNEES	65	92.9%
NON RETURNEES	5	7.1%
TOTAL	**70**	**100%**

Source: Field Data, 2011

4.2.1 Questionnaires for Instructors

These questionnaires were mainly for understanding the mode they use in delivering their lectures. They were based on the general condition of the usage of ICT tools and that gave a clear picture on the contribution of ICT, if any, in imparting knowledge to students for it is a person that is inside that can know the exact position of the 'organisation' than an outsider's scrutiny. The questions were formulated in a positive way so the positive reply was a positive recommendation about the factor in question. The measure of answers were based on Positive and Negative reply (Yes/No), Likert Scale and some open ended questions.

4.2.2 Questionnaires for Students

These questionnaires were to test the students perceptions on the usage of ICT tools in comparison to non-ICT tools. That is, are they satisfied with the usage of ICT tools and what do they think are the factors that inhibits them from successful usage. The questions were formulated in a positive way so that a positive reply was a positive recommendation about the factor in question. The measure of answers were based Positive and Negative reply (Yes/No), Likert Scale and some open ended questions.

4.3 Demographic analysis of the Collected Data.

In this, five questions were asked this was for the purpose of knowing characteristics of the interviewed respondents in terms of sex, age, level of study, professional qualification and duration in the service in the Open University of Tanzania in particular.

4.3.1 Number of respondents

Number of the respondents both instructors and students involved in the study were 65 which comprised of 20 instructors and 45 students from the Headquarters of Open University of Tanzania. See Table 4.1.

Table 4.2: Number of respondents for both students and instructors at the headquarters' of the Open University of Tanzania.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Instructors	20	30.8	30.8	30.8
	Students	45	69.2	69.2	100
	Total	**65**	**100**	**100**	

Source: Field Data, 2011

4.3.2 Sex of the respondents.

Demographers and other social scientists have the special interest in sex because it has influence on the prioritization of the various services and participation in various activities in society. Moreover, in a culture where it is male dominant, it is believed that women are mainly disadvantaged due to the social, cultural and economic factors for these reasons the researcher took into consideration sex of the respondents in order to understand by what percentage is the participation of female and male students and instructors in distance learning centers particularly The Open University of Tanzania (Gender balance). The findings from the data were as follows in Figure 4.1; 37% were female respondents and 63% were male respondents. Therefore, it is seen that the percentage of male is higher than that of females.

Figure 4.1: Sex of the respondents.
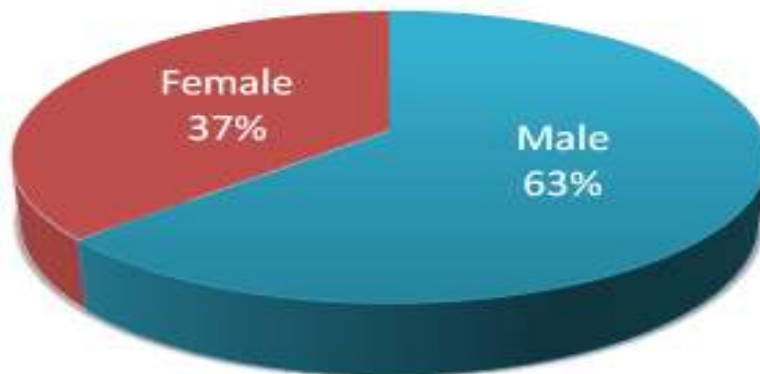
4.3.3 Age of students

This question was asked in order to measure the credibility and reliability of the data that was collected for it is believed that the older the person the more reliable and trustworthy they can be. This question was asked in the questionnaire for students so as to get reliable data. However, from the selected respondents the age ranged from 21 years to 50 years and therefore according to the data collected the age of respondents was as follows in Figure 4.2; Between 21 – 30 was 45%, 31 – 40 was 44% and 41 to 50 was 11%. This was due to the fact that those in the late ages that is 41 – 50 were those students who were pursuing Masters and PHDs and they were very few compared to those pursuing Degrees, Diplomas and Certificates.

Figure 4.2 Age of students
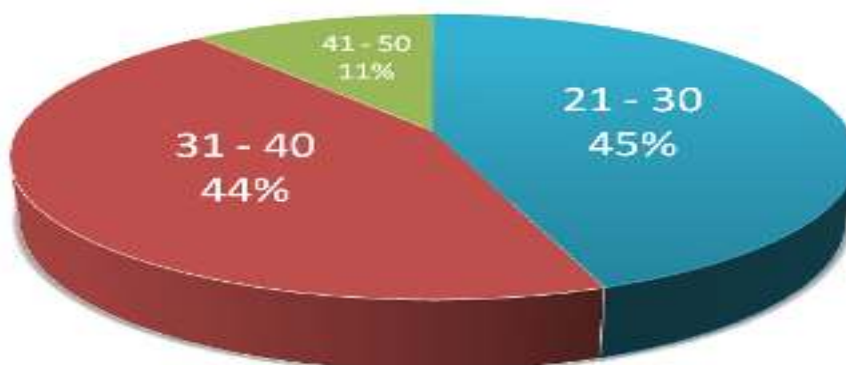
4.3.4 Level of study for students

The purpose of this question was to determine the level of study for each respondent (students) since by knowing the level of study it will bring an understanding as to what level answered that question and how reliable is the answer for instance a certificate holder may not be very conversant with the technological tools that are used in the University for the length of his or her stay is very short.

In this study, the term level of study refers to the formal education or learning that occurs in colleges or universities that is, Certificate, Diploma, Degree and Masters. Figure 4.3 illustrates the distribution of the level of study of respondents whereby Certificate were 10 students, Diploma were 12 students, Degree were 20 students and Masters were 3 students.

Figure 4.3 Level of study for students
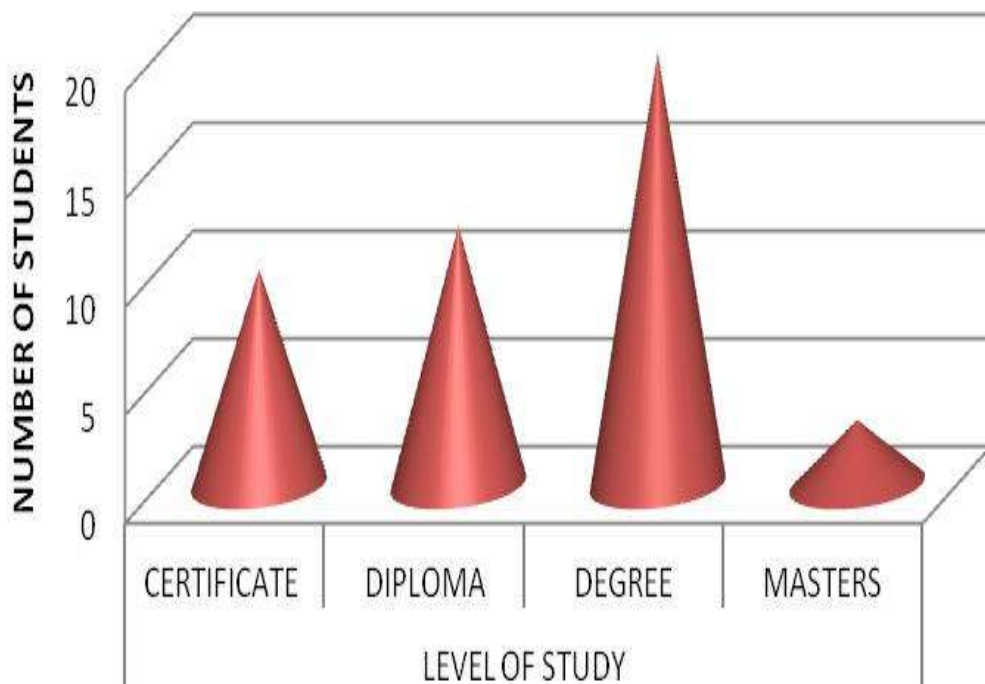
Source: Field Data, 2011

4.3.5   Professional qualification of instructors

General percentage distribution of the respondent's professional qualification reflects a big number of the OUT staff have acquired at least First Degree, Masters and a few PHD holders are shown on Figure 4.4 below. The data in the figure shows that 30% were Degree holders, 60% were Masters' holders and 10% were PHD holders therefore

Figure 4.4 Professional qualifications of respondents

Source: Field Data, 2011

4.3.6   Duration in the Service for instructors

This question was asked in order to know how if the organization has experienced staff, in the essence that, the longer one stays in the organization the better the person knows about its activities thus become experienced practically. The Length of service in my sample comprised those that range from 1 – 3 years, 4 – 6 years and above 6 years, that is, the percentages of respondents from 1 – 3 years was 50%, 4 – 6 was 30% years and Above 6 years was 20% (Figure 4.5).

Figure 4.5 Duration in the Service for instructors
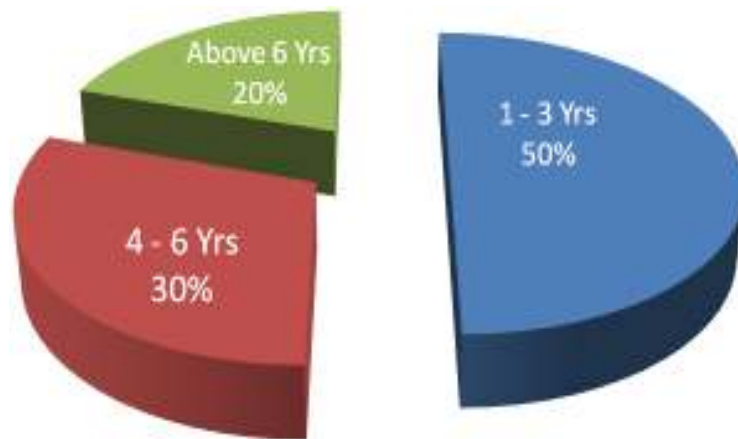
Source: Field Data, 2011

4.4 Infrastructure

A number of questions were asked to both students and instructors to see if the infrastructures are available and support the usage of ICT, so as to know if the usage is beneficial thus leading to the proper measure of the contribution of ICT in distance learning. The availability of proper infrastructure is one of the basic factors that facilitate the usage of ICT. The questions that were analysed were as follows:

4.4.1 Availability of ICT tools

The question was asked in order to identify a number of ICT tools available in the University Campus. According to the data collected it is revealed that, some tools for instance computers, internet connections and phones are there though not in plenty. However other facilities like video conferencing were not available. The table below shows the responses from the respondents whereby 100% accepted that there is no radio facility nor Video conferencing, 69% accepted that there is Television, 31% accepted that there is Cassette recording, 92% accepted there is Internet, 11% Video recording, and 69% accepted that telephones are available therefore according to these findings it can be concluded that Radio, Video conferencing, Cassette recording and Video recording are not available.

The main objective of the question was to see if there is availability of ICT tools then it will be easy to use the tools and thus enable the researcher to know the extend to which ICT contributes to distance learning but if there is no availability it is therefore hard to identify the benefits that the tools contribute to distance learning. Looking at the responses it is seen that to some extent there are other tools that are available in the University but it needs more effort and commitment of resources in order to buy and install other tools like video conferencing in order to utilize them and see the benefits accrued to their usage.

Table 4.3: Availability of ICT tools

TYPE OF TOOL	RESPONSES	
	YES	NO
Radio	0	65
Video conferencing		65
Television	45	20
Cassette recording	20	45
Internet	60	5
Video recording	7	58
Telephone	45	20
CD –ROMS	30	15

Source: Field Data, 2011

It is also clear that many different types of technology can be used to support and enhance learning. It is important that ingenious technologies with a high penetration potential should be deployed. Affordable portable technologies are to be considered thus enabling the availability and affordability of the tools in question.

4.4.2   Accessibility of ICT tools

This question was posed to see if the ICT tools that are available are being accessible, further more are the students and instructors free to utilize the tools?

According to the data that was analysed it was seen that according to the instructors the response was positive whereby the tools especially the Internet was accessible while most students answered negatively that the accessibility of the tools were very difficult. According to Figure 4.6 it shows that the number of Instructors who accepted that they can access ICT tools is 20 which is 100% acceptance according to them and according to students 15 which is a 33% of the total accepted that they can access ICT tolls while the remaining 30 (67%) said that accessibility of ICT tools is difficult.

This implies that to a great extend instructors are able to access the ICT tools which is a good sign that they can utilize them to their fullest. However on the part of students whereby there is a small percentage that has accepted that they can access the ICT tools this shows that it will be hard for them be conversant with the usage of ICT tools and thus leading to less acceptance on their part.

Figure 4.6 Accessibility of ICT tools
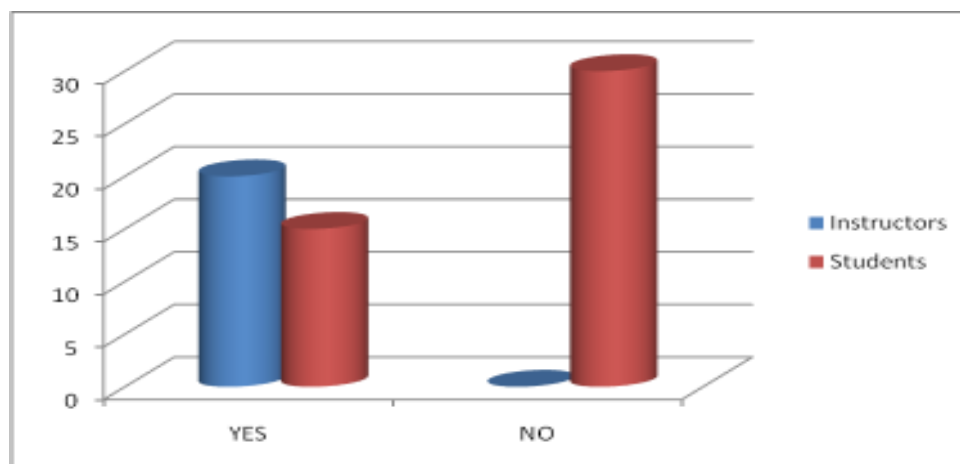
Source: Field Data, 2011

4.4.3   Availability and reliability of electricity

This question was posed in order to know how effective the ICT tools can be because most of the tools use electricity therefore reliability and accessibility of electricity can be a good factor to consider in infrastructure development and support for development of ICT in Distance learning. The data collected showed that availability

of electricity was not a big problem through the reliability was questionable due to frequent electricity cut offs famously known as **"mgao**". The responses is as seen in the Figure 4.7 below:-

Figure 4.7 Availability and Reliability of Electricity
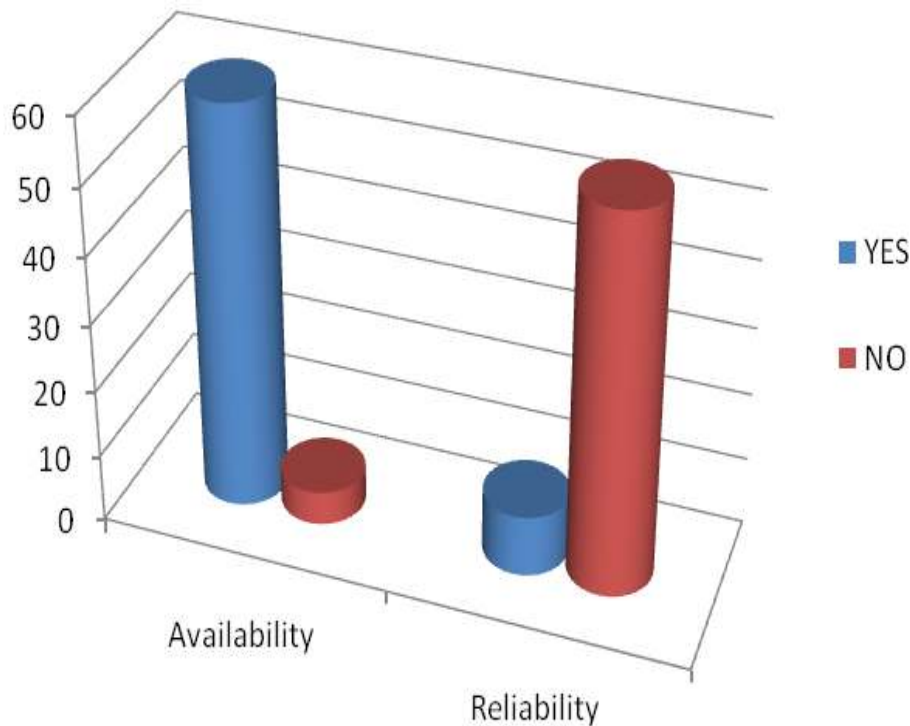
Source: Field Data, 2011

This implies that if electricity is available the usage of ICT is easy according to the research it shows that electricity is available however the reliability of electricity hinders the usage of ICT tools to a large extend as it was discussed a of responses from the data available claimed that when there is lack of electricity it may increase costs in cases where they had to use generators but in the real situation when there is no electricity it means no work can be done since at the University there is no generator that can be used in all areas for instance in the classes, teachers' offices and administration office for a long time. Moreover, for those students who do their studies at home or at the cafes also claimed that reliability of electricity is a big problem and thus more costly.

This is further supported by Farrel, et al (2007) whereby it was viewed that in Tanzania, the national electricity grid is limited to commercially viable areas missing out most of the schools in the rural areas. This, together with frequent power breakdowns and power cuts, has increased the cost of owning ICT infrastructure and made it almost impossible for schools in the rural areas to access and use ICT in education.

4.4.4 Availability of Connectivity

The cost of connectivity is very high in Tanzania which creates barriers to the spread and use of the internet which is a major vehicle for the transfer of data and access to information. Many higher education institutions use high bandwidth internet from service providers.

Research findings shows that, 69% of the total respondents claimed that it is disturbing and sometimes there is no connectivity while 23% claimed that they are not sure and 8% claimed that it is just ok that it is not disturbing and connectivity is good. As it is well illustrated in Figure 4.8 below;

Figure 4.8 Availability of connectivity
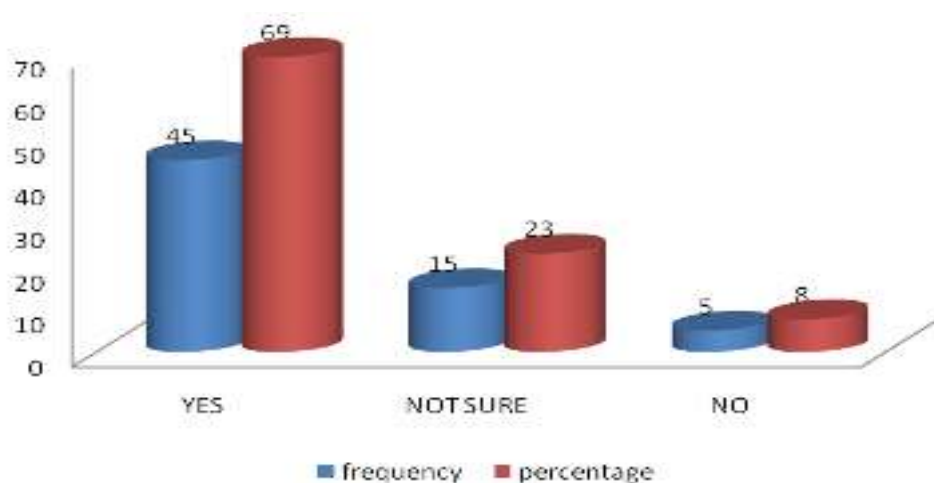
Source: Field Data, 2011

The Tanzania Education Research Network (TERNET) was launched in 2002 to provide an electronic network for connecting all higher education institutions in the country, as well as research institutes and teacher colleges. Details on its achievements were not available but indications are that most of the activities are at the planning stage.

4.5   Technological literacy

In this a number of questions were asked to see how many students and Instructors know how to use ICT tools or have attained any training related to ICT tools usage.

4.5.1   Instructors adopting their competencies on ICT- enabled instruction mode

According to the data collected it is seen 30% (6 out of 20) which is a very few number of Instructors using ICT enabled mode of Instruction mainly based on projection that is, using projectors to deliver their lecturers but a large number use the Traditional way of face to face when they have to deliver their sessions. However, Class Assignments are sent through the internet and also the Management uses the website to transmit information to students. Figure 4.9 illustrates this.

Figure 4.9 Instructors adopting their competencies on ICT- enabled instruction mode
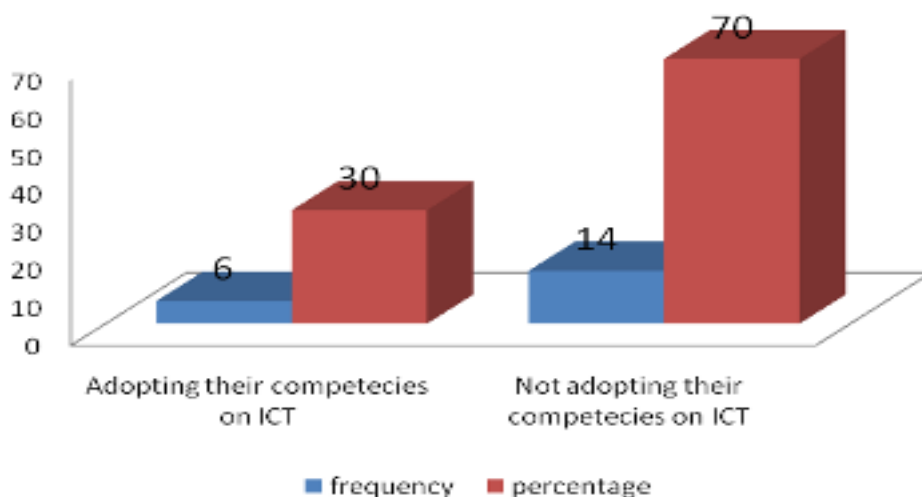
Source: Field Data, 2011

It is very important for teachers to adopt their knowledge dissemination by using ICT enabled instruction mode and this will enable ease infusion of the technology in learning. Although through this report as observed a very few number is adopting the use of ICT enabled instruction mode it is important that grave measures should be taken in order to enable instructors to use ICT-enabled instruction mode.

Teacher development is seen as a crucial component here. It ideally coordinates teachers' sophisticated professional skills with the pervasive use of technology. This in turn supports students who are creating knowledge products, and who are engaged in planning and managing their own learning goals in a school that is a continuously improving learning organization. Teachers model the learning process for students, and serve as model learners through their own ongoing professional development, both individually and collaboratively.

This is supported by a research done by UNESCO (2008) which states that the competency standards for teachers go further, describing three approaches: technological literacy, knowledge deepening, and knowledge creation. These approaches are seen as part of a development continuum, and each approach has different implications for education reform and improvement, plus different implications for changes in the components of the education system: Pedagogy, teacher practice and professional development, curriculum and assessment, and school organisation and administration. ICT plays a unique, but complementary role in each of these approaches, with new technologies requiring new teacher roles, new pedagogies, and new strands to teacher education. The successful integration of ICT into the classroom depends on the ability of teachers to structure their learning environments in non-traditional ways, merging technology with new pedagogies.

4.5.2   Students' Awareness on ICT technologies

This question was posed to see if the there is awareness of the ICT technology. The data collected shows that 80% of students are aware of ICT technology though in the basic level further more they claimed that it is one of the basic necessity because

most of the time they have to access the internet mostly in order to get materials, do registration, get their results and a lot of other things concerning their stay at the University. Therefore, students get information concerning university activities through the internet on the University's Website and on the notice Board. Figure 4.10 illustrates.

Figure 4.10 Students' Awareness on ICT technologies
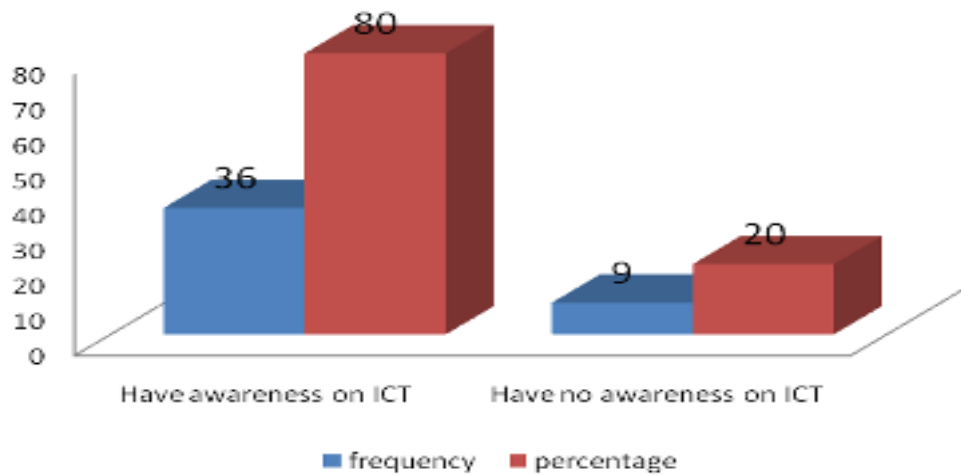
Source: Field Data, 2011

This is an important aspect. The awareness of students in the use of ICT will create a proper understanding if the teachers are to implement the use of ICT tools and this will create a like of the new methods of learning and moreover improve the confidence of the students. In addition to that it is important to note that it will help them to exploit the benefits accrued to ICT.

4.5.3   Training related to ICT technologies

The question was posed to both students and instructors in order to know if students and Instructors had attained any relevant training in ICT. This enabled the researcher to understand their perception of the use of ICT.

65% of the students and instructors have attended a course on ICT use in distance learning because they know the importance of been ICT knowledgeable before starting any distance learning programme.

Also, it seems that the distance learning curricula demand students to undertake such courses. This is so because many have been able to pursue such courses. If they were not included, very few could have attended the course.

Figure 4.11 shows that many respondents that is 65 percent of the interviewees have attended a course on ICT whereas 35 percent get help from other people.

Figure 4.11 Training related to ICT technologies
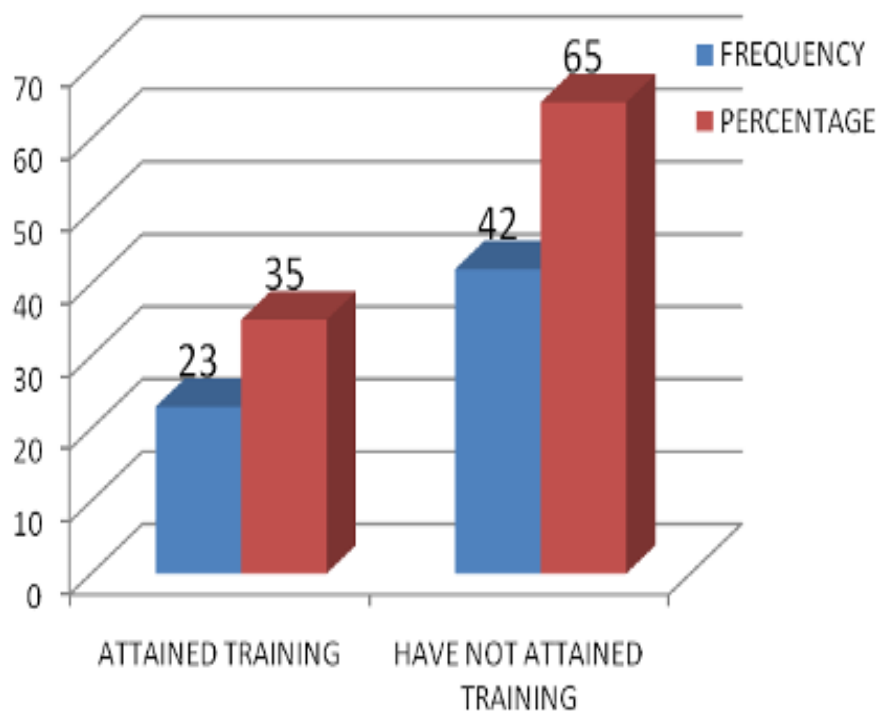
Source: Field Data, 2011

In viewing this aspect it is important to note that for one to be conversant with ICT one has to attain a training related to it. It is important that the training be on a regular basis due to the fact that ICT keeps changing from day to day therefore, students and teachers has to develop an interest in studying it and its changes.

Venezky, (2004) argues that teachers need to be prepared for this by being educated to use ICT effectively and creatively. In many developing countries, however, most teachers have minimal or no ICT skills themselves and therefore cannot develop these in learners. Two of the most important supports for ICT integration into teaching and learning are effective Initial Teacher Education (ITE) and Continuing Professional Development (CPD). Both have the greatest impact on the beliefs and practice of teachers, and yet professional development time in particular is often not budgeted for.

Research indicates that, until recently, training opportunities have remained limited in availability and inconsistent in quality. This has resulted in demonstrably low proficiency in using ICT, and a general lack of knowledge about technology in teaching and learning.

However, it is in the view of this research that both teachers and students need to be well equipped with ICT knowledge in order to benefit from it.

4.6   Usage of the ICT tools in comparison to Non-ICT tools

A number of questions were asked in relation to the above whereby the aim was to know if the usage of ICT tools is widely recognised and used by both students and Instructors. This will lead to a proper evaluation in that, is there is usage of the tools then it will be easier to know if the usage is beneficial or not.

4.6.1   Frequency of using ICT related tools in relation to non ICT tools

This question was posed in order to know which tools are more use between ICT and non ICT tools in distance learning. From the data collected, it is seen that, the use of non ICT tools is common in the Open University of Tanzania. This is because the necessaries that support ICT use such as reliable access to electricity, technology infrastructures (internet access, bandwidth, hardware, and software), language of instruction, and availability of software are poorly developed or absent.

Moreover, ICT literacy and confidence among students in Distance Learning Education is low. This makes the use of ICT tools low. Most students do not have experience with using technology as seen in Figure 4.12 illustrates the frequency of usage:-

Figure 4.12 Frequency of using ICT related tools in relation to non ICT tools
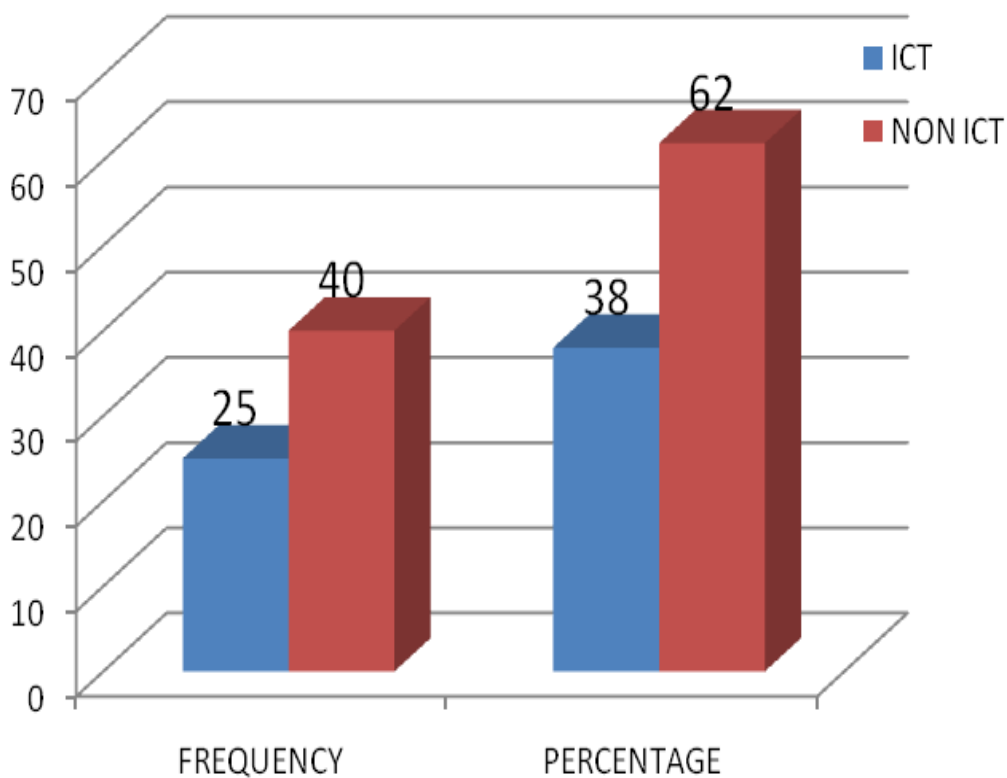
Source: Field Data, 2011

4.6.2 Tools used in delivering Materials/lectures

This question was asked to both students and Instructors in difference ways in order to know which tools are mostly used between the ICT tools and Non-ICT tools. In the data collected it was seen that although the university has the basic ICT infrastructure (such as Internet, computers, local area network), it still uses traditional way with face to face meeting to impart knowledge to its students who are spread in all regions of Tanzania. The findings are as seen in Figure 4.13 below;

Figure 4.13 Tools used in delivering Materials/lectures

	INSTRUCTORS	STUDENTS	TOTAL RESPONSES
ICT	10	15	25
NON ICT	10	30	40
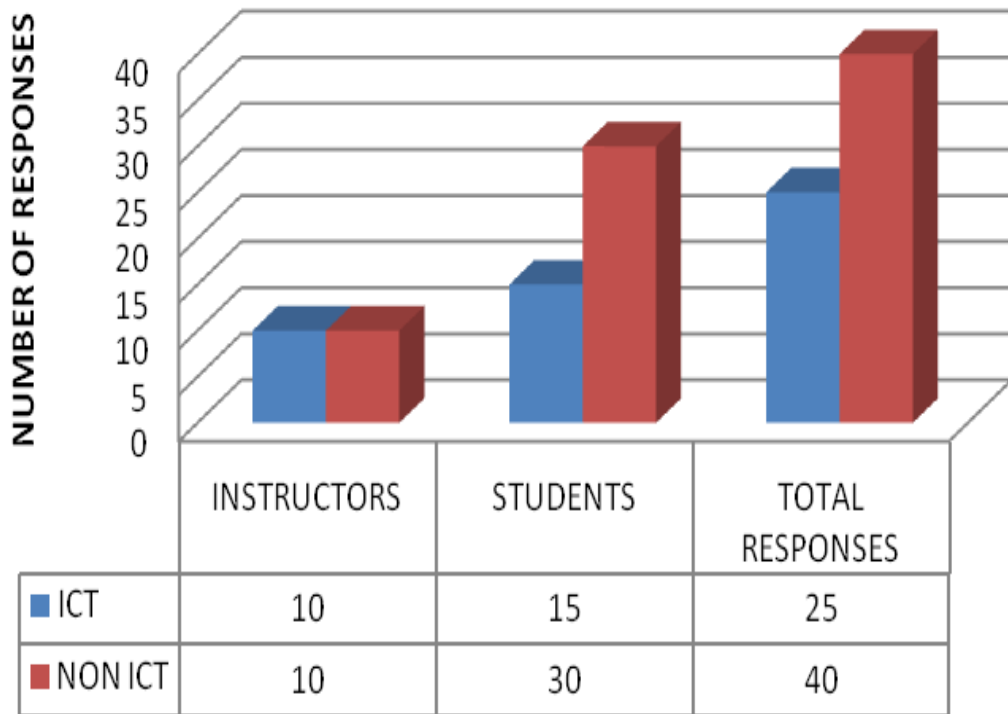
Source: Field Data, 2011

Both face-to-face and distance learning methods are used today in adult education and career and technical education (CTE), and both methods have their individual strengths and limitations. With the increase in the use of information and communications technology (ICT) for distance learning, adult and CTE programs use a blend of both methods in order to maximize the advantages and minimize the disadvantages of each.

4.7   Cost factor

This was viewed in two perspectives, Instructors and Students, the issue of cost is very important in that it helps to assist one in selecting the mode to use, that is, will it be ICT based or Non ICT based. Two questions were asked one on the use of ICT and the other on the use of Non-ICT tools.

4.7.1 In the use of ICT Tools

In considering the cost on the part of ICT, it takes into account a whole range of requirements at the different levels such as;

- Institution/school level issues such as availability of access to technology devices, institutional level intra-connectivity (LANs), infrastructure maintenance and cost of ownership, and continued upgrading.

- Availability and suitability of content, content cost of ownership, and content updating requirements.

- The national infrastructure attributes such as spread of power grid and alternatives available, availability and affordability of connectivity options, support and service levels.

The question was asked to both students and the Instructors. According to data collected it was seen that, 90% of Instructors preferred the usage of ICT because they claimed to be less costly in their part, for them, the issue of accessibility was not a problem especially within the University arena though they said that in cases where they had to work outside the office, they would encore some costs.

On the other hand 89% of students claimed it to be expensive on their part due to that fact that most of the time they have to pay for internet access in order to download materials for reading and references. They are unable to access online books, internet, TV and other sources. In addition to that few students have computers (Desktops and Laptops). The findings are as seen in Table 4.4 below:-

Table 4.4: Cost in the use of ICT Tools

(a)   Instructors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Expensive	2	10	10	10
	Less Expensive	18	90	90	100
	Total	**20**	**100**	**100**	

(b)   Students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Expensive	40	89	89	89
	Less Expensive	5	11	11	100
	Total	**45**	**100**	**100**	

Source: Field Data, 2011

Moreover, it was seen that, the installation costs are always very high though when one comes to running costs it becomes cheaper for instance the use of Video conferencing, though it is very expensive to install but in the long run it becomes cheap whereby other costs are cut down for example the need for a lecturer to travel and pay for transport fee and be paid allowances for travelling outside post to other centres.

Available technology needs to be affordable by schools if it is to be adopted. At the national level, affordability could be limited by the high cost of putting infrastructure in place, and is linked with the issue of poverty. At the individual or organizational level, expensive hardware and software as well as high costs of communication and services restrict access to ICT as those suggested by James (2001) cited in Minishi-Majanja (2007, pp.11-12).

4.7.2 In the use of Non - ICT Tools

In this, the question was also asked to both students and Instructors whereby it was seen that, according to the data collected 80% of Students claimed them to be less costly than ICT tools because if they pay for library services once they are allowed to visit the library and use any book.

On the other hand, 70% of Teachers claimed it to be more expensive for they have to make deep references so it is usually involves buying the books or journals and this is very costly.

Table 4.5: Cost in the use of Non - ICT Tools

(a)   Instructors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Expensive	14	70	70	70
	Less Expensive	6	30	30	100
	Total	**20**	**100**	**100**	

(b)   Students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Expensive	36	80	80	80
	Less Expensive	9	20	20	100
	Total	**45**	**100**	**100**	

Source: Field Data, 2011

4.8 Benefits and challenges

4.8.1. Challenges towards the use of ICT

There are many challenges, which hamper the exploration and exploitation of ICT opportunities. In the data collected a number of challenges were viewed as hindrances to utilization of ICT.

The data presented in Table 4.4 shows that, in the issue of ICT Infrastructure 31% agreed and 62% strongly agree this means that more than 50% are positive of the factor as a hindrance only 8% were unsure if it is a hindrance or not.

In Language and Content as a factor that hinders the use of ICT, 62% agreed and 32% strongly agreed that is 94% are positive on the fact that Language and Content is also a factor that hampers the exploitation and exploitation of ICT.

In Lack of skills 100% were positive whereby 38% agreed and 62% strongly agreed. High cost of accessing ICT tools was also supported by 69% positive replies 14% were unsure and 17% disagreed to the factor.

In Change management was supported as a hindrance by 72% whereby 38% agreed and 34% strongly agreed only 6% disagreed and 22% were unsure.

Lack of access was also supported by a 68% positive reply to the factor that is 62% agreed and 6% strongly agreed and 29% disagreed and 3% were unsure of the factor.

Lastly was leadership which was also supported to be a hindrance by a 60% response rate whereby 38% agreed and 22% strongly agreed however there was a 20% who were unsure and 20% disagreed.

Table 4.6 Challenges towards the use of ICT

Factors	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
ICT Infrastructure: unavailability of the tools, Poor power supply			5 8%	20 31%	40 62%
Language and Content: (Mistrust of their information content)		2 3%	2 3%	40 62%	21 32%
Lack of skills to use the tools (Teachers with ICT Skills)				25 38%	40 62%
High costs of accessing and using ICT tools		11 17%	9 14%	30 46%	15 23%
Change Management:		4 6%	14 22%	25 38%	22 34%
Lack of adequate access		19 29%	2 3%	40 62%	4 6%
Leadership:		13 20%	13 20%	25 38%	14 22%

Source: Field Data, 2011

Therefore, in view of integrating ICTs in learning a number of challenges were mentioned in regard to the use of ICT these includes but not limited to:

(a)   ICT Infrastructure: The main challenge for ICT-enhanced learning is the availability of information and communication technologies infrastructure or poorly developed ICT infrastructure. Before any ICT-based program is launched, policymakers and planners must ensure the availability of the followings: appropriate rooms or buildings to house the technology, computers as well as affordable Internet service for on line learning, and availability and reliability of electricity and telephony.

(b)   Language and Content: English is the dominant language of the Internet. A large proportion of the educational software produced in the world market is

in English. For developing countries in the Africa, Tanzania in particular where English language proficiency is not high, this represents a series barrier in maximizing the educational benefits of the World Wide Web where English is a second language; it is desirable that teaching and learning materials, preferably be developed in the local languages.

Moreover, other internet materials are not very reliable for instance some need to be edited before being used therefore, some claimed that some materials are not reliable thus mistrust.

This is also supported by Dr. P. Swarts and E. M. Wachira (2010) whereby they claimed that Content Availability: Even with the increased provision of ICT enabled services, the quality and quantity of available electronic content is yet to meet user expectations. An example in this area was cited as infrequently updated sites and obsolescent links on government websites which is not motivating, resulting in users not consulting government websites as their first choice for information. It was also noted that most of the websites are written in English while most ordinary Tanzanians speak Kiswahili. This results in content not being perceived as local.

However, Yonazi (2009) notes that there has been progress in developing local content with the government and different sectors attempting to develop and provide citizen-focused content and services. This content is in the form of web portals, improved service delivery through the use of mobile technology through seamless integration and increased information sharing attitudes in the form of blogs, online forums and discussion groups.

(c)   Lack of skills to use the tools (Teachers with ICT Skills): Lack of teachers equipped with ICT skills is another problem for the use of ICT in Distance Learning. The institutes where ICT is going to be integrated in learning, first of all their teachers must be well trained about ICT tools in learning. Before going to teach to students, Instructors must know about how and when to use

ICT tools to achieve particular purposes. Moreover, shortage of experts to contextualize the materials is also another hindrance.

(d)   High costs of accessing and using ICT tools; Lack of funds is one of the factors that hinder the exploration of ICT this is due to the fact that ICT infrastructure installations are costly (high) (costs of digital bandwidth, availability of funds to purchase ICT equipments, costs of software and after sales contracts on ICT equipments) and they need expertise though when one evaluates the usage and running cost, compared to the additional costs that are encored when using Non-ICT tools, it becomes cheaper.

(e)   Change Management: Managing the change is one of the biggest problems, as Instructors do not want to accept change easily. Change management issues must be addressed as new work practices, new ways of processing and performing tasks are introduced. In general a large number of Instructors are non ICT proficient, and resistance to change. Resistance to change may be due to cultural dominance. In particular, local cultures and traditions influence the ways in which knowledge is created and interpreted. Hence, understanding the local means of generating and interpreting knowledge is important for ICT integration.

Ryckeghem (1995) highlighted the importance of understanding the local culture in selecting appropriate technology and pedagogical approach, especially where many Africans prefer to consult colleagues or friends rather than to visit a library to find information. Gender is another key area of divide and there is evidence that gender inequities observed in relation to school students' use of computers are being transferred onto new media such as the internet, and that positive strategies to include girls are needed.

(f)   Lack of adequate access; in this it was agreed that though some can access the internet but sometimes there are books that can not be downloaded due to lack of proper passwords. All in all the availability of visual libraries can

make it easier but this lack causes the usage to be limited thus making it a hindrance.

(g)   Leadership: Integrating ICT in education is not an easy task, as it requires a wide range of support including higher management, and teachers. Therefore it is necessary to properly convince them for their support, and for this task a leader is required. Leadership is necessary before, during and after project implementation. Before the project is initiated, leadership is needed in order to explain the model, the concept and create awareness; during the project, leadership is needed to manage change and support the project; and after the project, it is needed to pledge the required adaptability and flexibility of the initiative.

Leng (2008) also supports this by stating that, effective leadership is a key element of success in any innovation in education. He contends that leadership is critical for successful Integration of ICT in schools. Effective leadership is needed to take advantage of the potential of ICT in education. This suggests that the success or failure of ICT integration in schools depends on the leadership in the school. This could be because ICT integration involves decision making, influencing others, supporting teachers and being a role model in ICT use. It would therefore be interesting to investigate school leaders' technological leadership in Eastern Africa and ways in which school leaders can be specifically prepared for the integration of ICT in education.

4.8.2. Benefits towards the use of ICT

While considering the opportunities associated with ICT enhanced education it can be said that ICT-enhanced learning is better than a traditional way whereby it has its benefits if the infrastructures are well established. The benefits mentioned include:-

(i)   Immediacy to information; ICT, technology makes material available anytime and anywhere through multimedia (e.g., video and audio) can engage multiple brain channels; graphics can help understanding of complex

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concepts; interactive activities can involve students in dynamic learning through a cycle of questions/answers/feedback; discussion and work groups allow students to evaluate their performance against that of peers.

(ii)   Access to a variety of learning resource, access to courses, individual topics and performance support resources anytime from the office at home or while traveling.

(iii)   Minimized accrued costs like transport costs; In synchronous distance methods which include satellite TV, audio-conferencing, video-conferencing and live Internet chat, learners and/or instructors are all engaged in the activity at the same time, restricting flexibility; flexibility is further restricted by methods like audio-conferencing or videoconferencing in which participants must be at a physical location with necessary technology and hook-ups. Learners can listen to audiotapes, view videotapes, check e-mail, log on to a threaded discussion, or visit webpages anytime; the necessary technology is widely—although not universally—available.

        According to Cutshall (2002); The ultimate in flexibility is the "anytime anywhere" availability of a web-based course or course components

(iv)   Provides multiple communication channels like e-mails, chat, forum and blogs thus increased diversity of learning resources; widened access to learning resources; an increased relevance of learning resources; and increased motivation and support of independent learners.

(v)   Involves and promotes collaborative learning; ICT-supported learning encourages interaction and cooperation among students, teachers, and experts regardless of where they are. Apart from modeling real-world interactions, ICT-supported learning provides learners the opportunity to work with people from different cultures, thereby helping to enhance learners' teaming and communicative skills as well as their global awareness. It models learning done throughout the learner's lifetime by expanding the learning space to include not just peers but also mentors and experts from different fields.

(vi)   Enhances Active learning; ICT-enhanced learning mobilizes tools for examination, calculation and analysis of information, thus providing a platform for student inquiry, analysis and construction of new information. Learners therefore learn as they do and, whenever appropriate, work on real-life problems in-depth, making learning less abstract and more relevant to the learner's life situation. In this way, and in contrast to memorization-based or rote learning, ICT-enhanced learning promotes increased learner engagement. ICT-enhanced learning is also "just-in-time" learning in which learners can choose what to learn when they need to learn it.

(vii)   Facilitating contact and information exchange. According to research findings it was observed that for many people with physical disabilities, ICTs can be extremely useful in providing access to communication, education and open up opportunities for them. The use of Braille keyboards and printers can help alleviate some common literacy and numeracy problems for visually impaired or blind people. Most telecommunications infrastructures are now being designed with the capabilities of meeting the special needs of the physically challenged. For instance, the Short Message Service (SMS) can be used to send and receive messaged by the hearing impaired, the voice activated dialing service can be used by visually impaired.

Moreover, Various communication technologies, ranging from broadcasting to telecommunications and to the Internet are playing effective roles in the acquisition and sharing of information. The concepts of the 'information revolution' and 'information society' are driven by enormous advancements in ICTs and their application. The Internet for example, has provided platforms for sharing information in applications such as the E-Mails, chart forums and The World Wide Web.

(viii)   Changing the learning process and learning outcome; The education sector is arguably one major area that ICTs are playing a remarkable role. These

technologies help in facilitating learning and exchange of educational materials. ICTs are helping library professionals store and manage academic information. Libraries have migrated from the traditional Dewey cataloguing system to an on-line system, which is a web-based cataloguing and search application. The online learning system is another web-based application that is revolutionalizing the learning platform of education. This system compliments the traditional face-to face teaching and learning format. In the on-line system, students can access class notes, submit assignment and also join a discussion group with other learners.

(ix)   Increase flexibility to the learning process by providing instructions in formats that creates interest to the learner.

4.9   Hypotheses testing
4.9.1 Hypothesis One
"There is competence of students and Instructors in the use of ICT."

The data was analyzed by use of tables and graphs. The measurement of competence was done through the responses to questions that were related to training and knowledge in ICT.

According questionnaires, it was seen that there was knowledge on ICT but there is little in the issue of competence on the use of ICT.

The following statistics were used to test the hypothesis:

1	65 percent of the interviewees have attended a course on ICT whereas 35 percent get help from other people
2	80% of students are aware of ICT technology though in the basic level.
3	30% (6 out of 20) of Instructors use ICT enabled mode of

	Instruction mainly based on projection that is, using projectors to deliver their lecturers but a large number use the Traditional way of face to face when they have to deliver their sessions.
4	Research indicates that, until recently, training opportunities have remained limited in availability and inconsistent in quality.

By observing the following remarks we can say that though the students and instructors have attained training in ICT but the training seem to be of basic level therefore it is had to tell if that was very beneficial and moreover the training opportunity have remained limited in availability and inconsistent in quality.

4.9.2 Hypothesis Two

"There is a positive relationship between Infrastructure and Effective management and application of ICT in distance learning."

The data was analyzed and taken into soft ware package known as SPSS. The print out of results was as shown in the table below. The print out composed various information that can lead either to or reject the suggested null hypothesis above.

Since the aim was to test for existence of the relationship between the variable customer care services and performance, the degree of correlation coefficient is sufficient to predict for strong or weak relationship existing between the two variables. However, other predictors will also validate the correlation coefficient, for example Standard deviation (stdev) and Probability (p).

SPSS> regress c_1 on one predictor in c_2

Regression equation : c_1= 2.53 -1.76c_2					
Predictor	Coefficient	Standard Deviation	t-ratio	Probability	
Constant	2.5294	0.2884	8.77	0.00	
C_2	-1.75805	0.06937	25.34	0.00	

S= 0.1702	R-sq = 99%	R-sq(adj) 99.2%			
Analysis of variance					
Source	DF	SS	MS	F-statistic	P
Regression	2	124.06	72.033	225.72	0.00
Error	6	0.12	0.102		
Total	8	124.28			
Source	DF	SEQ SS			
C_2	1	140.667			

Source: Research field data 2011

EXPLANATIONS TO SPSS REGRETION OUTPUT

The above printout shows the relationship between Effective management and application of ICT in distance learning (designated as c_1) on Infrastructure "c_2" (predictor).

The P (The probability of an observed value of the F-statistic could have been arisen by chance given that independent variable "predictor" has any effect on dependent variable) "c_1" was extremely zero for the case of predictor c_2. Such a strong relation of the dependent variable c_1 and independent variable c_2, that is correlation coefficient (R-sq) 99% was strictly not by chance. Thus the evidence certainly suggests that Infrastructure are relating to the effectiveness of the contribution of ICT in distance learning.

Moreover, the large value of "F" tends to imply that the independent variable has an effect on the dependant variable. This fact was clearly revealed by the F-value being 225.72 as shown in the print out. Yet the standard error of estimate gives the prediction of the accuracy of the model, which normally measure how scattered individual observations were about the regression line, together with degree of freedom (DF) being small (i.e. 2 in this case) it imply the more accurate of the results in the printout. That is why ss value was smaller, that is "ss" = 0.12, otherwise if the value could have been big we could predict otherwise. Further more regression

equation fit well the collected data since the coefficient of correlation was (0.994) 99.4%.

Conclusively the t-ratio in the print out suggest that c_2 (Infrastructure) variable has an influence on dependent variable c_1 (Effective management and application of ICT in distance learning) where by its t-ratio is 25.34 which is sufficiently big enough to explain the dependent variable c_1. Precisely, the regression equation indicating the coefficient of c_2 is negative (-1.75806 ≈ -1.76) such that it relates negatively to the c_1. This strong relationship of the two variables means that if the infrastructure are not good the Effective management and application of ICT in distance learning will not be positively evaluated, the vice versa is also true. From these results, the relationship between the two variables is not positively related as suggested by the hypothesis. Of course, such relationship has much to do with nature of current infrastructure taken vis-à-vis Effective management and application of ICT in as revealed by the study. Thus supports the null hypothesis.

4.9.3 Hypothesis Three

This section intended to test the statement that "Factors hindering the effective implementation of ICT are related to the success or failure of Effective management and application of ICT in distance learning." (Dimension of effective implementation of ICT with or without biasness). The collected data was analyzed and the results summarized in the table below.

FACTORS	Frequencies at Midpoints				Total	Average in % out of 20	% of each category out of 100%
	2.5	7.5	12.5	17.5			
The demographic domain (Geographical size and situation)		20	15	30	862.5	13.3	66.3
External factors (Government and political commitment to ICT; Political, Legal and regulatory)		16	28	33	837.5	12.9	64.4

ICT and Distance learning platform and Accessibility of resources (tangible and intangible)	1	5	19	40	977.5	15.0	75.2
Efficacy; (within Instructors and Students own motivation and capacity)		15	22	28	877.5	13.5	67.5
Learning culture (perception, knowledge, technology transfer, attitude, usage of ICT, Changes)		13	28	24	867.5	13.3	66.7

Source: Field Research data 2011

Descriptive Statistics: Results

Mean = 13.6

95% confidence interval for actual Mean: 3.58 thru 17.18

Standard Deviation = 2.52

Average Absolute Deviation from Median = 0.18

Probability < 0.05

Degree of freedom = 4

Chi-square   = 9.49

From the above observed table, there was an overall Chi- square value of 9.49 with 4 degree of freedom, as these value are reasonable large, it implies that the probability of the values in the table occurring by chance is minimal (<0.05). As a rule of thumb probability of test statistic having occurred by chance if is very low (usually 0.05 or lower) this means that the probability of the test occurring by chance is 5 in 100 that is 1 in 20. Of course, it implies significant relationship. Otherwise, if the probability of obtaining the test statistic by chance is higher than 0.05 then the relationship is not significant.

Thus, from this analysis (P= 0.05), it implies that "Factors hindering the effective implementation of ICT are related to the success or failure of Effective management

and application of ICT in distance learning" This means that the service providers have mixed feelings in customer service provision. The known and unknown customers are treated differently before the service providers, depending on the conditions of the organisation.

Further analysis prescribes that the features mentioned really affects the effective management and application of ICT in distance learning due to the mean being 13.6 the factors in question were given equal marks that is out of 20% and there were five questions to be analysed these questions carried a total of 100%. Therefore, the average for the assigned points was 68%.

Therefore according to the interpretation above it supports the hypothesis that "Factors hindering the effective implementation of ICT are related to the success or failure of Effective management and application of ICT in distance learning."

4.10   Summary

This chapter presented the overall analysis of the report where by it looked into the demographic factor of the respondents, the availability and reliability of infrastructure and how they affect the usage of ICT, Technological literacy of both Instructors and students, the usage of the ICT tools and competences of both staff and students in using then, the frequency of using ICT tools, tools used in delivering lectures, the cost fact in using ICT tools compared to the use of Non ICT Tools and lastly the Benefits and challenges accrued to using ICT Tools.

CHAPTER FIVE
STUDY SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0   Introduction

This chapter presents the summary, conclusion, recommendation and areas of further studies related to contribution of ICT in distance learning at OUT. The information obtained on the contribution of ICT in distance learning at OUT, with the information the researcher intended to clarify the strong and weak points within the range of University (Open University of Tanzania) to the effective contribution of ICT on Distance Learning. As far as the topic was concerned the objective was to evaluate the contribution of ICT on distance learning in Tanzania specifically OUT students and teachers.

5.1   Summary

This section provides the summary of the whole study in order to give a quick picture of what is the study all about. This study was conducted with the main objective of the contribution of ICT on distance learning in Tanzania specifically OUT students and teachers at the Head Quarter in Dar es Salaam. The focus of the study embarked on investigating the use/contribution of ICT in distance learning given the fact that, we are in the era of Science and Technology.

It is a descriptive study where the sample size comprised of 65 respondents (instructors and students) out of OUT populations. The sample size was selected through Convenience sampling which is a type of non probability sampling techniques. The data was collected by using content analysis, questionnaire and interview. The data was analyzed by using SPSS and Excel and presented by using frequency distribution tables, charts and graphs.

The research investigated a number of issues including factors contributing to the effectiveness of the use of ICT tools that will lead to its contribution in Distance learning the findings were that some of the factors include Students and Instructors

Awareness of technology, availability of ICT tools, frequency of tools usage, Infrastructure development, Change management and Leadership support.

From the research findings it has be noted that the issue of Infrastructure is a major hindrance in promoting ICT in distance learning for instance there are no elaborate networks (connectivity) in the rural areas to connect to, lack of ICT tools in some areas (hardware and software), unreliability of electricity in urban area and worse, is the lack of it in some areas (rural).

The research findings on the issue of competences of both students and instructors on the use of ICT tools identified that at-least most of them have attained basic skill on the use of ICT tools whereby 80% of the students are aware of ICT. However, ICT literacy and confidence among students in Distance Learning Education is low. This makes the use of ICT tools low. Most students do not have experience with using ICT tool. Moreover, it was also observed 30% (6 out of 20) which is a very small number of Instructors using ICT enabled mode of Instruction mainly based on projection.

The study also showed that to a large extend, students still use Non ICT tools to a large extend compared to their Instructors. Moreover the ICT tools that seem to be used more frequently are the phones and Internet further exploitation of more tools is needed.

It also looked into other hindrances/challenges which include; language and content barrier, Lack of skills in using the tools, high cost and accessibility in using ICT tools, Leadership and change management.

Apart from the challenges that were observed, the research also looked at the benefits of the use of ICT in comparison to Non ICT tools whereby it was found out that to a large extent if ICT tools were to be developed and become fully utilized, they will be at a better advantage than Non ICT tools.

The main limitation to this study was the lack of documented activities, statistics and processes for ICT use and integration in the education sector in Tanzania. Sources of information were sometimes conflicting for instance those in documents available online and those verbally presented during interviews and in questionnaires.

5.2   Conclusion

It is noted that new digital technologies in Tanzania have the potential to revolutionize the quality of subject teaching and learning when carefully integrated into the classroom. The role of the teacher is utterly critical here. Yet a primary barrier to teachers' readiness and confidence in using ICT, despite general enthusiasm and belief in benefits for learners, is their lack of relevant preparation, either initially or in-service. Research indicates that, until recently, training opportunities have remained limited in availability and inconsistent in quality. This has resulted in demonstrably low proficiency in using ICT, and a general lack of knowledge about technology in teaching and learning.

However, according to Unwin (2005), provision has often been characterized by "well intentioned, but misplaced, supply-driven initiatives" across the continent to provide teachers and students with ICT skills. These have proved "wasteful and inappropriate", with limited impact.

The study identified that, the use of ICT in the Open University of Tanzania is still to the minimum whereby the most dependable method of delivering lectures and searching for study materials is still manual, there is no visual libraries, no video conferencing and telephone. Conferencing moreover the usage of other facilities like the internet is also somehow restricted to Instructors mostly than students.

Generally the study reveals that, factors that hinder further exploration of ICT tools are many and there is need to address both the Government to play its role in infrastructure, the Institution itself to play its role for instance the Management should support and be active in enforcing the usage, the Instructors to be positive and self motivated towards the use and students to have a positive attitude.

It is advised that fundamental challenges need to be overcome before the Contribution of ICT in Distance learning can be realized and become a reality in Tanzania Education system. It is also emphasized that the challenges facing the contribution of ICT in Distance Learning in Tanzania need to be addressed holistically and systematically.

5.3   Recommendations

In as far as the study findings are concerns, the researcher is of the view that there is need to address different categories though it seems that a large part should be played by the Government as follows;

5.3.1   To the Government

(i)   The government and other ICT stakeholders to cultivate the culture of ICT use in early learning stages by reviewing the ICT syllabus and the national ICT policy to ensure that they meet the current global ICT demands.

(ii)   The government should improve the ICT infrastructures and enhance better ICT services among the users in distance learning. This would enable those who have been unable to use ICT tools to use them. Also Government should seek to ensure all installed ICT infrastructure is utilized effectively, and is synchronized to contribute to resilience and redundancy on a national basis

(iii)   Since ICT is a powerful development facilitator, the Government should embrace ICT as an integral part of its development strategy and empower all citizens to use.

(iv)   The government should increase ICT fund so that more ICT tools may be made available to students in the learning institutions. Also, the issues of ICT cost and infrastructures should be reviewed and improved respectively. This is because they account greatly to the failure of many students to access ICT tools.

(v)   The government should invest in the energy sector. This is because unreliable power supply seriously affects the use of ICT tools since most of the tools need a constant power supply to run.

(vi)   The Government shall encourage public and private sectors to explore various means of funding, including but not limited to loan finance, equity finance, incubation finance facilities, hire purchase finance, and grant finance for ICT development.

(vii)   The Government should promote, encourage and support research and development activities in the areas of ICT and strengthen the national capability to develop research programs and projects in the ICT field.

(viii) The Government should examine advantages and disadvantages of policies on compulsory CPD concerning ICT for young teachers in the first two years of their career, provided the appropriate conditions for equal access are met by the State.

(ix)   Government should ensure that investments are based on an integrated approach in implementing ICT strategies, including the four major components - hardware, software, communications provisions and trained human resources, and should be assured on a sustainable basis. Where public/private partnerships to complement public sector investment are applied, they should not be undertaken in conditions of monopoly domination of hardware or software. Open source software should be considered where possible.

5.3.2   To the Institutions

(i)   The learning institutions should put deliberate efforts to cultivate interest of ICT discipline among students, particularly in distance learning. The course should be made compulsory so that majority may undertake the course.

(ii)   The learning institutions should emphasis on the study of and interest building in ICT tools usage so that the concerned may realize the benefits attached. This could be through introduction of compulsory ICT courses, adjust ICT curricula, introduce ICT competitions and administer most exams, exercises and issue of notes through ICT tools.

(iii)   The learning institutions should develop a regular programme to enable Instructors to gain new and advanced ICT knowledge and skills due to the fact that ICT is changing on a day to day basis.

(iv)   Teachers are crucial to successful use of ICT. They will be required, and should be positively encouraged, to assume new roles and responsibilities if ICT is effectively applied to enhance teaching and learning quality.

(v)   Introduction and use of ICT in teaching and learning methodology is sometimes stressful and hinders use of new technology. Additional research is needed on the impact of teachers in relation to their training, their hours of work and the working environment preparatory to making adjustments which will reduce stress. Changes in working conditions should be negotiated with teachers and their representatives.

(vi)   An ICT implementation plan should be promoted as part of schools' development plans. The role and commitment of Institutions' leadership is crucial to realizing this objective.

5.3.3   To the Instructors
(i)   Instructors should develop a self interest in learning ICT and acquire relevant skills, knowledge, innovations and experiences from others in order to develop self confidence and overcome challenges that may be posed by students who may have access to newer information and make them an embarrassment in classrooms.

(ii)   Affirmative action, including "positive discrimination" policies should be considered to ensure equal gender access to CPD to account for heavy family responsibilities for most women teachers, as well as addressing the special needs of older teachers.

(iii)   Teachers should have adequate planning time as part of their work obligations to ensure they are able to introduce ICT into their pedagogical practice which favours high quality and appropriate learning. Additional planning time will need to be decided with due regard to resource implications and organization of schooling, and may be the subject of negotiations between authorities and teachers' organizations.

5.3.4   To the Students

(i)   Cultivate self interest in learning ICT in order to know how to look for latest information, study materials and collaborative learning.

(ii)   Students and parents through their elected representatives in school councils/boards, and other educational stakeholders, should be fully involved in school decision-making, including ICT. School leaders are also crucial to social dialogue.

(iii)

5.3.5   To the Other Stakeholders

(i)   Partners should work towards the objective that all teachers should have the right to a minimum amount of continual professional development (CPD) on ICT skills in the course of their careers, the amount to be determined in negotiations between educational authorities and representatives of teachers' organizations. This right is conditional on adequate State financing.

(ii)   Time for the purpose of CPD should be guaranteed in employment contracts of teachers, as well as collective agreements concluded between education authorities and unions

(iii)   Teachers' organizations should establish internal mechanisms for full dissemination of information on the outcomes of social dialogue to their members so as to ensure understanding and acceptance.

5.4   Suggestions for further research.

This study recommends that there is a need to do further research using a larger and a more diversified sample to investigate the real factors inhibiting the sufficient use of ICT tools in distance learning.

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QUESTIONNAIRE FOR INSTRUCTORS

Dear respondent,

I am Adelina Eustace Luhilabake a student pursuing Master in Corporate Management (MBA) at Mzumbe University. This questionnaire is aimed at collecting information on Information and Communication Technology (ICT) in The Open University of Tanzania (OUT). The information that will be gathered will be used for academic purposes only. Your response will be totally anonymous and confidential. Therefore, I am requesting you to answer the following questions honestly and openly as you can.

SECTION A

Circle a relevant response(s)

1.   Sex: Male (   )   Female   (   )

2.   Duration in service (a) 1 to 3 years   (b) 4 to 6 years (c) Above 6 years ☐

3.   Professional qualification (a) Diploma (b) Degree (c) Masters (d) Ph.D ☐

 SECTION B

Please indicate your perception if the Open University of Tanzania posses the features described in each statement by entering a number appropriate to your feelings in the small box.

Score: Strongly Disagree   Disagree   Unsure   Agree   Strong Agree

　　　　　　　1　　　　　　　2　　　　　3　　　4　　　5

1.   There is availability of ICT tools in the campus

        (1) (2) (3) (4) (5)   ☐

2. The ICT facilities are easily accessible

(1) (2) (3) (4) (5) ☐

3. Electricity is available to support ICT

(1) (2) (3) (4) (5) ☐

4. Do you have ICT knowledge

(1) (2) (3) (4) (5) ☐

5. Have you attended any training related to ICT

(1) (2) (3) (4) (5) ☐

6. Are your conversant with using ICT tools

(1) (2) (3) (4) (5) ☐

SECTION C

Circle appropriate letter

1. Which tools do you use in delivering materials to students
   (a) ICT tools (for instance, internet, Radio and Video conferencing)
   (b) Non ICT tools (for instance, Books, Handouts, Journals)

2. Which of the two above is most frequently used and why
   ....
   ....
   ....

3. Which of the two is more effective and why
   ....
   ....
   ....

4.   Which ICT tools are available in your campus (rank the four most important)

      (a)   Radio

      (b)   Video conferencing

      (c)   Television

      (d)   Cassette recordings

      (e)   Internet

      (f)   Video recordings

      (g)   Telephone

      (h)   CD-ROMs

      (i)   Others (specify)

5.   How much money does it cost you in using ICT tools in distance education per semester
      (a)   50,000 – 100,000
      (b)   100,000 – 150,000
      (c)   150,000 – 200,000
      (d)   200,000 - 250,000
      (e)   Above 250,000

6.   How much money does it cost you in using Non ICT tools   in distance education per semester
      (a)   50,000 – 100,000
      (b)   100,000 – 150,000
      (c)   150,000 – 200,000
      (d)   200,000 - 250,000
      (e)   Above 250,000

7.   What do you think are benefits of using ICT tools in distance education?
      (a)   Immediacy to information
      (b)   Anytime learning

(c)   Authentic and up to date information

(d)   Anywhere learning

(e)   Access to variety of learning resource

(f)   Collaborative learning

(g)   Development of new interests

(h)   Multiple communication channels-e-mail, chat, forum & blogs

(i)   Others (specify) [99]

SECTION D

Please tick the choice you feel is most appropriate

1.   Which of the following factors do you think inhibits you to make teaching materials using ICT tools in distance learning.

Factors	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
ICT Infrastructure:					
Language and Content:					
Change Management					
Leadership:					
Poor power supply					
Lack of adequate access					

Any other factor, please mention…………………………………………………

1.   Please indicate by percentage how each of these features affects the effective management and application of ICT in distance learning. Each question has equal points (20%). The points for all questions in this section adds up to 100%.

(i)   The demographic domain (Geographical size and situation) _____ %

75

(ii)   External factors (Government and political commitment to ICT; Political, Legal and regulatory)   ____ %

(iii)   ICT and Distance learning platform and Accessibility of resources (tangible and intangible)   ____ %

(iv)   Efficacy; (within Instructors and Students own motivation and capacity)   ____ %

(v)   Learning culture (perception, knowledge, technology transfer, attitude, usage of ICT, Changes)   ____ %

TOTAL   **100%**

2.   What is your general view on the use of ICT tools in distance education

………………………………………………………………………………………

………………………………………………………………………………………

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QUESTIONNAIRE FOR STUDENTS

Dear respondent,

I am Adelina Eustace Luhilabake a student pursuing Master in Corporate Management (MBA) at Mzumbe University. This questionnaire is aimed at collecting information on Information and Communication Technology (ICT) in The Open University of Tanzania (OUT). The information that will be gathered will be used for academic purposes only. Your response will be totally anonymous and confidential. Therefore, I am requesting you to answer the following questions honestly and openly as you can.

SECTION A

Circle a relevant response(s)

1.   Sex: Male (   )   Female   (   )   ▢

2.   Age: (a) 21 to 30   (b) 31 to 40   (c) 41 to 50   ▢

3.   Level of study
   (a)   Certificate
   (b)   Diploma   ▢
   (c)   Bachelor
   (d)   Master
   (e)   PH.D

 SECTION B

Please indicate your perception if the Open University of Tanzania posses the features described in each statement by entering a number appropriate to your feelings in the small box.

Score:	Strongly Disagree	Disagree	Unsure	Agree	Strong Agree
	1	2	3	4	5

1.   There is availability of ICT tools in the campus

(1) (2) (3) (4) (5)   ☐

2.   The ICT facilities available are easily accessible?

(1) (2) (3) (4) (5)   ☐

3.   Electricity is available to support ICT?

(1) (2) (3) (4) (5)   ☐

4.   Do you have ICT knowledge

(1) (2) (3) (4) (5)   ☐

5.   Have you attended any training related to ICT

(1) (2) (3) (4) (5)   ☐

6. Are you comfortable when using ICT tools

(1) (2) (3) (4) (5)   ☐

SECTION C

Circle appropriate letter

1.   How frequent do you use the non-ICT tools
   - (a) At least once a day
   - (b) At least once a month
   - (c) At least once a week
   - (d) At least once a semester

2.   How frequent do you use the non-ICT tools

(a) At least once a day

(b) At least once a month

(c) At least once a week

(d) At least once a semester

3.   How much money does it cost you in using ICT tools in distance education
       per semester

(f)   50,000 – 100,000

(g)   100,000 – 150,000

(h)   150,000 – 200,000

(i)   200,000 - 250,000

(j)   Above 250,000

4.   How much money does it cost you in using Non ICT tools in distance
       education per semester

(f)   50,000 – 100,000

(g)   100,000 – 150,000

(h)   150,000 – 200,000

(i)   200,000 - 250,000

(j)   Above 250,000

5.   Which ICT tools amongst of the following are available in your campus

(j)   Radio

(k)   Video conferencing

(l)   Television

(m)   Cassette recordings

(n)   Internet

(o)   Video recordings

(p)   Telephone

(q)   CD-ROMs

(r)   Others (specify) …………………..

6.   Which tools are used by instructors to deliver their lecture/ material

       (a) ICT tools (for instance, internet, Radio and Video conferencing)

       (b) Non ICT tools (for instance, Books, Handouts, Journals)

7.   Which of the two do you prefer and why.
       ....
       ....
       ....

8.   Do you think ICT has any contribution in distance education?
       (j)   Yes
       (k)   No
       If yes. Why? ………………………………………………………………

   SECTION D
   Please tick the choice you feel is most appropriate
2.   Which of the following factors do you think inhibits you to make learning
       materials using ICT tools in distance learning.

Factors	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
ICT Infrastructure: unavailability of the tools, Poor power supply					
Language and Content: (Mistrust of their information content)					

Lack of skills to use the tools (Teachers with ICT Skills)					
High costs of accessing and using ICT tools					
Change Management:					
Lack of adequate access					
Leadership:					

Any other factor, please mention…………………………………………………

3. Please indicate by percentage how each of these features affects the effective management and application of ICT in distance learning. Each question has equal points (20%). The points for all questions in this section adds up to 100%.

    (vi)   The demographic domain (Geographical size and situation) ____ %

    (vii)   External factors (Government and political commitment to ICT;
            Political, Legal and regulatory)   ____ %

    (viii) ICT and Distance learning platform and Accessibility of resources
            (tangible and intangible)   ____ %

    (ix)   Efficacy; (within Instructors and Students own motivation and
            capacity)   ____ %

    (x)   Learning culture (perception, knowledge, technology transfer,
            attitude, usage of ICT, Changes)   ____ %
            TOTAL   **100%**

4. What is your general view on the use of ICT tools in distance education
    ……………………………………………………………………………………
    ……………………………………………………………………………………
    ……………………………………………………………………………………