THE ROLE OF INFORMATION COMMUNICATION TECHNOLOGIES IN FACILITATING DISTANCE LEARNING

The Case of the Open University of Tanzania

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By

Azizi Hasan Kagugu

A Dissertation submitted in partial fulfilment of the requirements for the Award of Degree of Master of Arts (Information Studies) of the University of Dar es Salaam.

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the University of Dar es-Salaam a dissertation entitled: ***The Role of ICTs in Facilitating Distance Learning: The Case of the Open University of Tanzania***, in partial fulfilment of the requirements for the Award of Degree of Masters of Arts (Information Studies).

Dr. Evans Wema.

SUPERVISOR

Date ……

DECLARATION

AND

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

Signature……..

AKNOWLEGDEMENTS

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DEDICATION

This work is dedicated to my deceased father (RIP), mother, brothers, sisters, my petite daughter Halima and all my friends.

ABSRACT

This study examined the role of Information Communication Technologies (ICTs) in facilitating distance learning at the Open University of Tanzania. The study used a sample of 120 respondents from OUT headquarters at Kinondoni and two other regional centres; Temeke and Ilala, all in Dar es Salaam. This study used a cross- sectional design while using both qualitative and quantitative research approaches. Data for this study were collected by using structured questionnaires, Focus Group Discussion and personal observations. Quantitative data were analysed by using SPSS 16 while qualitative data were analysed using content analysis procedure. The study findings revealed that the most available ICT facilities at OUT are computers, telephones and mobile phones. The findings reveal that most of the ICT facilities that are accessed by students are located in the library. However, it was found that the majority of respondents use face to face and internet as the major means of communication. The findings showed that ICT would bring about several use to the learner and the instructor, it facilitates shared learning resources and shared learning spaces. It was found that among the available systems that facilitated the distance learning included OPAC, EXIMIS, SARIS and Moodle. The study found that problems related to the effective use of ICT facilities at OUT include, inadequate infrastructure, inadequate funds, lack of awareness and lack of training. It was therefore recommended that OUT should improve the internet connectivity, integrate the computer training on the course program content, regular monitoring, control and maintenance of the ICT facilities.

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LIST OF ABBREVIATION

AJOL	African Journal On Line
CD	Compact Disc
EXMIS	Examination Management Information System
FINMIS	Financial Management Information System
HRMIS	Resource Management Information System
ICT	Information Communication Technologies
LIBMIS	Library Management Information System
LMS	Learning Management System
OPAC	Online Public Access Catalogue
OUT	Open University of Tanzania
PSTN	Tanzania's Public Switched Telephone Network
RSP	Rolling Strategic Plan
SARIS	Students' Records Management System
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network

CHAPTER ONE

ITRODUCTION AND BACKGROUND TO THE STUDY

1.1 Background to the Problem

Rapid technological advancements in the world have led to multiple convergences of content, computing, telecommunication and broadcasting. These have led to Information Communication Technologies (URT, 2003, Mswanyama, 2004). Mchanja (2008) asserts that information is a resource and that any resource has value according to him any valuable thing must be captured, stored, retrieved and updated. The role of Information Communication Technologies (ICTs) is therefore multifold. It cuts across the diverse settings of human life including social, political, economical, developmental, environmental and educational sphere. ICTs have the potential in facilitating communication and interaction between the students themselves and between students and teachers in distance education settings (Venugopal and Manjulika, 2002). Trucano (2005) argues that ICTs in various forms have been used with some success to support the initial acquisition of literacy skills. The possibilities and realisations have differed greatly according to the environment in which programmes have taken place. There is widespread belief that ICTs can and will empower teachers and learners, transforming teaching and learning processes from being highly teacher-dominated to student-centered, and that this transformation will result in increased learning gains for students, creating and allowing for opportunities for learners to develop their creativity, problem-solving abilities, informational reasoning skills, communication skills, and other higher-

order thinking skills. However, there are currently very limited, unequivocally compelling data to support this belief. It is from this scenario that a research investigation was carried out to examine the role of ICTs for information provision in distance learning at OUT.

1.2 An overview of the Open University of Tanzania (OUT)

The Open University of Tanzania was established by an Act of Parliament No.17 of 1992. The Act became operational on 1993 by publication of notice No.55 in the official gazette. Act No.17 has been replaced by the Open University of Tanzania Charter effectively from 2007, which is in line with the University Act No. 7 of 2005 (OUT Prospectus, 2009).

The Open University of Tanzania is an open and distance learning institution offering certificates, diplomas, degrees and postgraduate courses. Educational delivery is attained through various means of communication such as broadcasting, telecasting, Information and Communication Technology (ICT), correspondence, enhanced face to face, seminars, contact programmes or the combination of any two or of such means.

The Open University of Tanzania consists of a number of Faculties, Institutes and Directorates. These are Faculty of Arts and Social Sciences, the Faculty of Education, the Faculty of Science, Technology and Environmental Studies, the Faculty of Law. Others include the Faculty of Business Management, the Institute of Continuing Education, the Institute of Educational Technology and the Directorate of Research,

Postgraduate Studies and Consultancy. More Faculties and Institutes are expected to be established according to procedures indicated in the new Open University of Tanzania Charter signed by H.E. the president of United Republic of Tanzania on 28th March, 2007.

1.3 Available ICT facilities at OUT

The University has provided computers to all staff with special duties in all Faculties. Head of academic departments were among the beneficiaries to receive computers. For the remaining staff at headquarters, access to computer is at least one computer to two academic staff (OUT RSP, 2009). Currently, the University under Sida project has provided computers to the following centres in Dar es Salaam: Kinondoni 56 computers, Temeke 16 computers, Ilala 7 computers and the Headquarter 300 computers. The library at the headquarters in Dar es salaam has 30 computers for students to access the internet. A telephone line is also available in most of the offices. Heads of departments were given Vodacom network stick and Voice over Internet Protocol connection to their personal computers.

1.4 Distance Education

Distance education is defined as distributed education, open and distance education, cross border or borderless education (Swai, 2006). Distance education is used in relation to courses or services received away from campus (Haynes, 2002). In Tanzania, distance learning education started in the 1940's as education by correspondence by a British

Tutorial College. The Cooperative Education in Moshi was the first to introduce distance education locally in 1964. The second national correspondence institution came into existence in 1970. The Open University of Tanzania was established in 1992 and it came into effect in 1993 (Kilato, 1997). Distance education enables many people to access education. It provides opportunities for people who cannot access mainstream educational institutions. In Tanzania, the Open University enables more people to access University Education on a part time basis and depending on their financial ability. There are many potential candidates who would like to access university education but are yet to get time off from their jobs and other responsibilities.

In this 21st century, Information Communication Technologies (ICT) provides opportunities for more people to access university education through distance education. In this context, students utilise ICT that include online resources such as web 2, blogs, internet for e-mails, chat rooms, bulletin boards and wikis, intranet and electronic media such as mobile phones. The uses of ICT tools, on the other hand, help the instructors to keep in touch with learners as the instructor monitors participation, evaluate learning, pedagogy and the teaching-learning effectiveness (Mushi, 2006).

Distance learning education at the OUT comprises the use of different modes of teaching. A combination of print media, the use of ICT and face to face is currently employed. The university has enhanced the use of ICT through the introduction of MOODLE to replace A-Tutor as the official University Learning Management System

(LMS). It is however impossible to abandon the use of print media in the foreseeable future. The reason behind this is due to the size and nature of the country (OUT RSP, 2008). Open learning refers to a mode of learning that is flexible, allowing the students to register for any number of subjects and learn at his/her pace, and therefore, not having a fixed completion duration. With the evolution of ICT, most learning resources are at ones fingertips, and much easier to obtain (OUT Postgraduate studies brochure, 2009).

1.5 Problem Statement

Various studies on Information Communication Technologies (ICTs) have been conducted in Tanzania. For example, Mswanyama (2004) investigated the application of ICTs in Tanzanian Teachers Training Colleges. He found that computers were used mainly for accessing internet. On the other hand, Mchanja (2008) looked at the design and implementation of an integrated academic information management system and e-learning platform. Among the findings of this study revealed that students' examination results and other academic related information were not well organised in networked computer systems. Mmari (2009) examined the role of electronic reference services in facilitating the effective teaching and learning process at OUT Library. He discovered that the use of electronic reference services was still low at OUT. These and many other studies have focused on specific aspects of ICTs such as computers, internet and electronic resources. However, there has been insufficient research in Tanzania that has demonstrated the role of ICTs in providing information to distance education learners at OUT in a holistic approach.

Due to low use of ICTs in facilitating information provision to distant learners, many problems related to inefficiencies in accessing information by students have occurred at the OUT. These include delays in sending or receiving course work and project reports to respective lecturers, accessing course announcements, examination results to mention but a few. Hence, this study was carried out so as to find out the extent to which ICTs have played a role in facilitating information provision to distance learners at OUT. This will help to demonstrate the essence of ICTs in manipulating the currently designed and implemented information systems for positive impact in the provision of information to distance learners.

1.6 Objectives of the study

1.6.1 Main Objective

The main objective of this study was to examine the role of ICTs in facilitating distance learning at OUT.

1.6.2 Specific objectives

The study was guided by the following specific objectives:

i. To examine the availability of ICTs for information provision at Open University of Tanzania.
ii. To examine the use of ICTs in facilitating distance learning at OUT.
iii. To examine factors which constrain access of ICTs for information provision at OUT.

1.7 Research Questions

This study sought to address the following questions:

i. What ICT facilities are available at OUT for supporting information provision in distance learning?
ii. How ICTs are used in facilitating distance learning at OUT?
iii. What factors constrain the use of ICTs for information provision at OUT?

1.8 Significance of the study

This study is expected to discover the role of ICTs in facilitating distance learning at the Open University of Tanzania. It is also expected that this study will act as a motivation for OUT to improve its ICT facilities for better information provision based on the research findings. Furthermore, it is expected that the study will act as a reminder to the stakeholders to revise policies and priorities concerning ICT facilities improvement on the quality of information provision and infrastructure at OUT. It will further act as a marketing and promotional tool of OUT activities including the role of ICTs in information provision. Finally, the findings will have a positive contribution to the existing literature in the field.

1.9 Definition of the key terms

1.9.1 Information Communication Technologies (ICTs)

ICT is an acronym that stands for “Information Communication Technologies”. Information Communication Technologies are umbrella terms which include all technologies for the manipulation and communication of information.

1.9.2 Open and distance learning

According to Tinio (2002) Open and distance learning is defined by the Commonwealth of Learning as a way of providing learning opportunities that is characterized by the separation of teacher and learner in time or place, or both time and place. According to him it is a learning that is certified in some way by an institution or agency; the use of a variety of media, including print and electronic; two-way communications that allow learners and tutors to interact; the possibility of occasional face-to-face meetings; and a specialized division of labour in the production and delivery of courses. On the other hand, distance learning is often synonymously used with distance education to mean learning which takes place with the instructor and learners in a physically separate location (Narlker, 2009).

1.10 Limitations of the study

This study lacked stable flow of financial support because the collection of data from the field required facilitation. Interviewing key respondents through FGD needed money and patience as they were not readily available at one place. Power interruption and load shading was a big obstacle that delayed the analysis of data. This affected the completion of the dissertation on the schedule.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review related to the study. It aims at giving a direction and a good understanding of the key issues under study. The chapter discusses the concept of Information Communication Technologies (ICTs), the availability of ICT facilities in institutions of Higher Learning and the use of Information Communication Technologies in education. Other issues presented in this chapter are Information Communication Technologies for information provision in Higher Learning Institutions, Information Communication Technologies for information provision in distance learning, factors constraining access of Information Communication Technologies for information provision in distance learning, the conceptual framework of the study, the research gap and the summary.

2.2 An overview of Information Communication Technologies

Information Communication Technologies (ICTs) are defined as electronic technologies for collecting, storing, processing, and communicating information. They can be separated into two main categories. The first category is those which process information such as computer systems. The second category includes those which disseminate information such as telecommunications systems (Gunton, 1993). Moreover, ICT is used to describe a range of technologies for gathering, storing, retrieving, processing, analyzing, transmitting and sharing information (Maro, 2008).

Furthermore, Hameed (2006) gives another definition of ICT as a broad subject concerned with technology and other aspects of managing and processing information and which deals with the use of electronic computers and computer software to convert, store, protect, process, transmit, and retrieve information.Technologies included in ICT are; Radio and Television (broadcasting technology), telephone, computers and the internet.

2.3 Information Communication Technologies in education

In the past educational institutions provided little choice for students in terms of the method and manner in which programs were delivered. Students were typically forced to accept what was delivered and institutions tended to be quite static and traditional in terms of the delivery of their programs. At present, the use of ICTs provide many options and choices and many institutions are now creating competitive edges for themselves through the choices they are offering students. These choices extend from when students can choose to learn to where they teach (Oliver, 2002). Also, the emerging ICTs are contributing significantly to the content of education curricula and the ways in which they are dominating so much of contemporary life and work (McCausland et al., 1999).

As computers and the internet continue to transform the economy and society, the role of information communication technologies (ICTs) in fostering development has become more generally recognized. If one was to compare such fields as medicine, tourism, travel, business, law, banking, engineering and architecture, the impact of ICTs across

the past two or three decades has been enormous (Oliver, 2002). Information and Communication Technologies (ICTs) are forces that have changed many aspects of the way we live.

As a result, Judy and Angela (2008) observe that over the last two decades there have been fundamental shifts in the way teaching and learning are perceived and conducted within the tertiary education sector. One is a move from teacher-centred to student-centred education. The other is a move from the traditional to the virtual classroom. Information Communication Technologies (ICTs) in most cases have most essentially had tremendous success in providing services at reduced costs to the people's door steps and for making higher education available to all classes of people. As a result, on one hand people, will have the access right on higher education and on the other hand will gain the necessary knowledge, skills and experiences to serve the nation and prosper accordingly (Blurton, 2002).

There have been rapid changes in education sector because of ICTs. Different ICTs are now set to become instrumental to help expand access to education, strengthen the relevance of education to the increasingly digital workplace and raise educational quality by among others, helping make teaching and learning into an engaging activity (Shah and Shafiul, 2010). These further indicate that the application and exposure to and deployment of ICT fundamentally change the way education is conceived and delivered to students. Due to its easy accessibility, this means of education has become very

popular all over the world. Thus, distance education has got a thrust after the evolution of ICT-based education system.

There is no doubt that Information and Communication Technology (ICT) holds the promise of transforming the ways we live into new and more powerful ways. ICT has become a strategic resource, a commodity and foundation of every activity from technology, communication, health to entertainment. ICT now plays a major role in distance learning and research in general (Ajayi, 2003).

2.4 Information Communication Technologies for information provision in Distance Learning Education

There have been many innovations in distance learning technologies carried out in the developing countries. Localized resources such as overhead projectors and chalkboards may no longer be necessary if all learners have access to the same network resources on which the teacher is presenting information especially, if the students are not physically at the same place (UNESCO, 2010). Most of these innovations focus on getting the maximum benefit from the existing resources. Distance Learning has progressed in rapid strides. As noted by Prem and Madhulika (2006) India is now a home to some of the world's largest open universities, deploying a variety of educational media which include interactive radio and television, teleconferencing, multimedia and the World Wide Web. This has been due to the IT revolution and the extensive use of electronic media which have become viable options with most of today's open and distance education programs going this way.

The Open University of UK shows that its community already is in a high possession and use of ICT facilities. In emphasizing the role and importance of ICTs in education GAID (2009) states that a study conducted by the International Institute for Communication and Development (IICD) indicated that 80% of its participants felt more aware and empowered by their exposure to ICT in education. Likewise, 60% stated that the processes of teaching as well as learning were directly and positively affected by the use of ICTs.

Distance or e-leaners are usually geographically isolated from their tutors. They need answers, ideas, advice and encouragement. Once they start completing assignments, they need personalised assessment of their works; probably a library through ICTs to support these students in their learning process. Under e-library, distance learners are provided with different electronic resources that complement their print sources. Students are trained on information literacy skills. These enable them to interact with resources databases which contain electronic materials as well as the learning management systems which are used by the university as part of e-learning mode. These skills enable students to download and upload their progressive results and other learning resources. In using computer technology, students can also send and receive e-mails from their tutors. They can also chat and send queries to both tutors and librarians which need immediate solutions. Therefore, there is a link between e-learning and library services in the learning process (Maro, 2008). Mushi (2006) argues that use of ICT tools such as e-

mails, chat rooms and bulletin boards help the instructor to keep in touch with learners as the instructor monitors participation, evaluate learning, pedagogy and effectiveness of teaching-learning. If appropriately engaged ICTs eliminate the problem of instructor learner isolation which has been a long time distance education concern.

The University of Dar es Salaam has established a university-wide data communication network, connecting all 26 academic buildings on the main campus with an 8km fibre-optic cable as well as two regional campuses with a 2-Mbps wireless link. Full internet connectivity is provided to the campus. A virtual distance learning system is being established. It uses fibre-optic, wireless backbone and internet infrastructure. Plans are to ensure that all university graduates are computer literate within two years. Many aspects of the administrative system have been computerized.

Meanwhile, ICT infrastructure and services at the Open University of Tanzania has benefited from the short term strategic funding from SIDA which has earmarked upgrading of ICT infrastructure and services for application in teaching and learning as well as improving management capacity. OUT headquarters is currently connected to the internet by a dedicated 512 kbps link to Tanzania Telecommunications Company Limited (TTCL). Almost all regional centres have been connected to headquarters through the Virtual Private Network (VPN). The university has distributed computers to regional centers to keep linked to the headquarters. Also, links to other universities have been made and the OUT website is regularly upgraded. An e-learning management

system (ELMS/Moodle) has been implemented and staff trained for usage. The use of open source software has increased recently. Record keeping has been enhanced and examination data bank software is operational (OUT, 2009). On the national level, Tanzania's Public Switched Telephone Network (PSTN) which uses fibre optic, microwave and satellite-based links is now over 95% digital. This paves the way for allowing the provision of new services enabled by ICT (URT, 2003).

At OUT information provision is categorized on the basis of the number of following systems. These systems are Students Academic Register Information System (SARIS), Library Management Information System (LIBMIS), Financial Management Information System (FINMIS) and Human Resource Management Information System (HRMIS). Others are E-Learning Management System (ELMS/Moodle) and Voice Over Internet Protocol (VOIP). The latter is used by staff especially, directors in the regions for daily communication. Communication with tutors through e-learning, CDs, video cassettes and audio cassettes is also used (OUT RSP, 2008).

2.5 The Use of Information Communication Technologies in facilitating distance learning

Presently, a new era has evolved in the education sector by means of ICTs. Different ICTs are now set to become instrumental to help expand access to education, strengthen the relevance of education to the increasingly digital workplace and raise educational

quality by among others, helping make teaching and learning into an engaging and active process connected to real life (Shah and Shafiul, 2010).

Mushi (2006) also has noted that learning like other social activities involves two or more participants who result from meaningful interactions between and among people involved. These interactions are more crucial where technology was the primary means of instruction. In such cases, there were no physical human cues to encourage interaction, rather instruction has to be designed and delivered in such a way that it performed what the instructor could have performed when teaching in a traditional classroom.

Mwakilama and Nawe (2005) reflect on the transformation programmes of the two colleges of the University of Dar es salaam. They put it clear that the application of ICT for teaching, research and learning in institutions of higher learning and the increased availability of information resources in electronic formats, largely determines how institutions of higher learning are changing their traditional ways of doing things. Quoting different scholars, they argue that ICT applications in higher learning institutions offer a number of opportunities such as enabling distance education.

The impact of ICT on learning is currently discussed almost entirely in relation to the use of digital media primarily, the World Wide Web. However, ICT was impacted on higher education before the widespread use of the Internet. Through the application of print, audio-visual and broadcast media to distance education, it has enabled those with

adult roles and responsibilities to continue formal study leading to higher education qualifications on a mass scale. For example, in Australia, a range of technologies, innovative in their day but often quickly superseded, have been used to good effect by various programmes in the service of developing adult literacy. These have included audio-cassettes in combination with printed text, radio, interactive videodisc, narrowcast television, teleconferencing and various desktop computer applications such as hypermedia, word processing, language-drills programmes, shell programmes and text manipulation and storytelling programmes (Anderson, 1991).

The use of ICT has provided many options and choices. Many institutions are now creating competitive edges for themselves through the choices they are offering students. These choices extend from when students can choose to learn to where they learn (Oliver, 2002). Another way in which emerging ICT are contributing significantly on the content of education curricula stems from the ways in which ICT are dominating so much of contemporary life and work. Already, there has emerged a need for educational institutions to ensure that graduates are able to display appropriate levels of information literacy. The capacity to identify and issue and then to identify, locate and evaluate relevant information in order to engage with it or to solve a problem arising from it (McCausland *et al*., 1999).

According to Tinio (2002) ICT is potentially a powerful tool for extending educational opportunities both formal and non-formal. ICTs are potential tools previously

underserved constituencies scattered and rural populations. These are the groups which traditionally were excluded from education due to cultural or social reasons such as ethnic minorities, girls and women, persons with disabilities and the elderly as well as all others who for reasons of cost or because of time constraints are unable to enroll on campus.

The role and value of using ICT in sustaining and continuing literacy learning has various dimensions (Rogers *et al*., 1999). Benefits which have been identified include the motivational effect of writing on the internet, the opportunity for inexpensive distribution of large amounts of material, the spontaneous formation of international study circles, relating to a constructivist approach to sharing and valuing alternative wisdoms, and economies of recent printing technologies.

2.6 Factors constraining access of Information Communication Technologies in facilitating distance learning

Many countries in developing world are fraught with problems and limitations. Shafiqul (2009) identified some problems related to ICT-based education. The identified problems are technology and moral issues, affordability, technological imperialism, socialisation and humanisation of technology, appropriateness and acceptability. Opportunities offered by ICT-based education may not be beneficial to all learners in countries with different socio-economic, political and cultural environments. The availability of knowledge through technology may cause serious maladjustment to the

people of many developing countries. The cost of establishing and maintaining the program economically, culturally, socially or politically must be affordable as globalised system of education. He further advises that any replacement or reformation of the use of technology in developing countries needs to be harmonized socially, culturally and economically. According to him each technology has its own strengths and weaknesses. One medium may serve a teaching function better than another in a particular area and culture and learners may have different preferences for the technology to best learn with. The socio-economic and cultural background of a person influences their ability to learn from different media technology. The use of new communication technologies require trained manpower to design, develop, produce and deliver educational materials. Few developing countries have adequately trained human resources for these specialized jobs.

Soh *et al*., (2007) remark that the rapidly changing ICT landscape means that academics are also regularly under pressure to update curriculum and teaching materials. With frequent updates to degree programs, it is difficult for potential students and careers advisors to keep abreast of these changes.

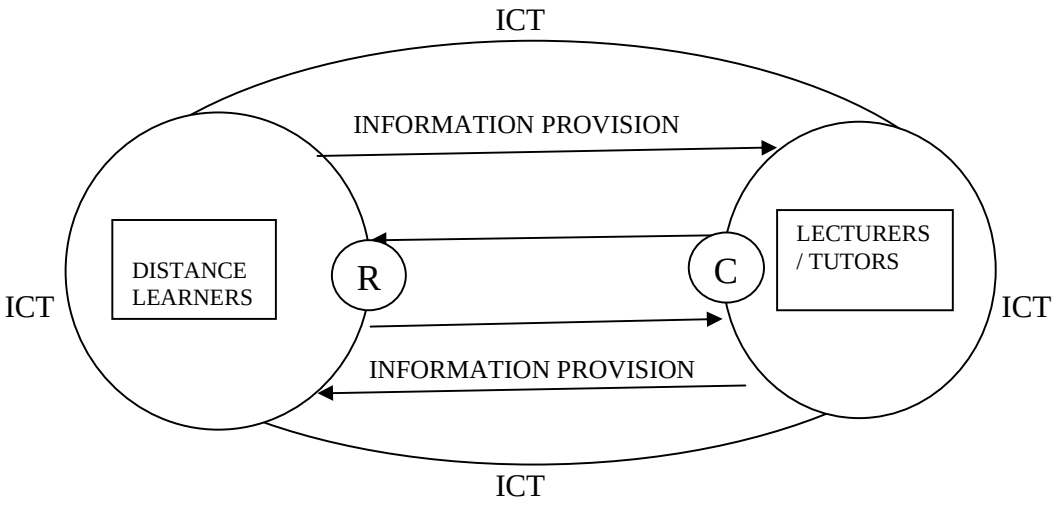
Also, the commonly identified challenges of accessing and using ICT in facilitating teaching and learning faced by developing countries are rooted in unstable power supply, poor infrastructure, unskilled people, network problems, cost of acquiring

hardware and software. Others are low level of computer literacy, limited legal provision, and inadequate policies (Marrett, 2009).

Furthermore, according to the Balancing Act (2005), the potential for ICT to address major challenges facing distance learning, the issue of access to ICT remains a huge obstacle. Even though internet access and mobile phone use have been increasing rapidly in recent years, for very many poor people, these remain remote from their reality. Behind the enthusiasm of reviews of growing internet and telecommunications connectivity in the developing world and despite ICT-dedicated programmes and projects, most illiterate people have no prospect of learning through these means. Access, particularly to the internet, remains an elite luxury in much of the world and ICT infrastructure the plaything of the rich.

2. 7 Conceptual Framework of the Study

Figure 1: The ICT usage conceptual framework



The ICTs usage conceptual framework Adopted and modified from the Relly's Model

In relation to this study, this model (**Figure 1**) was adopted for its importance in pointing out the sociological view in communication. ICT environment forms a larger universe within which many information elements are at play. In our case, there are communicators and receivers of information. The information system is a two way flow from either side. The lecturers or tutors as communicators form a sub-universe and the distance learners in the students' sub-universe as receivers of information. This conceptual framework is based on the specific objectives that are to examine the availability, use of ICTs and factors influencing the general application of ICTs at OUT. This displays the relationship and interplay in the utilization of ICT facilities for information provision between students and lecturers at the Open University of Tanzania.

2.8 Research Gap

So far there are few studies which have been conducted in academic institutions in Tanzania on the role of ICTs in facilitating distance learning. In their studies, Mwakilama and Nawe (2005) concluded that information services provision, ICT facilities provision, information retrieval tools and the changing role of librarians have raised new demands and challenges. In addition, networked computers have been used for internet access and word processing. Mushi (2006) observed that ICTs should highly be adopted as the ideal technologies for contemporary ODL world of practice. Mcharazo (2004) suggested that distance education does not depend solely on the information by

distance education institution therefore, some research and evaluation areas should be considered. Delivering instruction through the distance mode presents a significant challenge to educators but in this era of ICT the gap are filled by use of the ICT. However, through this literature review it was found that little research has been done so far on the use of ICTs in facilitating distance learning at OUT. This is the gap the study intended to fill by examining the role of ICT in facilitating distance learning.

2.9 Summary

This chapter presented the literature review related to the study. The literature discussed the role of ICT valuable resource in facilitating distance education. The literature review focused on specific objectives of the study which were to examine the availability of Information Communication Technologies, The use of Information Communication Technology in education, Information Communication Technologies in Higher Learning Institutions, Information Communication Technologies in distance learning. The specific objectives also intended to examine the use of Information Communication Technologies and factors influencing access of Information Communication Technologies in facilitating distance learning.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This section discusses methods that were used to collect data including the description of study area, population, sample size and sampling techniques. It provides an illustration of the way the research was conducted. In this case, this chapter presents the research design, sampling method, research instruments and techniques, data quality control, the way data were analysed, the research procedures and the summary of the chapter.

3.2 Description of Study Area

There are 26 OUT regional centres distributed all over Tanzania. These are used to service distance study students as general point for project work, interaction with other students, attending seminars and tutorials, practical work and demonstrations and for using reference materials (OUT, 2009). However, this research was conducted at the OUT headquarters at Kinondoni and two other regional centres; Temeke and Ilala, all located in Dar es Salaam. The selection of these three regions was considered crucial because of being in the city where population of distance learners was fairly higher than other regions. According to the OUT Fact and Figures (2010), the academic year 2007/08 annual enrolment in Dar es Salaam was more than 40%. One reason was the level of development in ICT facilities. The study was also limited to Dar es Salaam due to lack of adequate funds and time.

3.3 Population and Sampling

The sample units were drawn from the Facts and Figures, admissions and staff lists. The research handled one category of population which was students in different programmes at the Open University of Tanzania. Among the 26 regional centres, only 3 were sampled for research. These were Kinondoni, Ilala, and Temeke. A cluster sampling technique was used to interview 120 respondents who were all students of the Open University of Tanzania including both graduates and undergraduates. In cluster sampling, all or some of the units within each cluster were randomly chosen to make up the sample thus each cluster became a miniature of the sampled population. According to Tripathi (2002) sample units should be heterogeneous and the study considered Tripathi's views.

3. 4 Research Design

A research design is the overall plan or programme of research. It is the general blue print for the collection, measurement and analysis of data with the general goal of solving the research problem. It ensures that data is validly collected by objective and economical procedures Tripathi, (2002). Basing on the definition above and the research objectives, this study employed a survey method. Both quantitative and qualitative data were collected in order to answer the research questions. Data collection involved questionnaires whose successful use enabled the manipulation of variables in numerical terms (Babbie 1990). Qualitative data were collected using guiding questions with purposively selected focus groups. Also, simple or uncontrolled observation was used

as it is the most common exploratory tool for collecting research data. Data were analyzed using SPSS computer software particularly, simple statistics such as frequencies and percentages were computed.

3.5 Data Collection

Data for this study were collected using a combination of methods (triangulation) in order to ensure the validity and reliability of the data collected and because each method has its own strengths and weaknesses. Two types of data were collected.

3.5.1 Primary Data

Primary data are those which are collected for the first time by the researcher (Babbie, 1990). Primary data were obtained by the use of structured questionnaires containing closed and open-ended questions. Focus group discussion was conducted for supplementary information that verified answers obtained from questionnaires. Personal observations were used to supplement information which was collected by other methods.

3.5.2 Secondary Data

Secondary data are those data which have already been collected by someone else. This can be published or unpublished information (Kothari, 1985). This study used both print and electronic resources. Secondary data was collected from various documents such as; books, newsletters, reports, magazines, journals, daily newspapers and web resources from the internet.

3.6 Research Instruments and Techniques

3.6.1 Questionnaires

Self administered questionnaires were used for OUT students **(**Appendix I**).** Questionnaires were used because they were cheaper than face-to-face interview and reach a large numbers of respondents by enabling them to give information without influence. The questionnaires contained close-ended and few open-ended questions to permit respondents to include some additional information. Also, direct interviewing of selected focus group was conducted for supplementary information which verified answers obtained from the questionnaires. Secondary information were collected from various documents such as books, newsletters, reports, magazines, journals, daily newspaper, websites as well as from existing literature to understand the role of ICTs in facilitating distance learning.

3.6.2 Observation Guide

An observation guide with the theme about the research objectives was used to collect data (Appendix II).

3.6.3 Focus Group Discussion

Students from various centres in Dar es salaam were gathered and interviewed. There were respondents from Ilala, Temeke, Kinondoni and Ubungo. Focus group discussion was purposely opted to justify answers obtained from other methods such as questionnaire and observation guides (Appendix III).

3.7 Data quality control

Data quality control ensures researchers to obtain data of high quality. This was achieved by observing the following; pre-testing of the research instruments, triangulation and abiding to ethical issues.

3.7.1 Pre-testing of the research instruments

The testing of research instruments was considered important because it helped to measure their clarity, consistency and validity. The questionnaires were tested on a small sample of 25 respondents from the OUT headquarters. The findings from this study were used to refine the questions to improve clarity, reliability and validity of instruments. This was aimed at rewriting and improving the questionnaires by avoiding inconsistency or ambiguity.

3.7.2 Triangulation

Multi-methods were used to avoid biased data. For example, a structured questionnaire was used to standardise the response from respondents as much as possible in order to avoid bias. Focus group discussion was also used to confirm answers obtained from other methods. Observation guide was also used where respondents were not willing to express themselves.

3.8 Data analysis

After interviews and questionnaire filling, preparation of data for analysis followed. These were editing, coding, classification and tabulation using frequencies and

percentages. These activities and summaries provided early insight into the structure of data. Frequencies were calculated and the numbers of each response were determined. The data were then analysed quantitatively using statistical methods. A social science statistical tool commonly known as SPSS was used. Data were presented in the form of frequency tables and percentages. This provided a platform for discussion and presentation of results. Recommendations for this study directly resulted from its findings.

3.9 Research procedures

After a research problem was identified, a research proposal was prepared, presented and approved. An introductory letter (Appendix IV) was obtained from the University of Dar es Salaam authority. This was presented to the OUT officials in charge for permission to conduct the research. Furthermore, all other ethical issues such as level of confidentiality and rights of individuals were careful taken into consideration.

3.10 Summary

This chapter presented the methodology and the design used in this study. The chapter has explained the study area and the reasons for choosing the study area. Furthermore, the chapter has explained the sampling technique used in the study as well as the research instruments used in the study. The chapter has also depicted the way data were analysed as well as the research procedures used in this study.

CHAPTER FOUR

DATA PRESENTATION AND DISCUSSION OF THE FINDINGS

4.1 Introduction

This chapter presents and analyses the data basing on the three specific research objectives. The objectives of the study were to examine the availability of Information Communication Technologies (ICTs) in facilitating distance learning at the Open University of Tanzania, to examine the use of ICTs in facilitating distance learning at OUT and to examine factors which constrain access of ICTs in facilitating distance learning at OUT.

This chapter is divided into nine sections. These sections are background information of respondents, age and gender of the respondents, the availability of ICT facilities for information provision at OUT, the role of ICT facilities for information provision in distance learning and ICT facilities needed for information provision. The other sections included the role of ICT facilities for information provision in distance learning, the benefits of ICT facilities, constraints related to the effective use of ICT facilities, the strategies for overcoming problems of using ICTs in facilitating distance learning and the summary of the chapter.

The discussion sequentially followed the order of the research objectives and the results are presented in various forms including narration, graphs, charts and tables. Descriptive

statistics are shown in frequencies and percentages. The sub-headings for this chapter have been organized basing on the main research objectives.

The main purpose of this study was to examine the role of ICTs in facilitating distance learning at OUT. The data for this study were collected through questionnaires with open and close -ended questions which were administered to 120 respondents who participated in this study, all students at the OUT, both male and female. Interview, Focus Group Discussion (FGD) and personal observation were also used.

4.2 Background information of the respondents

Background information (Demographic Data) was on personal information of the respondents. This involved age, gender, education level, faculty/institute and the status of the respondents. The researcher felt that it was necessary to get this information as they have an influence on the role of information communication technologies (ICTs) in facilitating distance learning. Questionnaires were distributed to 120 students and all were returned, coded and analysed using SPSS statistical package for analysing social sciences research. The completed questionnaires gave a 100% response rate. The main reason for the high response rate was the cooperation that was received from research assistants during the distribution and collection of the questionnaires. However, regular visits were made to the surveyed institutions as a follow up for the soonest possible filling in of the questionnaires. The results of this information are presented and discussed in various formats below.

4.3 Age and Gender of the respondents

Age was categorized into four groups. The groupings were from the age 20 to over 45 years as shown in Table 1 below:

Table 1: Age of the respondents

Age category	F	Percent
20 – 35	96	80.0
35 – 45	22	18.3
Over 45	2	1.7
Total	120	100.0

Source: Field Data, 2010

The table reveals that the majority were youths 96 (80%) with very few 2 (1.7%) elderly students. These were in the category of 20 to 35 years. The age category of 35 to 45 years students 22 (18.3%) were few. This also depicts that the number of old student's enrolment at the university is low.

4.3.1 Gender

The study expected both male and female respondents. Table 2 below shows the distribution of the respondents according to their gender.

Table 2: Gender

Gender	F	Percent
Male	88	73.3
Female	32	26.7
Total	120	100.0

Source: Field Data, 2010

The findings indicate that out of the 120 respondents the majority 88 (73.3%) of the respondents were males while only 32 (26.7%) were females. Perhaps this can be explained from the socio-cultural point of view where girls are married early instead of staying longer in schools to learn. This reveals that gender imbalance still persists at the university regardless of the sensitisation effort for the balance of the two. This was cemented by Tinio (2002) who said that women have less access to ICTs and fewer opportunities for ICT-related training compared to men because of illiteracy and lack of education, lack of time, lack of mobility, and poverty. The findings were also contrary to the University objective that aims at gender equality and equity that ensuring both women and men are considered and treated on equal terms with regards to their dignity and rights (RSP, 2006).

4.3.2 Level of education respondents were pursuing at OUT

Respondents were asked the level of education they were pursuing at the OUT. Table 3**,** shows a total of 120 respondents interviewed.

Table 3: Level of education

Level of education	**F**	**Percent**
Certificate	6	5.0
Diploma	2	1.7
Bachelor	104	86.7
Masters	8	6.7
Total	120	100.0

Source: Field Data, 2010

104 (86.7%) respondents out of the 120 were students pursuing bachelor's degree courses. Those who were on post graduate program constitute 8 (6.7%). The lowest percentage was of diploma students who constituted only 2 (1.7%). High percentage of the respondents was bachelor's degree students. This is evidenced by the fact that undergraduate courses are leading in terms of the number of students. This can also be justified as the university projects the enrolment of students of about 10,919 per year by 2012/13 for undergraduate and 1,845 for postgraduate students (RSP, 2006).

4.3.3 Faculty/Institute

Among 120 respondents were students from different faculties and institutions. Table 4 below shows their difference in terms of frequency and percentages.

Table 4: Faculty/Institute

Faculty/Institute	F	Percent
Faculty of Arts and Social Sciences	32	26.7
Faculty of Science Technology and Environmental Science	21	17.5
Faculty of Education	16	13.3
Faculty of Law	11	9.2
Faculty of Business Management	31	25.8
Institute of Continuing Education	9	7.5
Total	120	100.0

Source: Field Data, 2010

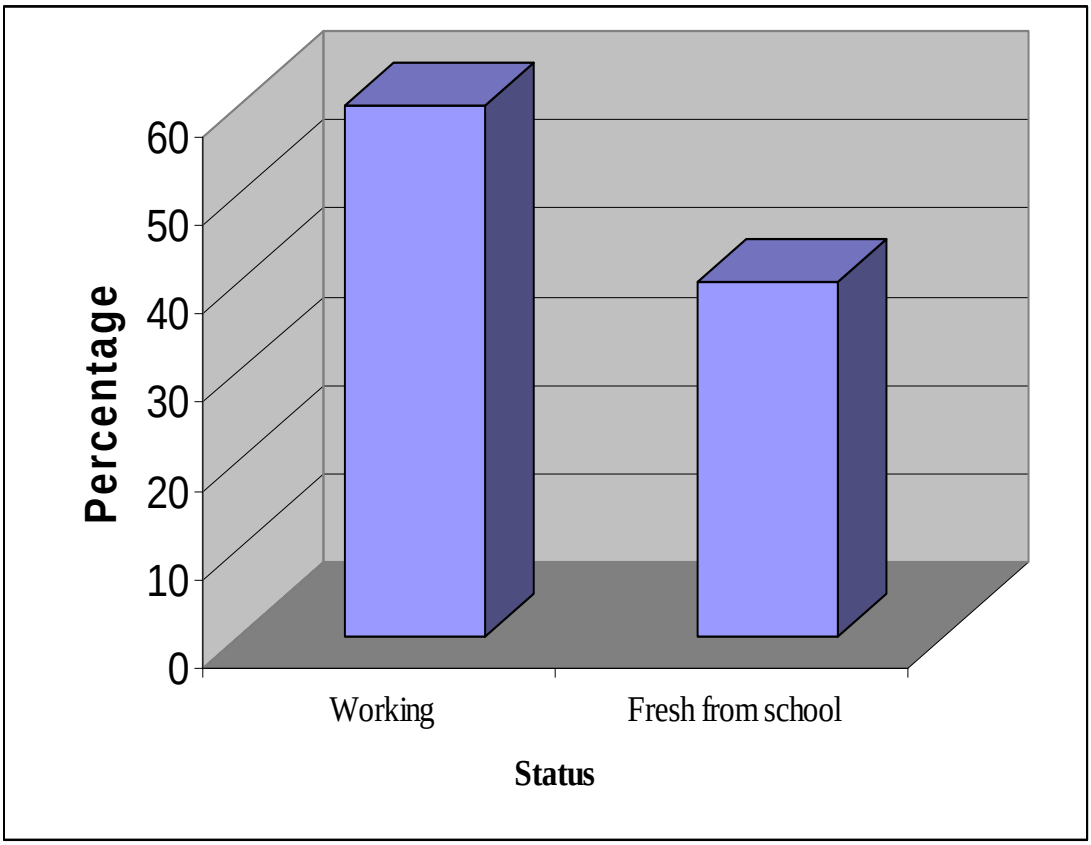
The majority 32 (26.7%) were from the Faculty of Arts and Social Sciences and closely followed by 31 (25.8%) by Faculty of Business Management. The Faculty of Science Technology and Environmental Studies consisted of 21 (17.5%). The Faculty of

Education had 16 (13.3%) while the Faculty of Law had 11 (9.2%) respectively. The Institute of Continuing Education had 9 (7.5%) respondents.

4.3.4 Status of the respondents

Respondents were asked to state their status. The purpose of this question was to find whether there were differences in the status among the respondents. Their responses are presented in Figure 2 below.

Figure 2: Status of the respondents



Source: Field Data, 2010

The findings show that the status of the OUT students, majority of the respondents were 72 (60%) working class while only 48 (40%) were fresh from school. The results confirmed the fact that OUT gives opportunity to the people who are working based on the nature and modality of distance learning. In Tanzania OUT is the leading institution that offers its courses through distance learning mode, thus giving an opportunity to the interested individuals who are engaged in different activities such as being employed or self employed.

4.4 The availability of ICT facilities for information provision at OUT

Respondents were asked to identify the ICT facilities at OUT. The purpose of this question was to know what kind of ICT facilities were known to be available at OUT. The study found that the main ICT tool that was mentioned to be available at the Open University of Tanzania was the computer. Respondents had more than one option. Table 5 below summarises the results.

Table 5: Available ICT facilities at OUT

ICT Facilities	F	Percent
Computer	118	98.3%
Telephone	12	10.0%
Mobile phone	26	21.7%

Source: Field Data, 2010

Table 5 above shows that computer as a facility constituted 118 (98.3%) while the mobile phone followed with 26 (21.7%). The telephone was at 12 (10%). This indicates

that the main facility as a means of communication was the computer connected to the internet. In the financial year 2008/09 some centres were provided with 10 internet connected computers from SIDA funding. These centres were Dar es Salaam (20), Arusha, Kilimanjaro, Ruvuma, Rukwa, Zanzibar, Singida, Tanga, Mbeya, Iringa and Mtwara (RSP, 2006). Contrary to these results, a study by (Kashorda and Waema, 2009) concluded that over 50% of the students' access computers and the internet in cyber cafés and only 8% of the students reported their primary access to computers was on campus.

4.5 Means of communication

The main means of communication at the Open University of Tanzania was found to be face to face. Table 6 below summarises the main means of communication at OUT. It should be noted that respondents had more than one option.

Table 6: Means of communication

Means of Communication	F	Percent
Via telephone/mobile	44	36.7%
Internet	50	41.7%
Intranet	2	1.7%
Letters	6	5.0%
Face to face	88	73.3%

Source: Field Data, 2010

Table 6 shows that face to face communication was at 88 (73.3%). This was followed by the internet at 50 (41.7%). Also, telephone as a means of communication was shown to

be used by 44 (36.7%). Intranet and letters were the least means of communication. Important to note is that the physical letter communication system was becoming less common. Although the use of ICT such as telephone/mobile and internet showed improvement, the traditional means of communication that is face to face interaction was still the main means of communication between students and lecturers. This was also echoed by Hashim *et al* (2010) in his study about attitudes towards ICT at the Institute of Educational Development in Malaysia when students requested more face to face seminars while their mode of learning and teaching was through the use of ICT.

4.6 Awareness of available information systems

For the purpose of enhancing an e-learning management, different system such as LIBMIS, FINMIS, EXMIS, SARIS and Moodle were established and implemented at OUT. Library Management Information System (LIBMIS) also known as Online Public Access Catalogue (OPAC) was commonly used by library users in accessing documents available in the library. Users through simple search or advance options would locate materials by using title, subject or combination of terms with the use of advanced search such as Boolean operators. It was mainly meant for retrieval of catalogues from faculties, regional resource canters, digitized study materials and connectivity with external research databases (OUT, 2004) Financial Management System (FINMIS) was mainly meant for financial data management such as students' fees payment records, track all loans, interest, advances, payments and repayments (OUT, 2004) . Examination Management Information system (EXMIS) was basically meant for keeping and accessing students examination records, tracking students performance through and

output at course level, departmental level, faculty level and university level (OUT,2004). Students Academic Register System (SARIS) also known as Academic Register Management Information System (ARMIS) meant to support central administrative functions and decentralized student administration tasks (OUT, 2004). Moodle was meant to provide a forum for students to access online resources such as study materials. Staff was also trained for using the same. Respondents were asked to state whether they were aware of these information system available at OUT. Table 7 below shows the results of respondents as related to awareness of the available information systems. From the table it can be noted that respondents had more than one option.

Table 7: Awareness of available information systems

Information systems	**F**	**Percent**
Library Management Information System (OPAC)	50	41.7
Financial Management Information System (FINMIS)	2	1.7
Students' Academic Records Management System (SARIS)	64	53.3
Examination Management Information System (EXMIS)	34	28.3
Moodle	18	15.0

Source: Field Data, 2010

Table 7 shows that awareness of available information systems counted 64 (53.3%) for SARIS while OPAC was 50 (41.7%). EXIMIS counted 34 (28.3%) and Moodle 18 (15%) while FINMIS counted 2 (1.7%) as the least in awareness. SARIS lead in awareness because all students used it frequently for personal records such as, examination results. The Library Management Information System (LIBMIS) followed

in awareness due to the fact that it was the source of academic information material that the students wanted most.

4.7 The use of information systems at OUT

Respondents were asked to indicate the system they used to access information in their learning process. The purpose of this question was to know whether the available systems were utilised by the learners. From the question, respondents had more than one option. Responses are summarized in table 8 below.

Table 8: The use of information systems at OUT

Information systems	F	Percent
Library Management Information System (OPAC)	50	41.7
Students' Records Management System (SARIS)	56	46.7
Examination Management Information System (EXIMS)	28	23.3
Moodle	16	13.3

Source: Field Data, 2010

Table 8 above indicates that the highest 56 (46.7%) used SARIS. SARIS enabled students to register or be admitted on-line through their regional centres. SARIS, a reliable student database allows students personal, performance and curriculum data to be used by university departments such as bursar's office, examination office, faculties and library (OUT, 2004). It also, enables students to access their results for their assignments, tests, and examination scores. This was commended by a respondent from Ilala. He said, "Although we sometimes delay to get our results, but SARIS is convenient than the former system." On the other hand, 50 (41.7%) respondents

indicated that the use of OPAC as a tool for locating information resources was also appreciated at the university. The major reason for using this as noted by one respondent from Temeke when she said, “There are a lot of the materials organised in the library that I access using the OPAC.” Due to the introduction of automated machine which replaced card catalogue, OUT library introduced OPAC to enable library users to locate information materials. The finding for OPAC was less reported by (Kashorda and Waema, 2009) that only 27% had OPAC available off campus. They further argued that most of the university libraries were not ready to provide digital library services.

The least systems in use were EXIMIS 23.3% and Moodle 13.3% respectively. The ICT systems facilitate sharing, collecting and dissemination of information. It is surprising for the least use of Moodle because Moodle has been designed for the purpose of depositing the learning materials by the instructors. The major reason for not using this as noted by one respondent in an interview from Ilala was as follows: “I’m not aware of such a system.” As discussed in the previous sections very few respondents (15.0%) were aware of the Moodle system at OUT. This is in contrary to the results of the study by Shah and Shafiul (2010) who contended that in distance learning ICT facilitates delivering support services to distance learners, research and development work, performing management and administration functions and online submission of grades.

4.8 Location of ICT facilities

Respondents were asked to state where most of the accessed ICT facilities were located. To respond to the question, respondents had more than one option. The results of this question are presented in table 9 below:

Table 9: Location of ICT facilities

Location of ICT facilities	F	Percent
Library computer lab	110	91.7%
Faculty computer labs	10	8.3%
Students resource centre	8	6.7%
At the tents	10	8.3%

Source: Field Data, 2010

The findings reveal that most students used the library computer laboratory. This is shown in Table 9**.** 110 (91.7%) of the respondents said they used the computer laboratory while 10 (8.3%) said they used faculty computer laboratories. On the other hand, 8 (6.7%) of the respondents said they used students resource centres while the remaining 10 (8.3%) said they used tents. This is indicated in table 9.The results show that library computer laboratory was the most accessed location compared to the rest such as faculty laboratory, student's resource centre and tents. It is therefore suggested that Congestion in the library computer laboratory could be eased by facilitating other laboratories, centres and online resources so that users can be distributed evenly. Respondents were asked where they frequently go to access computers for their information needs. In one interview, a respondent from Ilala narrated that, "I normally

access computer at the OUT library computer laboratory although it is ever full. Sometimes when I come with my laptop I prefer at the tent because I enjoy the fresh air but the speed of wireless internet is also disappointing"

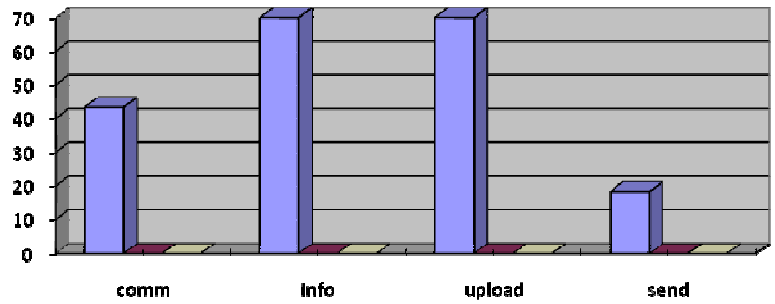
Nwezah (2005) argues that the current trend sees information including full texts being accessed from laboratories, offices and homes twenty-four hours a day. Kashorda and Waema (2009) contend that students access on average 35% of the computers in the institutions. They further say that the universities in East Africa are paying more attention to faculty and administrative staff compared to students in provision of computers. Also they note that although some of the university started to provide wireless access to internet for their students by building hotspots, over 50% of the students still had to use cyber cafés for computer and internet access.

Picture 1: Users in the Library Computer Laboratory

4.9 The purpose and use of ICT facilities

Respondents were asked to state the purpose of using ICT facilities. Figure 3 below shows their responses as related to the purpose and the use of ICT facilities at the Open University of Tanzania.

Figure 3: The purpose and the use of ICT facilities



Source: Field Data, 2010

From the respondents responses in figure 3 above, Information searching and uploading/downloading study materials took the lead by 70% for each. This suggests that students focussed mainly on information and study materials. Communication followed with 43% while sending and receiving queries to and from lecturers, stood at only 18.3%. In a study by Toki (2008) it was concluded that students do not make use of the academic database of digital journals or any advanced options provided from the search engines, but they choose Google in all the queries. This implies that students were mainly concerned with the category of sources that would not encourage serious searching hence, making little efforts in searching for substantial information.

4.10 Sources of Computer skills

Respondents were asked to state ways by which they acquired computer skills. Table 10 below shows their responses as related to the process of computer skills acquisition. Respondents had more than one option.

Table 10: Sources of Computer skills

Computer skills	F	Percent
Self practices	76	63.3
Guided by library staff	2	1.7
Taught courses offered at the university	46	38.3
Through face to face sessions	10	8.3

Source: Field Data, 2010

Computer skills have become a necessity for many people especially, university students who are required to prepare their works in print or soft form. Table 10 shows that self practice was the common method of acquiring computer skills. From the table 76 (63.3%) suggested that students were enrolled for university studies without pre-training skills in computer usage. This is evidenced by the short term computer courses 46 (38.3%) offered at the university. Meanwhile, from the findings it is revealed that students did not benefit much from face to face sessions from their lectures in computer skills. Guidance by library staff was also low. The findings in the table show that 10 (8.3%) and 2 (1.7%) were guided by library staff. Contrary to this, Hashim (2010) argues that the proliferation of personal computers throughout the business environment will continue to place demands on workers at all levels to develop proficient computer

skills. This implies that the university should also consider organising computer skills to lecturers and guiding staff to guarantee competence in the delivery of computer skills as they deliver knowledge.

4.11 The Frequency of using internet connected computer

Respondents were asked a number of times in a month they use internet connected computer. There were variations with regard to frequency into which respondents used the internet connected computer. A significant proportion of the respondents 76 (63.3%) said they used it at any time they needed information. Responses are presented in Table 11 below.

Table 11: Frequency of using internet connected computer

Frequency of use	**Level of education**									
	Certificate		Diploma		Bachelor		Masters		Total	
	F	%	F	%	F	%	F	%	F	%
Every day	0	0.0	0	0.0	22	21.2	4	50.0	26	21.7
Any time I need information	2	33.3	2	0.0	68	65.4	4	50.0	76	63.3
Twice to Thrice a week	4	66.7	0	0.0	12	11.5	0	0.0	16	13.3
Once a month	0	0.0	0	0.0	2	1.9	0	0.0	2	1.7
Total	6	100.0	2	100.0	104	100.0	8	100.0	120	100.0

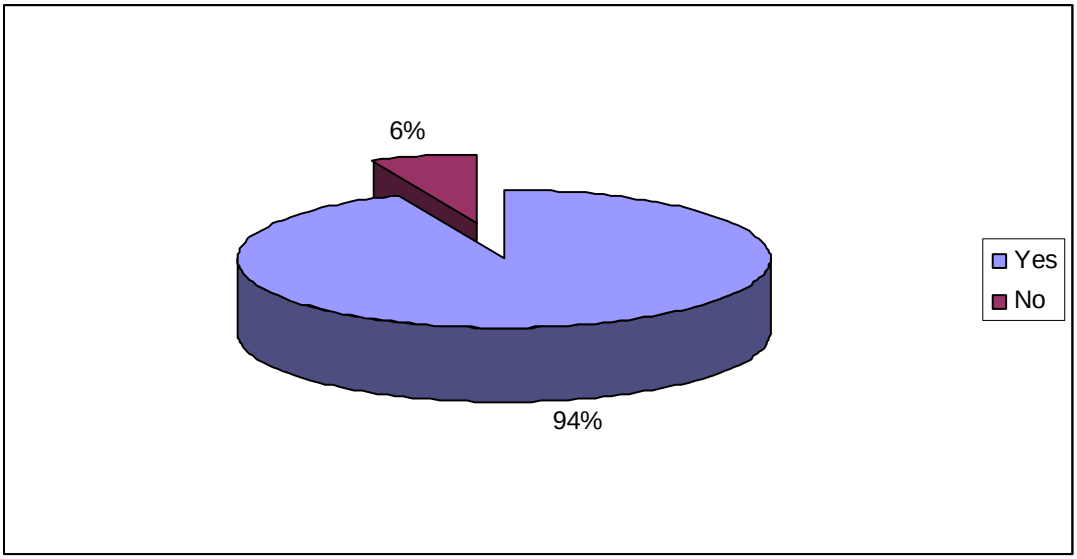
Source: Field Data, 2010

Furthermore, the study examined the usage pattern of the internet connected computer basing on the education level of the respondents. Results indicated that there was a significant difference between the level of education and frequency of using internet connected computer. There was also a significant relationship between the level of education and the frequency of using internet connected computer. This implies that the frequency of the use of internet connected computer increases as the level of education of respondents increase. For example, 4 (50%) of Master's students access the internet connected computer every day while none of the certificate students access it every day. Moreover, 4 (66.7%) of the respondents doing certificate courses access the internet connected to computer once in two to three weeks.

4.12 The Level of satisfaction of information obtained through ICT facilities

Respondents were asked to state whether they were satisfied with the kind of information they accessed through ICT facilities. Their responses are presented in Figure 4 below.

Figure 4: Satisfaction of information obtained through ICT facilities



Source: Field Data, 2010

The majority of the respondents revealed that ICT facilities satisfied them. Almost 94% respondents responded that they got the information they needed through the available ICT facilities. Only 6% of the respondents pointed out that they did not get information they needed through ICT facilities. Those who did not get the needed information pointed out that they failed to access some of the ICT system because of the lack of information searching skills. In one interview, a respondent from Kinondoni centre said that, “People told me that through use of internet I can get any material I need...but most of the time I used to access the internet I do not get the materials that are relevant to my field”

Hashim (2010) when studying the attitudes of students recommended that since ICT is the enabler for most means in imparting education those who indicated high anxiety

should be given training on basics of computer. This implies that computer literacy especially, searching skills should be imparted to all levels regardless of those who have basic skills in computer.

4.13 ICT facilities needed for information provision

Respondents were asked to indicate the ICT facilities they most needed for information provision at the Open University of Tanzania. Their responses were recorded and are summarized in Table 12 below. Respondents had more than one option.

Table 12: ICT facilities needed for information provision

ICT facilities	F	Percent
Internet connected computer	90	76.3
Mobile phone	10	8.5
Telephone	6	5.1

Source: Field Data, 2010

Table 12 shows that internet connected computer was 90 (76.3%) of the ICT facilities used to get information needed. Mobile phone depicted the small use of 10 (8.5%) and telephone by the smallest percentage of 6 (5.1%). A personal desktop computer or laptop computer was considered to be an essential tool for distance learning. This is where the work is produced and data are processed and accessed. Wireless laptop computers allowed students to participate in class activities regardless of the distance. These findings are not surprising due to the reason that in the internet connected computers learners search materials from different databases subscribed by the university such as,

AJOL. Moreover, most of the universities today develop systems that facilitate exchange of information to and from the instructors. Results from this study could also be supported with a study by the Asian Development Bank (2009). It argues that ICTs have the potential to improve the teaching and learning process by enabling students to access information and engage in interactive learning experiences that would not otherwise be available to them. This implies that mobile phones have not effectively been used for information provision in academic environment although the rate of possession among Tanzanians is high. In an interview with respondents from Temeke, one respondent said that

> *The ICT facility that I need most is the internet connected computer...because when I need any piece of information I just type my query on the search engine such as Google and search for the information relevant to my need. Also I use it to get materials deposited by my instructors on the Moodle platform*

This implies that although there some of the students who explore the use of Moodle platform, but most of them use Google for their information needs.

4.14 The use of ICT facilities for information provision in distance learning

4.14.1 Perceived usefulness of ICT Facilities for information provision

Table 13 shows the distribution of responses according to the respondents' perception on the usefulness of ICT facilities in providing information for distance learning.

Table 13: Perceived usefulness on the role of ICT Facilities

Facilities	Ranks							
	Excellent		Very good		Good		Poor	
	F	%	F	%	F	%	F	%
Computer	38	31.7	38	31.7	30	25.0	14	11.7
Mobile phone	10	8.3	23	19.2	24	20.0	63	52.5
Telephone	2	1.7	11	9.2	38	31.7	69	57.5

Source: Field Data, 2010

The Table describes the ICT facilities in ranks from excellent to poor scales as regard to their use for information provision. Computer usage scored 38 (31.7%) *excellent* and the very same score for *very good.* 30 (25%) respondents said the use of computer was *good.* Computer ranked first due to the reason that it is the most used facility in the collection and dissemination of educational information among the distance learning students. With the use of the computer, students process as well as access the information. Nihuka and Voogt (2010) found out that students use computers and internet for word processing and searching of reading materials. Respondents were also asked to rank the use of mobile phones. The results are presented in the Table 13. From the Table, it revealed that respondents who ranked mobile phones usage as excellent were 10 (8.3%) while those who ranked it poor were 63 (52.5%). In comparison to computer which was also less than 50%, the use of mobile phone was very low in distance learning. Also, Nihuka and Voogt concluded that instructors and students access to mobile phones was below 50%. Therefore this implies that the use of mobile phones in academic environment is still low. Moreover, respondents were asked to rank

the use of telephone in academic communication. The results are presented in the table above. From the Table, it revealed that respondents who ranked its usage as excellent were 2 (1.7%) and those who ranked it poorly were 69 (57.5%). These results are not surprising because landline telephones are mainly used in the offices of instructors and administrators.

4.14.2 Perceived usefulness of information systems at OUT

Many respondents affirmed the importance of the available systems in distance learning. Table 14 presents the perception of respondents on the usefulness of ICT facilities at OUT.

Table 14: Perceived usefulness of the ICT systems at OUT

Systems	Ranks							
	Excellent		Very good		Good		Poor	
	F	%	F	%	F	%	F	%
OPAC	13	10.8	45	37.5	46	38.3	47	39.2
FINMIS	2	1.7	10	8.3	46	38.3	62	51.7
SARIS	35	29.2	43	35.8	44	36.7	18	15.0
Moodle	6	5.0	21	17.5	36	30.0	6	5.0

Source: Field Data, 2010

Table 14 reveals that Student Academic Register Information System (SARIS) scored 35 (29.2) in use as an excellent system. It also shows that 43 (35.8%) out of the 120 respondents said that SARIS was *very good* while 45 (37.5%) responded that OPAC was *very good* in terms of the usefulness. Few of the respondents 21 (17.5%) showed that

Moodle was *very good*. It was found that ICT systems increased the variety of educational services. It promotes opportunities to obtain education and information, develops a system of collecting and disseminating educational information and supports sharing experience and information with others. According to RSP (2006), ICT infrastructure and services are very crucial in supporting the modern open and distance learning process. The use of ICT in the teaching and learning process in the open distance mode of delivery when combined with other learning modes like face to face and e-learning can yield the best results.

4.15 The Benefits of ICT facilities in distance learning

The findings show that most of the respondents were of the view that the use of ICT in the distance learning had a number or benefits. The Table 15 shows that the majority (80%) of the respondents indicated that there was improvement of access to information. The findings show that the respondents access the information from the University's OPAC but also through the database subscribed by the university library. According to the respondents, this provided easy access to learning information materials. However, it should be noted here that mobile phones and telephones possess the same benefits as computers although in this study, it was revealed that these ICTs had not been well used for academic delivery. ICTs enable access to and use of information that may not be commonly available in certain contexts (Asian Development Bank (ADB), 2009),

Table 15: The Benefits of ICT facilities

Benefits of ICT facilities	F	Percent
Increased speed of delivery	59	50.2
Improved access to information	96	80.0
Reduced cost for postage and travel	61	50.8
Saving your time	44	36.7

Source: Field Data, 2010

Less than half of the respondents (36.7%) mentioned saving time is one of the benefits of ICT. It was observed that most of the respondents accessed the internet at the University library where there were few computers which were functioning. More than half (50.2%) mentioned that ICT had increased the speed of delivering information. According to the respondents once the information has been posted on the university website the students logged in to the website and they would access the information as compared to old days when the post office was used to deliver information. The use of ICT had extended the scope of offering programs in distance learning mode. Many students were able to make this choice through technology facilitated learning. OUT had regional branches throughout Tanzania thus, enabling the students to make choices using ICT without physically travelling to the headquarters. According to RSP (2006), the OUT website would be improved further by extending links to all faculties and directorates whereby students would be able to access facultys' specific information and download application forms or fill them on-line. In addition, Mushi (2006) observed that the benefits of ICTs could also be realised through increasing access, facilitating knowledge constraints, through interaction and interactivity, facilitating educational

programs to people regardless of their geographical locations and social responsibilities, facilitating equality, equity and development.

4.16 Problems related to effective use of ICT facilities

Respondents were asked to mention problems related to the effective use of ICT facilities. The Table 16 below summarises the results. The respondents had more than one option.

Table 16: Problems related to effective use of ICT facilities

Problems	F	Percent
Inadequate infrastructure	86	71.7
Inadequate funds	55	45.8
Lack of awareness	52	43.3
Lack of training	54	45.0

Source: Field Data, 2010

Results from the study indicate that at OUT problems related to the effective use of ICT facilities included, inadequate infrastructure, funds, lack of awareness and lack of training**.** 86 (71.7%) respondents mentioned lack of infrastructure as the major problem in the effective use of ICT facilities due to the reason that at the university campus the available infrastructure was still inadequate as compared to the number of students.

In addition to the above, most students lacked computer facilities. According to the respondents even those who the computers had indicated that most of them were not connected to the internet. 54 (45%) respondents mentioned lack of skills as the problem

in use of ICT facilities. Training could enable students to gain the computer skills which will enable them to perform different activities. This is similar to the observations made by Marrett (2009). S/he noted that in developing countries problems facing distance learners in using ICT include poor infrastructure, lack of skilled man power, network problems and unreliable power supply. Others include cost of acquiring hardware, software, low level of computer literacy, limited legal provision and inadequate policies. Hence, the university should venture into procurement of more computers and establish more internet access point such as hot spots surrounding campuses.

4.17 Strategies for overcoming problems of using ICTs in facilitating distance learning

Respondents were asked to provide their suggestions on possible strategies for reducing problems they face in using ICT in facilitating information in distance learning. The results are summarised in Table 17 below. In providing their suggestions, respondents had more than one option.

Table 17: Strategies for overcoming problems of using ICT

Strategies	F	Percent
Connectivity	50	41.7
Monitoring and control	18	15.0
Increase time of access	8	6.7
Reduce fees for computer training	40	33.3
Improve computer facilities	78	65.0
Computer maintenance	2	1.7

Source: Field Data, 2010

About 78 (65%) of the respondents indicated that computer facilities should be improved as a strategy to overcome problems of using ICT for facilitating information in distance learning. The respondents asserted that the OUT management should ensure that all the computer facilities are properly working.

Improved connectivity was another suggestion given by 50 (41.7%) respondents. They said that the internet connectivity using LAN/WAN or wireless is slow thus, leading to the time wastage. Furthermore, respondents said that the OUT management should increase the internet broadband to improve the speed of the internet. This also was justified by Haji (2005). He contended that in developing nations, connectivity and bandwidth become a limitation to the sharing of knowledge. Another strategy suggested by 18 (15%) respondents was to monitor and control the ICT systems. From the respondents' views this is to ensure that systems that facilitates distance learning should be properly working.

One of the problems facing most of the students in using ICT for distance learning is lack of computer skills. About 40 (33.3%) of the respondents suggested fee reduction for computer training. This, together with improved training on various computer programmes will impart students with practical skills. Computer training offered as a separate course with reduced training fee would also attract more of the students that would be able to attend.

4.18 Summary

This chapter presented and discussed the major findings of the study basing on the research objectives. The major issues discussed were the availability of the ICT facilities at the Open University of Tanzania, the role the ICTs have played in facilitating distance learning at OUT, problems of accessing ICT for facilitating information provision in distance learning and the suggestions to overcome the problems hindering ICT in information provision to facilitate distance learning at OUT.

The findings of the study revealed that most available ICT facilities at OUT were computer, telephone and mobile phone. The findings revealed that the most useful means of communication was computers. The findings show that most of the students accessed the ICT facilities at the library computer laboratory. The major purpose of using ICT facilities according to the findings, was for information searching, uploading and downloading study materials.

The study findings further revealed that ICT would bring about several uses to the learner and the instructor. It was found that at OUT, OPAC, FINMIS, SARIS and Moodle were the major ICT systems designed to facilitate distance learning.

The study found that at OUT the problems inherent in the effective use of ICT facilities included, inadequate infrastructure, funds, lack of awareness and lack of training.

Finally, the respondents suggested a number of strategies to overcome the problems of using ICTs in facilitating distance learning. The suggested strategies for overcoming problems of accessing ICT for facilitating information provision in distance learning include: improve connectivity; monitoring and controlling of the ICT facilities and the system; reducing fees for computer training to enable more students to attend the training; improving computer facilities; and regular computer maintenance to ensure that available computers are properly working.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the research findings conclusion and recommendations of the study. The chapter is divided into five sections. These are introduction, summary of the study, the main findings, conclusion of the study and the last section provides both policy-based recommendations and possible areas for further study.

5.2 Summary

This study examined the role of Information Communication Technologies (ICTs) in facilitating distance learning at OUT. The study had three specific objectives. These objectives were to examine the availability of ICTs for information provision at the Open University of Tanzania, to examine the use of ICTs in facilitating distance learning at OUT and to examine factors constraining access of ICTs for information provision at the OUT.

The study was conducted at the OUT headquarters at Kinondoni and two other regional centres; Temeke and Ilala, all in Dar es Salaam due to the fact that annual enrolment in Dar es Salaam is more than 40%. Both quantitative and qualitative designs were employed in this study using various data collecting tools such as questionnaires, observation, interviews, documentary review and library search. There were 120

respondents selected based on the stratified random sampling. The data were analysed using the Statistical Package for Social Sciences Programme (SPSS, 16.0). Quantitative data were organized and coded. The researcher employed descriptive statistics such as frequency, percentages and pie chart inferential statistics such as Chi-square and correlation. The following are summarized main findings based on the specific objectives of the study.

The study findings revealed that the most available ICT facilities at OUT are computers, telephones and mobile phones. The findings revealed that most of the accessible computers to students are located at the library. However, it was found that the majority of respondents use face to face communication and the internet as the major means of communication.

There is a relationship between the Conceptual Framework used which to a large extent supported the study findings. The findings reveal that the role of ICTs in facilitating distance learning is strongly related to the level of education, age, gender and experience of distant learners. Distant learners need various types of information that is obtained from different sources. From the findings, it is evident that information communication technologies (ICTs) will help students to perform highly and hence, improve their living standards.

Furthermore, the findings show that ICTs will bring about several use to the learner and the instructor, it will facilitate shared learning resources and shared learning spaces. It was found that among the available systems that facilitate the distance learning included OPAC, FINMIS, SARIS and Moodle. It was also found that through SARIS the instructor sent the continuous assessments to their students. Students use OPAC to access the different learning materials which support their areas of study while Moodle has been the depository of the relevant leaning materials by the instructors.

The study findings also revealed that there are constraints in accessing ICT for facilitating information provision in distance learning at OUT. These constraints include, inadequate infrastructure, lack of funds, awareness on the existing systems at OUT that are meant to facilitate distance learning and lack of training to enable the students to become competent in using the ICT facilities as well as the available systems.

Finally, the study findings came up with a number of strategies to solve the problems in using ICT in facilitating distance learning. These were to improve computer facilities; improve connectivity so as to increase the speed of the internet; regular monitoring, controlling and maintenance of the ICT facilities to identify those which are not working; and conduct the maintenance to ensure that all the available ICTs are properly working. Another strategy is to increase time of access on those attending at the computer lab and reduce fee for computer training.

5.3 Conclusion

Information Communication Technologies (ICTs) play an important role in facilitating distance learning. The use of ICT has extended the scope of offering programs at a distance. Wherever they are in different branches or centres, students receive and access various learning materials as well as sharing information with their instructors at any time. Therefore, improving ICT facilities, empowering students with computer skills and improving the integrated information systems are important turning points for facilitating distance learning.

5.4 Recommendations

There are various issues which have been discussed which need to be addressed so as to ensure that OUT benefits in the use of ICT in facilitating distance learning. However, basing on the study findings and conclusions, the following recommendations are suggested in this study:

1) The University should strive hard to improve connectivity so as to increase the speed of the internet. Under the effort of the government to connect SEACOM network it is hoped that this problem will be solved national wise.

2) The authority should make regular monitoring, control and maintenance of the ICT facilities to identify those which are not working and conduct the maintenance to ensure that all the available ICTs are properly working.

3) The University should integrate computer training in the course content pursued by the learners at all levels. This will equip learners with computer skills that will enable them to use different ICT facilities.

4) Seminars, workshops and training programmes as a means of creating awareness on the available ICT system at OUT should be directed at distance learners and conducted on a regular basis.

5.5. Areas for Future Research

More studies need to be conducted to examine the role of information Communication Technologies (ICTs) in facilitating secondary and primary education. Research is also needed to examine the constraints limiting the success of ICTs for information provision across all levels of education. Further research needs to be conducted to examine the use of ICTs for information provision in integrated information systems.

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APPENDIX 1

QUESTIONNAIRE ON THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) IN FACILITATING DISTANCE LEARNING AT THE OPEN UNIVERSITY OF TANZANIA (OUT)

INTRODUCTION

The following is a questionnaire to be used for collecting data from the Open University of Tanzania students. It will (only for academic purpose) be used to collect data that intends to study the role of ICT in facilitating distance learning. Therefore, you are highly requested to freely fill it and return it to the person who gave you.

A. Background information of respondents

1. Name (Optional)……
2. Age:
    a. Under 20 [ ]
    b. 20- 35 [ ]
    c. 35- 45 [ ]
    d. Over 45 [ ]
3. Gender:
    a. Male [ ]
    b. Female [ ]

4. Which level of education are you pursuing at the OUT?
    a. Certificate [ ]
    b. Diploma [ ]
    c. 1st degree [ ]
    d. Postgraduate/MA/MSc [ ]
    e. PhD. [ ]

5. From which of the following faculty/institute do you belong?
    a. Faculty of arts and social science [ ]
    b. Faculty of science, technology and environmental studies [ ]
    c. Faculty of education [ ]
    d. Faculty of law [ ]
    e. Faculty of business management [ ]
    f. Institute of continuing education [ ]
    g. Institute of education technology [ ]
    h. Others (specify) [ ]……

6. Status:
    a. Working class [ ]
    b. Fresh from school [ ]

B. Availability of ICT facilities

7. From what you know which of the following ICT facilities are available at the OUT? Multiple answers are possible.
    a. Computer [ ] tick if it is connected to internet [ ]
    b. Telephone [ ]
    c. Mobile phone [ ]
    d. Voice over Internet Protocol [ ]
    e. Others (specify) [ ]

    ……
8. How do you communicate with your tutors/lecturers in the process of seeking information?
    a. Via Telephone/mobile [ ]
    b. Internet [ ]
    c. Intranet [ ]
    d. Students Records Management System (SARIS) [ ]
    e. Letter [ ]
    f. Face to face [ ]
    g. Others (specify) [ ] ……..

9. Where do you access ICT facilities at OUT?
    a. Library lab [ ]
    b. Faculty labs [ ]

c. Student resource centres [ ]

d. At the tents [ ]

e. Others (specify) [ ] ……..

10. For what purpose do you use ICT facilities?

a. Communication [ ]

b. Information searching [ ]

c. Uploading and downloading study materials [ ]

d. Sending queries to your lecturers/tutors and receiving answers to queries [ ]

e. Others (specify) [ ] ……..

11. Do you have access to computers? If no go to question 16.

a. Yes [ ]

b. No [ ]

12. Where do you have access to computers?

a. At the work place [ ]

b. At the library [ ]

c. At home [ ]

d. Cybercafé [ ]

e. Elsewhere, mention: [ ] ……

13. How have you learnt computer skills?

    a. Self practices [ ]
    b. Guided by a library staff [ ]
    c. Taught courses offered at the university [ ]
    d. Support from friends [ ]
    e. Through face to face sessions [ ]
    f. Others (specify) [ ]……

14. How frequent do you use internet connected computer?

    a. Every day [ ]
    b. Anytime I need information [ ]
    c. Once a week [ ]
    d. Two to thrice a week [ ]
    e. Once a month [ ]
    f. Others [ ] (specify) …….

15. For what purpose do you use computers? (Multiple answers are possible)

    a. Internet services [ ]
    b. Information access [ ]
    c. Word processing [ ]
    d. Spread sheets [ ]
    e. Power point [ ]
    f. Publishers [ ]
    g. Others (specify) [ ]……..

16. Do you get information needed through ICT facilities? (If no go to question 18)

    a. Yes [ ]

    b. No [ ]

17. From which ICT facilities do you get the needed information?

    a. Internet connected computer [ ]

    b. Mobile phone [ ]

    c. Telephone [ ]

    d. OUT website [ ]

    e. Others (specify) [ ] …….

18. Which of the following information systems are you aware of their availability at OUT?

    a. Library Management Information System (OPAC) [ ]

    b. Financial Management Information System (FINMIS) [ ]

    c. Students' Records Management System (SARIS) [ ]

    d. Examination Management Information System (EXMIS) [ ]

    e. Moodle [ ]

    f. Others (specify) [ ]……..

Which of the following information systems do you use to access information?

    a. Library Management Information System (OPAC) [ ]

    b. Students' Records Management System (SARIS) [ ]

    c. Examination Management Information System (EXMIS) [ ]

d. Moodle [ ]

e. None of the above [ ] Explain

……..

C. The role of ICT facilities for information provision in distance learning

19. Give the appropriate rank according to the usefulness of the following ICT facilities that are available at OUT for information provision in distance learning

ICT facilities	**Excellent**	**Very good**	**Good**	**Poor**
Computer				
Internet				
VoIP				
Mobile phone				
Telephone				
OUT Website				
Moodle/e-learning				
LIBMIS (OPAC)				
SARIS				
FINMIS				

20. Which of the following benefits of ICT facilities OUT are offered to you in the whole process of information provision? (Multiple answers are possible)
    a. Increased speed of delivery [ ]
    b. Improved access to information [ ]
    c. Reduced cost for postage and travel [ ]
    d. Saving your time
    e. Others (specify) …….
       …….
       …….
       ……..
21. Explain how have the ICT facilities at OUT assisted you in facilitating the education process as a distance learner?

……

……

22. Which of the following problems do you think hinder the effective use of ICT facilities for information provision in distance learning (multiple answers are possible)
    a. Inadequate infrastructure [ ]
    b. Inadequate funds [ ]
    c. Lack of awareness [ ]
    d. Lack of training [ ]

e. Others (specify) [ ]

……

……

……

……

……

23. In your opinion, what should be done to improve the effective use of ICT facilities for information provision in distance learning?

……

……

24. Give any recommendation on the role of ICT facilities for information provision in distance learning at the OUT

……

……

Thank you very much for your time dedicated to fill in this questionnaire

APPENDIX II

OBSERVATION GUIDE

The followings will be observed by the researcher

1. Presence of televisions, radio land line and cell phones.
2. Presence of internet services
3. Presence of computers
4. Use of the ICT facilities

1. ICT facilities provided at the Open University of Tanzania.
2. Use of the ICT facilities at Open University of Tanzania.

APPENIX III

FOCUS GROUP DISCUSSION GUIDE

1. From what you know which of the following ICT facilities are available at the OUT?
2. How do you communicate with your tutors/lecturers in the process of seeking information?
3. Where do you access ICT facilities at OUT?
4. For what purpose do you use ICT facilities?
5. Do you have access to computers?
6. Where do you have access to computers?
7. How have you learnt computer skills?
8. Do you get information needed through ICT facilities?
9. What information systems are you aware of their availability at OUT?
10. What information systems do you use to access information?
11. What benefits of ICT facilities are OUT offered to you in the whole process of information provision?
12. Explain how have the ICT facilities at OUT assisted you in facilitating the education process as a distance learner?
13. Which of the following problems do you think hinder the effective use of ICT facilities for information provision in distance learning? (multiple answers are possible)

14. In your opinion what should be done to improve effective use of ICT facilities for information provision in distance learning?
15. Give any recommendation on the role of ICT facilities for information provision in distance learning at the OUT