

**INFLUENCE OF LEARNER CHARACTERISTICS ON INFORMATION
COMMUNICATION TECHNOLOGY DISTANCE EDUCATION PROGRAMMES .A
CASE OF MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY,
KAKAMEGA COUNTY, KENYA**

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**A Research Project Report Submitted in Partial Fulfillment of the
Requirements for the Award of Degree of Master of Distance
Education of the University of Nairobi**

2019

DECLARATION

This research project report is my original work and has not been presented for any award in any other university.

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This research project report has been submitted for examination with my approval as the university supervisor.

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DEDICATION

This research work is dedicated to my parents the late Mr. Philip Masinde Lubakaya and my Mum Mrs. Leonorah Masinde for their tireless effort, sacrifice encouragement, spiritual and financial support.

ACKNOWLEDGEMENT

My gratitude goes to my research project supervisor Dr. Anne Ndiritu for her guidance review technical support, encouragement and moral support during this research project preparation. Thanks to all my lecturers in The University of Nairobi distance education programme for their dedication and support that made this dream come true.

I am indebted to the University of Nairobi for offering me chance to study in their institution as well as bringing on board courses that match the needs of our present generation.

Special thanks to Dr. Juliana Munialo, Dr. Naomi Gikonyo, Dr. Kyalo, Dr. Keiyoro, Prof. Macharia, Mr. Ngetich, Dr. Ann Aseey, Dr. Mulwa, Dr. Luketero, Mr. Kyule, Odumbe and all those who contributed to my success that I cannot mention individually.

I acknowledge the support of colleagues in distance education class especially Mr. Muasa Benson, Raphael Gikonyo and Mwaniki for their understanding, moral support, and academic support, technical support as well as creating a conducive atmosphere for my studies and success to come.

I also wish to acknowledge the staff and students of Masinde Muliro University for their cooperation and general contribution that led to the success of this research project.

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ABSTRACT

This study sought to investigate the influence of learner characteristics on ICT integration in distance education programmes. The study was guided by the following objectives:- To determine how learner perception influence ICT integration in distance education programs, to assess the influence of learner entry level on the integration of ICT in distance education programs;-to assess the extent to which geographical location of learners influence ICT integration in distance education programmes, to examine the influence of learner age and gender on integration of ICT in distance education programs. The study was conducted through descriptive research design. It was limited by reluctance of respondents who claimed to have busy time schedules and ignorance, which was mitigated by establishing a closer relationship and making several return visits to collect the questionnaires. The scope of the study was Masinde Muliro University of science and technology in Kakamega County. The instrument for collection of data was questionnaires both structured and open ended. The target population for the study were 500 respondents. Simple random sampling was employed to come up with the sample size of 135. Information was randomly collected from the distance learners in Masinde Muliro University of Science and Technology, Kakamega County. The collected data was then analyzed using descriptive statistics and presented in frequency tables. The research revealed that learner characteristics influence ICT adoption in DE programmes. Basing on the findings of the study the researcher recommended that University ODEL campuses should have ICT departments with specialists who handle learners technological issues and needs. Also possession of laptops should be made mandatory for student's admission into the DE programs. The study suggests that further research should be done on other factors influencing the integration of ICT in the same University's DE programs such as Institutional and resource based factors.

LIST OF ACRONYMS AND ABBREVIATIONS

CD- Rom- Compact Disc- Read Only Memory

DVD- Digital Versatile Disc

EU-Egerton University

ICT- Information Communication Technology

JKUAT- Jomo Kenyatta University of Agriculture of Technology

KU – Kenyatta University

MAU- Maseno University

MMUST- Masinde Muliro University of Science and Technology

MOOCS-Massive Open Online Courses

MU- Moi University

ODL – Open Distance Learning

ICT-Information Communication Technology

DL-Distance Learners

DE-Distance Education

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

A brighter future of every country depends on its effort to rapidly and effectively deliver education to its people. Any hope of achieving higher standards of living seems to depend directly upon the ability of each country to train its citizens in all spheres. Almost all countries of the world invest in education both conventionally and through distance learning with the aim of boosting their economic growth Ndiritu, (1999), since it's important for development of a country. Kenya like other countries of the world has had a high need for higher education surpassing its supply. For that reason many Kenyan universities have resorted to technology based methods in supplementing the traditional mode of delivery. These methods are most preferred by users since learning is easy as well as creating a collaborative learning environment.

Considering the above benefits universities throughout the world have adopted ICT in their distance education programs, including a number of universities in Kenya have also adopted electronic means for their distance learning increasing accessibility, to university education to many members of the country regardless of age and their daily engagements. MMUST started her ODL by 2004. However ICT integration in its distance education programme is still at infancy. MMUST'S Odel Platform in supports blended methods of delivery. Thus learning is possible through various ways for instance there is e-learning, short conventional tutorials and others. A survey carried out on East African Universities indicated that although e-learning was growing rapidly in the world, in E.A it was still low, Walimbwa, (2008), and MMUST is one of the universities in the region (EA). The factors behind this were lack of skills, knowledge, inadequate internet bandwidth and failure to put ICT policies in place.

A survey on Tanzanian Universities, ICT adoption in education revealed that power interruptions and inadequate infrastructure were major challenges facing ICT adoption. However low expenses associated with technology facilitated purchase of learners' own electronic gadgets. Learner characteristics have also influenced ICT integration in MMUST'S ODEL programmes. Kasse and Bulunywa (2013) points out that attitudinal challenges by students and staff towards e-learning has contributed to limited ICT adoption in institutions. Odhiambo (2009), on

comparing the perception of e-learning by students in JKUAT and USIU to establish the cause of the low rates of ICT adoption, found out that multi-media facilities which bring about effective teaching and learning are not fully used but emphasis is put on lecturers uploading reading materials on the LMS so that they can download. Research holds that technology based learning should begin by training the individuals thus the teacher and the learner, but not the electronic gadgets.

In MMUST the level of learners interaction with e-learning modules uploaded on respective LMS is very low as well as the level of their usage of other ICT tools. For instance the research carried out by Makokha and Dorothy (2012) revealed that the status of e-learning in MMUST was wanting. It was questionable as no clear results were shown. The percentage of students using ICT to learn in comparison with other institutions of higher learning was not shown, instead there was an asterisk. The other institutions were using ICT where their rate of usage lied between 30% and 35%,while in MM UST no percentage of ICT usage was shown , there was an asterisks as mentioned earlier.

The students further revealed that they didn't use e-learning since their teachers were not using it and also due lack of adequate network particularly when away from campus, as well as the high expenses involved . ICT usage in our Kenyan universities are therefore very low yet, the whole world is going digital with the advancement in technology. Chung,(1991),notes that these electronic materials includes audio and video media others are CDS CD-ROM, Cell-phones, satellite synchronous and asynchronous media and others. However the use of these tools is influenced by various learner characteristics a great deal.

Among other learner characteristics Ndume et al(2008), Cites negative learning culture towards e-learning as a big obstacle facing ICT adoption. As mentioned earlier on to develop a modern e-learning must first begin by developing the teacher and learners in all aspects in order to achieve in terms of information communication technologies application in education of any country to achieve defined economic development whatsoever. Zemsky and Massy,(2004), argue that ICT tools can be easily used in education when faculty and learners possess basic training as well as knowledge in computer- related skills. OECD,(20005), points out that the key stumbling blocks to learning using electronic gadgets remain with institutions, due to lack of necessary facilities and required human resources. In Singapore ICT use began in early 1980s, but attempts to

provide appropriate theoretical framework in the field of ICT only started in the late 1980s Harasim (1996). In Singapore therefore DL grew at faster pace compared to its study by researchers.

1.2 Statement of the problem

The recent past has seen Kenya experience a high demand for higher education between 2012 and 2016. There has been a rise in university enrolment by 34.9%. This is due to the provision of free education. Digital revolution also requires a higher level of skills for individual's development. In response to this Kenya government came up with various innovations in education to enable her reach this huge population with diverse needs. The educational innovations were to take care of the normal working hours, household chores and for various economic reasons, Jackline (2016). In this respect, ODL is seen as the best means to offer university education, Agalo (2008).

Various methods of accessing ODL have also come up in Kenya. The government harmonized her ICT policy in January 2006 to ensure that technological services are made available and able to be used by all people in the country. This has seen the use of ICTS in almost all educational institutions in the country as noted by Jackline (2016). The ministry of Education also prioritizes mainstreaming of ICTS in the educational program. ODL with ICT as a way of providing education, is one of Kenya's means of achieving her vision 2030, Tarus et al (2015).

The government of Kenya therefore compels universities to introduce on-line together with other modes of delivery, in rising provision of university education (NESC 2007). The E-Reading survey reports of (2013), holds that institutions of higher learning in Kenya are setting aside part of their resources at least 0.5% to meet needs of improving technological infrastructure to facilitate the use of ICT as a way of delivering ODL, Mulwa (2013). More so, the report also showed that universities were well connected to main infrastructure making technological gadgets use to access education and other services offered to students easy.

Despite the above mentioned input by the government, ICT integration in distance education programmes in MMUST has remained behind and is at its infancy stage Makokha & Dorothy (2016). By 2012 ,the institution didn't have an ICT policy for learning. It was further revealed that ICT integration at MMUST was questionable since a percentage showing students using ICT

or e-learning was represented by an asterisks. Thirdly on interviewing students they revealed that they were not using ICT since their lecturers too were not using it in teaching. This concurs with Walimbwa (2008), who states that though online learning is growing quickly in the world the universities in EA have not adjusted to the pace.

The low or infancy level of ICT integration in MMUST has a worrying trend bearing in mind that all other universities have made a remarkable effort to integrate ICT in their distance education programmes. More so, e-learning is growing rapidly worldwide and every country is moving with speed to adjust their education delivery systems especially in higher institutions of learning to match or suit world technological development. This research project therefore sought to fill the three gaps established by earlier researchers on Masinde Muliro University's ICT integration in their distance education programs, Thus find out whether the ICT policy has been put in place, secondly, whether lecturers and students are using ICT to date and thirdly establish the level or percentage of ICT use by students if at all its used presently. The study also came up with strategies that if implemented by MMUST they would be of much help to their DE programmes.

1.3 Purpose of the study

This study wanted to investigate how learner characteristics influence ICT in DE programmes of MMUST Kakamega, Kenya.

1.4 Objectives of the study

Objectives for the research included ;

1. To establish the influence of learner perception on ICT integration in DE programmes in MMUST, Kakamega.
2. To examine the influence of learner entry level to ICT adoption in DE programmes of MMUST, Kakamega. Kenya.
3. To determine how learner demographics in terms of age and gender influence adoption of ICT in DE programmes of MMUST Kakamega, Kenya.
4. To assess the extent to which geographical location of learners influence adoption of ICT in DE programmes of MMUST Kakamega. Kenya.

1.5 Research questions

The research questions below assisted in guiding the study;

1. How does learner perception influence ICT integration in DE programmes of MMUST, Kakamega?
2. How does the entry level influence the adoption of ICT in DE programmes of MMUST, Kakamega?
3. How does learner demographics in terms of age and gender influence adjustment to use of ICT in DE programmes of MMUST, Kakamega?
4. To what level does the geographical location of learners influence the integration of ICT in DE programmes of MMUST, Kakamega?

1.6 Significance of the study

The project report holds much significance to the educationists and most importantly the ODEL department and other stakeholders in MMUST. The final research report can assist the MMUST administration to improve the level of ICT use in their ODEL programmes, as well as helping the students and lecturers discover exactly where the problem lie and therefore make in adopting technology for learning . In addition it is valuable to the general delivery of ODL in Kenya since it may help them know the challenges facing ICT adoption in the university and therefore help them design appropriate curative strategies that will facilitate ICT integration in the universities DE programmes. The study formed a basis of literature review to future researchers in education. This study also assists higher education administrators to come up with more ICT working policies that will assist even other universities in their effort to adopt e-learning and therefore ICT use in their DE.

1.7 Limitations of the study

The project only dealt with influence of learner behavior on ICT integration in DE programmes although there may be other factors influencing it such as institutional factors or teacher- based factors. The study was also limited by time factor given that the researcher was a DL with busy time schedule and also the DE students of MMUST are not always present on the campus. However, the researcher spared time away from duty to carry out the research. Also she had to approach the university administration and inquire when the DE learners were to be available on the campus in order to research on them. Financial problems also limited the study. This was

mitigated by the researcher starting to plan and save early so that the financial constraints couldn't interfere with budgeting and compromise the quality of research outcome.

1.8 Delimitations of the study

This study dealt with MMUST alone. However the outcome of the study was applicable to other universities in the country (Kenya). The study was also carried out on distance education programmes only. Though that way the findings were helpful to other faculties within the university as well.

1.9 Basic assumptions of the study

Below are assumptions made during the study;

ICT integration was taking place in all other universities. A sample to be chosen represented same conditions in all other universities. The challenges faced by MMUST were also faced by other universities. The findings of the study were to be helpful to MMUST as well as other universities.

1.10 Definition of significant terms used in the study.

Learner perception:-A way you think about or understand someone or something.

Accessibility;- Being reachable or entered.

ICT Infrastructure;- network, , it's a necessary condition for development of ITs.

E-Learning:-electronic learning or on-line learning.

Continuing Education:- All educational processes that may enable people to continue learning across their lifespan.

1.11 Organization of the study

This research is divided into five chapters;-The first chapter gives the background of the study as well as statement of the problem describing specific problem addressed in the study, the purpose of the study, objectives and research questions which the research aimed at answering are also shown, chapter two presents review of literature together with information related to the task concerned as well as theoretical framework and conceptual frame work of the study. chapter three comprises of methodology and procedures to be employed for data collection and

analysis, The fourth chapter depicts data analysis and presentation .The fifth chapter finally presents a summary of findings, discussions of the study , conclusions, recommendations and suggested areas for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction:-

Here related data about learner characteristics affecting ICT in DE programs is given. It provides readers with a brief review of the theoretical framework together with conceptual framework and the conclusion or summarized literature reviewed.

2.2 ICT Integration in distance education

DE is a way of education whereby the student is away from the tutor. The teacher is taken to the student using the ICTS, Dhanarajon (2001). Presently ODL is a relied upon platform for education not only in 1st world but also third world states. The high demand for higher education that the countries are facing which has overwhelmed the institutions of higher learning's abilities to accommodate them, Nyerere (2012). The institutions have therefore opted for ODL to enable them meet their challenges. The learning materials used in ODL courses include both hardcopy and softcopies. The aim of DE is to make education available to all those who are willing to learn but are unable to attend the conventional classes due to various reasons Olubor and Ogonor, (2008). Open learning is free for all without any conditions attached, Glen (2005).

Learner support services are provided through media. The media increases interaction between the teacher and student and hence ODL has become a big educational innovation in the world, Adegoke et al (2008). ODL is important as it has made education flexible, interactive and attractive. ODL has been successful right from its inception through correspondence courses in the 19th c. The alternative titles for DE are DL, E-L and online learning, Gray Berg, Michael Simson (2018). The main element in all (DE, DL e-l, online- learning) is the separation of the teacher and learner during instructions and as mentioned earlier various technologies are used in enhancing educational communication thus the internet is the medium.

DE has developed through various perspectives or generations. Firstly, it traces its roots to correspondence education in Europe in 19th century. Gray A. Berg (2018), notes that DE began with correspondence education during 19thC due to learners being geographically scattered. Chautauqua movement facilitated its spread. It also assisted in offering education to females, teaching language and others. Entrepreneurs who worked alone also dominated distance

education. This witnesses indicate that distance education was there long before correspondence education. In the U.S, this form of education was reliable with the establishment postal services .Helmberg Borje (2005), maintains that effort to use ICT was made when C.philips taught shorthand sending tests and transcripts to students. Isaac Pitman also made a remarkable effort to develop correspondence education to success. This success paved way for formal correspondence schools. Relevant schools were opened to offer this kind of education. The U.L pioneered in offering DL degrees with its extra-mural program of 1858. The University of London was given the sole mandate to examine and award degrees.

Secondly, DE developed in first half in the 20th century, Gray A.B (2008). Educational technologies were used in the U.S having been affected by two theories thus psychology of education and Behaviorism. The constructivism approach arose which emphasized on holistic teaching to have an all-round developed child. The theories pioneered use of ICT for teaching, since constructivism emphasized process-and experience-based learning. Technologies used at that time included lantern slide, lyceum Gray (2018), further argues that the first technological innovations included; the tinfoil phonograph by Thomas Edison in 1877, that was used to teach language. Universities later owned radio stations that broadcasted and recorded educational programs by 1936. Educational films were produced to teach the military not only about fighting but also personal hygiene and other important issues. Institutional television also came up in 1950 in Iowa. Many community colleges too developed computer-assisted programs where computers were adopted to teach and assess learners' progress. Later on computers were linked via internet giving birth to the present DL.

The third perspective of DE is marked by the birth of web-based courses thus modern distance learning in the 21st century, Berg G.A (2018). Most institutions of higher education granting degree programmes in U.S offer DE courses mainly through the internet. Over 100,000 different courses were offered online with the target population being professionals looking for higher certificates and advancing their knowledge. 1990s saw advancement in multimedia thus video, audio and others, where individual instructors produced their own multimedia. Berg. G.A (2018), therefore confirms that modern DL uses web-based systems incorporating the use of electronic materials such as podcasts and others, used both synchronously and asynchronous systems. They allow learners access information all the time, socializing space also available

on the internet through blogs and wikis. Gray (2018), argues that DL has also helped in electronic teaching, monitoring and others. Parents who home school their children have also benefited not forgetting universities offering e-learning programs.

Since distance learning admits any adults and other learners without any minimum conditions attached it became open to every adult giving birth to open learning and hence open universities. Gray A.B (2018) describes Open University as an institution that utilizes distance learning. He states that the Open University movements became strong around the world from the mid-20th century to offer higher education to non-traditional students who are disadvantaged in one way or another. The Open University fuelled by the UL where it first originated. Up to date many institutions are offering DL using technology (ICT) and hence they have created open distance learning campuses (ODEL) that take care of such education (DL). In fact almost all Kenyan universities are taking part in this distance learning thus UON, KU, JKUAT, MAU, EU, MU, and MMUST and others. Up to date distance education which has incorporated a lot from computer-based learning thus on-line distance education which has seen the adoption of various electronic gadgets in the course of learning, Arefah (2004).

The use of ICT has made distance education an effective way of giving knowledge to those unable to get it from regular classes. It has provided inductive learning environments to anybody, from any part of the country using electronic gadgets. DE facilitates knowledge sharing, (UNESCO 2005), also contact between students and institutions is enhanced by use of technology, Bolt & Wallchope, (2011). The growth in university education in the whole world led to DE with ICT as one most preferred mode to widen access. Akinwale & Gesinde (2014), observed that DE has been taken up by many African states. In Kenya the question of ODL was addressed in educational commissions that saw inception of ODL in Kenyan institutions of higher learning thus, UON, KU, EU, ,MMUST, JKUAT and others.

The integration of ICT, into ODL has made it easier to achieve lifelong learning, Adegoke et al.(2008). Information Communication Technology as defined by Trucano, Michael (2005), includes electronic devices like T.V and other hand held devices, networked computers via the internet, that have been harnessed for information processing needs, education using computer and telecommunication based equipment for storage, processing and dissemination of information. Electronic media has a widened reach to target population. However most African universities

are facing challenges in delivery of ODL, though they have adopted its use Nyerere,(2009),an idea also supported by AVU Africa Virtual University, Tarus et al. (2015), further notes that, universities in Kenya have resorted to electronic learning as a way of delivering ODL. Kenya considers online learning being important for achieving her vision 2030. However, electronic use in Kenya's institutions of higher learning stands low.The research by Waema and Kashoda (2014),revealed that very few students owned electronic gadgets for learning this was courtesy of the E-Readiness survey carried out on 30 universities. The problems facing use of electronic devices for learning in Kenyan government sponsored institutions of higher learning was insufficient ICT together with lack of online facilities necessary to facilitate its,Taurus et al (2015), also notes financial constraints as another problem facing ICT integration.

Inadequate skills and insufficient human capabilities contributed to poor level of e-learning and ICT use. Poor internet connectivity and failure to put ICT policy in place have dearly hindered electronic devices use in E. A, Walimbwa , (2008). Kasse and Bulunywa (2015), in the study on Ugandan universities found out that ICT was useful although it was faced by challenges related to infrastructure and negative attitude by teachers and students, dragging behind ICT adoption. In general the use of ICT provides an efficient educational interface within a learning environment and is quite beneficial to developers, facilitators and educators together with their complex understanding of learner characteristics and behavior that incorporates many pedagogical and technological elements.

IJEDICT (2013),outlines Singapore benefitted from use of ICT as follows;

Faster acquisition of knowledge. Brush et al,(2008), students use technology to acquire new knowledge. It also supports learner- centred learning.Sanches, (2011),maintains that Students are meaningfully engaged with use of computer. ICT improves students' creativity as they learn,Chai, Koh &Tsai (2010) and reasoning capabilities, McMahons (2009). Education is improved. Lowther, (2008) states that ICT brings about good quality learning . ICT avails learning materials. Watts., Taffe (2003) ,insists tutors' helping, well in ICT adoption if well supported with all the required facilities.However, in this fast growing world, many countries Universities have adopted ICT to solve their educational dilemmas in delivering of higher education to their students reciting in different geographical areas of the countries.

Afsaneh Touwhidi (2010),outlines DE technologies as follows;

Audio Books:-Anadolu University in Turkey uses them to provide education to 300 blind students. The books are vocalized radio phonically and students study on their own Ozgur & Kiray, (2007). Cell-phones:- Has replaced telephone in many countries, Baggley (2008). Radio:- Was actively used in education in 1940s,. Video Technology and Media:-various video technologies have been used thus interactive video, video texts, films. Satellites:- Has contributed a lot in learning, Kozma, (2005). Teleconferencing:-It's an integration of computer with telecommunication systems. Students and teachers meet together through electronic equipment. It creates a sense of traditional classroom, Bernard et al (2006).

Computer:- computer was used as from 1940s , Fouts, (2000).They may be interconnected and used for learning. Internet:- interactive internet is vital in distance learning. Distance learning uses WWW sites. Electronic mail:- it's tele-text used effectively for teaching,Polling,(1994). Knebel (2001) says that Email brings together the tutor and learner. Multimedia:- Doolittle (2002), defines multimedia as instructions delivery involving more than one media. Advancement in technology has led to new methods being introduced in education to enhance pedagogy.

The newest technologies used in education include the following:-

Cloud-based technology; Cloud computing has been used to perfect learning. Learning materials are well kept without deletion. Students don't need to buy USB flash discs to save their work, assignments content and others since they are stored and shared more easily on the cloud such as Google Docs. Cloud-based technology provides a centralized storage for resources helping reduce expenditure as well as save time. Virtual reality:- Virtual education is where learning is taken outside the classroom, using apps and other platforms to teach.

STREAM-arts and STEM: - This has led to increased technological skills. It has helped children become good citizens and also fostering transferable skills for their future as well as increasing creativity. Technology to prevent bullying; Since technology enables abusive behavior, it also provides robust solutions to the problems. The app allows teachers to remotely view any of their student's devices monitoring their behavior and movements. Mobile-style education: It improves interest and commitment of teachers and learners.

2.3 Learner's entry Level and ICT Integration

For effective technological use in DE programs, the learners should have had previous schooling before joining DE and therefore working towards a higher level of education. Perraton, (1993), many open and distance education programs are offered at higher learning levels. Most learning institutions in Asia are using DE systems. Reddi and Mishra, (2005). This means that most of the distance learners should have had previous schooling and therefore may be working towards either a degree, diploma and certificate that would be a necessary condition for ICT adoption. Chongwony (2005/2006), asserts that most distance or on-line learners are post-secondary learners; For instance in Japan by 2008, 37 universities provided undergraduate degrees for both on-line and distance learners 10 junior colleges also provided associate programs

A study carried out on distance learners in Japan indicated that 60% of the students in distance education programs have jobs. Judith Kamau (1999) notes that, the educational standards requirements for entry into the distance education programmes is at least a jc and primary teacher certificates. These entry points provide a foundation for learning and using ICT in distance education programmes as they dictate how easy one fits into the programme. ICT use requires students to have the necessary skills in computer and related ICT tools. Bernard Abrami et al (2004), hold that the present DE involves use of technology to bridge the gap between the teacher and learner, also observed by Walimbwa (2008), earlier on, there is enough personnel to effect the use of ICT in the EA universities.

The language used by learners to read and speak has to be the one accepted as a global medium of communication since it would be the same language used on ICT gadgets to allow efficient use. For instance, English has been widely used by most learners and it's the one used widely as a medium of communication in most common wealth countries. According to Sikora & Carroll (2002), the US DPT of education, 1999-2000 revealed that undergraduates survey showed many learners who speak English have the morale to participate in DE, as native speakers shy away. When a common language is used in distance education it encourages sharing of materials and new technologies. However, the learner learning style has to be considered, Straub, (2009). Adam, (1999-2000), believes that through distance education the system is shared system. Hiu, Ginter (1999), views proper delivery as requiring consideration of the teacher /learner to introduce new content.

Therefore it's important to ensure that a common language is used in ICT to allow all students whether they are native of a country or not to use and share technologies without language barriers since many of the learners are new and should be conversant with the language used which is acquired from previous learning or schooling. A research by Makokha and Dorothy (2016), revealed ICT illiteracy as being a significant barrier for high quality technical support. They therefore recommended that training of learners in computer. Yousaf (2008), says that an improved structure outcome in ICT brings about enjoyment in learning, positive self-image and many other related benefits. According to the journal of information Engineering and Applications Nigeria, (2014), high illiteracy rates influences students ability to use these computer facilities when available. Computer literacy by teachers and learners is therefore a necessary condition for ICT adoption, Haupt and Mintoor et al (1997), Mentz (2003). However most nations in Africa don't have such manpower and yet this is necessary for ICT use.

Personal interest and experiences of the learner affects ICT integration in distance education programs. Researchers found out that prior knowledge in technology facilitates its adoption in distance education programs, Tallent-Runners et al (2006). A person's personal interest play a key role in using computer- associated programs, wills, (2002). Research shows that the area where instructors and the students' field of aid in determining what prior knowledge the learner can be expected to possess and help in designing of materials for online courses that are most likely to tap into prior experience and knowledge. In distance education using ICT the constructivism approach should apply where the learner constructs own knowledge, Mandernach (2009). This would be automatically out of learners personal interest and higher entry level into the programme. Students need have to exploit their knowledge to understand and appreciate technology, Holmberg (1995). These learners with personal interest and experience with computer and technology will embrace its use.

Perception of the subject by the learner influences learners either to adopt and use ICT in it or not. For instance if the learner has some liking or positive attitude towards the subject then he/she will be ready to use ICT in it if necessary. But when the learner doesn't like the subject then he/she will also hate adopting and using ICT in it. Judith Kamau (1999), argues that instructor has to develop positive study skills in the distance learner. In Japan most of subjects dealt with through DE are in the field of social science and humanity, However, the programs are

compared as per those established before 2000 and prior to 2000 tended to be in the area of low, literature economics and business.

2.4 Learner Perception and ICT Integration

For efficient integration of ICT into distance education programmes, the learner should be positive about it and be ready to embrace it into the programme. The learner should perceive ICT as being relevant, affordable, easy to use making learning possible and accessible. This has not been possible due to negative perception that technology is expensive, Tsubira and Mulira (2004). positive attitude is necessary in this case, Woodrow, (1992). Nasir Hussein,(2005) article, recommends all parties to take part in fixing attitudinal issues. Makokha and Dorothy (2016), noted negative learning culture towards e-learning as one of the obstacles impeding its implementation in EA universities. In his study, Odhiambo (2009), looked at attitude for ICT use at JKUAT and USIU, he observed that there was a minimal degree of adoption and use of IT among students in these two institutions of higher learning.

Electronic devices for content delivery that have high capacity to enhance quality in learning were not fully used since tutors placed importance on the use of hardcopy materials. This idea concurs with Han and Lex (2010) who asserted that developing human capabilities in the field of ICT is paramount before introducing computer and other electronic gadgets to be used in education. Mpofu et al,(2012), argue that most lecturers facilitating ODEL and online learning in Zimbabwe had no knowledge and skills to use various technologies when instructing, whereas it was necessary. A research by Kasse and Balunywa (2013), revealed negative attitude as limiting ICT adaption. In Tanzania online learning was lowly accepted in higher learning institutions due to the negative learning culture towards ICT use among other factors mentioned above like lack of ICT skills inability to access ICT tools and others. Many of the distance learners are always not ready to embrace change. Research holds that people are always resistant to upcoming technologies. DE encourages learners to embrace new developments. Adam,(2000). Straub (2009), asserts that accepting upcoming technological devices is difficult.

Motivation is the compelling force behind doing something. It's what energizes an individual to do an action or something. The distance learner should therefore have motivation for adapting ICT use in their programs for there to be successful ICT integration. Pinder, (2008), holds that motivation is a compelling force causing one to act. It can be external or internal. External

motivation is important as the benefits related to it are more satisfying and motivating. However benefits associated with internal motivation are much more attractive. The distance education learner has to therefore be intrinsically moved in using technology, Since Kozma (2005), notes that when technologies are introduced, they boost the process of delivery. This should work as a motivation factor to online learners who are employed and also to learn from anywhere anytime Boster and Brand (2013), holds that ICT helps in the growth of learners reasoning capacities and self-determination. The distance learner should have self-efficacy thus they should belief in themselves that they are capable of using ICT in their learning programmes for effective integration to take place as suggested by Ormrod (2006).

The distance learners have reasons for their learning and therefore ICTs chosen should match their reasons for learning in order to attract them adapt it very fast. In the Philippines, the use of particular ICTs in distance education also ensures quality in provision of education. The use of multi-media has also encouraged adoption of ICT Eastman & Hehmen (2004). Learners are also given chance to communicate electronically ,Owen Suits, (2001). ICT provides required literacy for jobs and individual development as well as national building, Christensen, (2002). Therefore learners can also adopt ICT for employment purposes. These reasons motivate them to use ICT in their programs. Most ODL learners are those seeking to upgrade themselves with higher education and therefore the ICT used must be suitable for the purpose for faster adoption. According to the (JIEA 2014), DE is suitable to mature people, as it enables their job security among other benefits. Most DE learners aim at achieving job security as they further their studies and the ICT used has to help them achieve this.

The distance education programme being studied together with ICTs used by the learner should be suitable and related to their lives so as to attract them use it in their study. Thus the technology used must be both pedagogically sound and socially fit_hence it has to be relevant. According to JIEN (2014), the DE programme has to suit the adult learners daily schedule and education to enable them have job security. ICTs chosen for learning should therefore help learners achieve the UNESCO objective.

2.5 Geographical location of learners and ICT integration

For successful integration of ICT the learners geographical location has to enable them be accessible to facilities which support ICT like electricity, network boosters and others. However,

given that distance learners are geographically spread throughout the country and world. Some residing from rural and remote areas where there are no technological infrastructure such as electricity supply telephone infrastructure internet bandwidth and others.

Lack of these facilities makes it difficult for the DL to use their gadgets like; computers, laptops, smart phones and others. This characteristic makes it difficult for them to access the ICT infrastructural facilities in order to use them hence ICT integration in their learning programmes remain low. However learners residing from safe urban areas with adequate ICT infrastructure can access these facilities with ease from their areas of residence in particulars among others. According to JIEA,(2014), inadequate infrastructure facilities sometimes makes distant learners unable to access necessary information about studies as deadline for submission of term papers meetings that majority of students especially those who commute from home or outside the state do not have access to ICT facilities as well as high ICT illiteracy rates, resisting to change and therefore making ICT integration difficult.

In study conducted by Kasse and Bulunywa (2013), revealed that some of the infrastructural challenges facing ICT adoption in East African Universities includes lack of electricity and internet connectivity. Ndume et al (2008) ,insists that several factors challenged ICT implementation in Tanzania such as power outages and inadequate ICT infrastructure.As mentioned earlier the DE learners reside from rural and remote areas where there is no electricity infrastructure and other computer infrastructural facilities for ICT use.

Proper integration of those ICTS requires that infrastructural facilities are available for use by students. According to Gray (1988) as mentioned earlier, the united kingdom institution educated both learners from within and without. This is evidence that the distance learners come from diverse locations and hence accessing ICT infrastructure may be difficult for some of them. Given that they learn from their homes and places of work. As mentioned in JIEA (2014), majority of distant learners especially those who commute from home or outside the state have it difficult to access ICT infrastructure and ICT tools in order to use them. According to Elbeck (2009), the aim of distance learning is to do away with problems associated with separation in DE and this is possible by the use of ICT. Hollow and ICWE(2009), observes that E-learning has become reliable taking care of all regardless of their geographical locations. However, this is

possible only where there are required ICT infrastructure to enable use of ICT tools by the scattered learners.

Distance learners should also access and use ICT tools for effective integration to take place. In a study carried out by Dorothy and Makokha,(2016), majority of the interviewed students admitted not using e-learning as they lacked electronic tools, particularly during holidays. However, accessing these ICT tools is vital for effective acquisition of information between learners and teachers, learner and peers and their geographical location should allow this. JIEA (2014) states that, a research was conducted to assess the technological tool ownership at Ibadan institution. The findings indicated audio tapes usage was ranked highest. Mobile phone usage had a mean value of 2.04, computers usage had a mean value of 2.03. The survey indicated a computer ownership rate of 12% with home internet monthly internet access of 2.7%. The smart phone readily available stood at 11.8%, 26.7% of the DE student surveyed used cyber cafe on daily basis to meet their academic and social needs.

These percentages are very low yet the whole population is expected to own them. However most learners face financial constraints, whereas the DE learner needs to have enough resources in terms of finance for them to acquire and use the ICT tools and equipment for easier learning and integration of ICT their programs. Makokha and Dorothy (2016), noted high expenses involved in the internet connectivity and cost of access discouraged many learners from using ICT gadgets. The DE learners should be located in areas where they can access learning centers. The DE learning Centre's have the infrastructural facilities and other on-line resources that are necessary for ICT use. However most learners cannot access them due to their distant geographical locations. The learners ability to access these facilities would otherwise facilitate ICT integration in distance education processes.

A study carried out on 10 Tanzanian universities by Sanga Sife and Lwoga (2007),indicated most institutions were using ICT. Nyerere (2016), notes that learner support services are a critical component for availing ODL, such as having learning centers in different parts of the country meant to provide learner support services . The Centres are also used for examinations. The learning Centres also provide e-learning platform and skills to interact with IT. Dorothy and Makokha's study,(2016,) also indicated lack of proper network as a factor contributing to low usage of technology by distance learners.

An e-learning survey report indicated that in Kenyan universities very few students owned electronic gadgets, Waeng and Kashoda,(2004),compared to their large numbers in the institutions. Yet UNESCO (2010),advocates that ODL programs with ICT are capable of reaching all regardless of their location

2.6. Learner demographics in terms of Age and gender and ICT integration.

Research has also shown that computer usage is affected by gender and age of the learners for instance. two-thirds of the distance learners are female. These females are unable to attend conventional classes due to their daily chores in the households which limits their time to attend full time classes. The distance learners are mostly adults, married with family responsibilities. The Journal of information engineering and application vol 9, (2014),holds that most of the distance learning students' age ranges from 25 to 50 . These learners are already mature without ICT skills and therefore it stands as a major challenge for using ICT tools even when available Nyerere,(2008). Melindadela (2007),explains that, in the Philipines people are only concerned with their daily needs making DE with ICT a problem. Nyerere (2003), agrees that DE with ICT avails learning opportunities to the vulnerable like women, the poor and others. These women learners lack confidence and hence making use of electronic gadgets difficult.

They also lack time to access ICT infrastructure given that they mostly come from remote areas. World bank (2011),holds that, countries have to provide their young people with quality education to match the present world economic needs. This is possible through the interactive and non-interactive media . The youthful learners adjust to the use of ICT at a faster rate compared to adult learners. However, research showed that the age for DE learners was going down in comparison with regular learners, (WPC) (2007). If the age will continue decreasing then it will be favorable for ICT integration since young learners are curious and explore ICTS and the internet a great deal thereby acquiring more skills. Ashiby (2002), as cited in Arafah (2004), observes that maturity of learners is the major characteristic in DE ,as supported by Sikora and carroll (2002).

For effective use of ICT in distance education programs, learners should have enough time to study and explore with ICT, this is possible with young learners. Research studies have shown that students who use computers at home use them better in schools unlike learners with limited

access. When learners have enough time to study and explore ICT, they get opportunity to interact as well as learn.

2.7 Theoretical framework

A theory is a viewpoint proposed by someone and is subject to criticism. Constructivist approach was appropriate to this study since it advocates for distance learners to construct knowledge and meaning on their own (CDLP 2005), Mandernach, (2009), from their experiences or interaction with ICT tools in the course of their learning, given that most of their learning is done away from their tutors. The theory encourages a wide range of teaching modes including ICT adoption in education and most importantly distance education programs.

Constructivism theory also advocates for contextualization and basing on this fact the distance learners are encouraged to actively participate in the learning process, construct new knowledge on their own since they are scattered and located in various parts of the country where they rarely meet with their tutors. They have to perceive ICT positively and base on the knowledge acquired in previous schooling to construct new knowledge from wherever they are regardless of their gender or age and this can be achieved through the use of technology.

2.7.1 S.F. scudder's communication theory

Communication theory was also applicable to this study since it emphasized on the need to communicate for existence. In this case communication between the distance learners and their tutors together with their peers is vital. The proponent of this communication theory was S.F Scudder in 1980 and it holds that all living creatures existing on the earth communicate although they may communicate in different ways. The distance learners communicate to their tutors and institution in general via information communication technologies, thus the media makes it possible for the participants to express their feelings, thoughts, problems as well as sending and receiving important information from one party to another.

Communication theory also holds communication as being the process of sending information from the sender to the receiver, where the receiver attaches meaning to the information and acts as expected. In this context, the tutor sends learning information or content to the DL through the media, the learner then reads and understands what the tutor means and acts upon it. The teacher may send learning content, assignments, necessary information as to when the learning sessions

may commence, fee payment, necessary information relating to the DE learning processes. The learner then receives the information and does the necessary. The learner also receives feedback from the tutor through communication technologies. Communication theory stands for the concepts below: -

Mechanistic:- The view proposes that communication is the transfer of messages from one person to another thus from the sender to the receiver. In DL, transmission of information is between the tutor and the learner, or between the learner and peers and vice versa.

Psychological:- The psychological point of view holds that communication also involves transmission of thoughts, feelings and reactions which the sender tries to share with the receiver. It's applicable in DE since the feelings, thoughts and reactions of both the teacher and the learner are conveyed through technologies

Social:-Communication is a result of interaction between the two parties and it depends on the type of message involved. In the case of DE, interaction between the tutor and the learner is facilitated by the media and hence communication.

Systemic:-Communication is viewed as the meaning attached to signals depending on the receivers interpretation. In DE, the learner uses ICTS to create and acquire new knowledge after interpreting and reinterpreting as he/she learns on his/her own from various places of the country.

Critical:- Communication is a way through which a person expresses his power and authority among other people. In this case the institution, and staff expresses authority and power to the DL by giving the rules and regulations to be observed, dictates the headlines for fee payment, assignment submissions and others via the media.

In conclusion, communication is therefore a dire need for existence since every living thing needs to communicate among themselves and others, which is applicable in distance education as it's a necessity for learning to take place.

2.8 Conceptual framework

The figure 1 shows a conceptual framework that was used in this study. The interrelationship between the variables is shown using the arrows. ICT integration is dependent on learner characteristics. The independent variables are learner characteristics in distance education programs. They are:- learner perceptions, learners entry level, age and gender of learners and geographical location of learners.

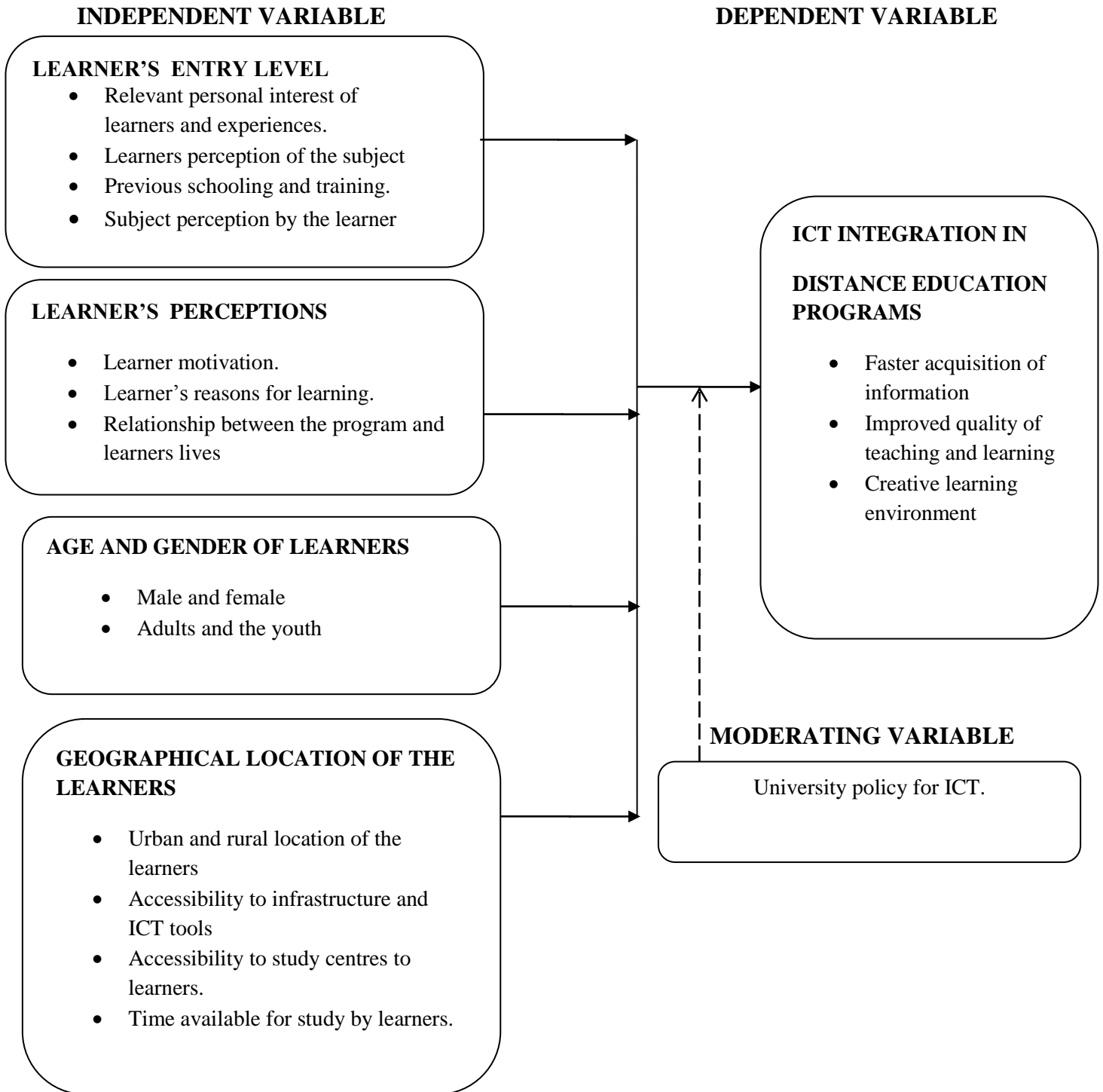


Figure 1: Conceptual framework

2.9 Knowledge Gap

From the inception of DE, much research has been done on various areas pertaining the programme such as development of the contents, deliverence of courses and designs of the system ,Grustafson, (1997).

The problems faced by distance learners and ways of addressing them have also been researched on Sherry (1995). Researchers have also done research on how learner support services can help retain learners in DE programmes Kaudo (2018), However, less research has been carried out on learner factors affecting the use of information communication technology (ICT) in distance Education Programmes. More so, research has also been done on the status of online learning in Kenyan universities Dorothy Makokha (2012). The findings of their studies indicated that online learning in the seven Kenyan universities was very low and at its infancy stage. Most Kenyan universities registered low percentages of learning using ICTS which lied between 30% and 35%. The worst of all was MMUST, where no clear percentage of ICT usage was registered; it was represented by an asterisk as shown in the table 2.1.

Table 2.1 gives ICT usage in the seven universities in Kenya.

Institution	Percentage %
KU	38
JKUAT	35
UON	35
MAU	36
EU	33
MMUST	*
MU	33
TOTAL	35

Basing on the above outcome, by Dorothy Makokha (2012), there is therefore need to investigate how the characteristics of learners have influenced the integration of ICT in DE programmes and particularly in MMUST where the earlier researchers found no particular percentage for ICT usage and instead there was an asterisks. This research therefore seeks to find out whether the

distance learners of MMUST are using ICT for learning or not as established by earlier researchers considering their characteristics.

2.10 Summary of literature review

DE has always been known for its departure from the conditions in which teaching and learning takes place naturally. The present DE is anchored on computer mediated technology to develop learner's sense of purpose and general utilization of technological devices. Learner characteristics perform an important part when choosing ICT used in learning and teaching in distance education programs. The needs and trends of learners have to be considered when determining the ICTS to be used for teaching and learning in DE. The factors to be looked at include; Learners entry level into the program, geographical location, learner perception and the demographic trends such as age and gender, Reiser and Gagne,(1982). Tallent-Runners et al (2006), also agrees that the use of ICT is vital in DE. However the institution and administration should give learner factors first priority in deciding the type of devices to be used.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This part entails pre-view of research method adopted during the research.. They include:- Research design, target population, sample and sampling method, research instruments, data collection procedures, validity and reliability of the research instruments and finally data analysis techniques.

3.2 Research design

Research design is a process where a practical test is created to justify or refuse certain knowledge claims. A descriptive survey design was adopted. It involved asking a relatively large number of people the same standardized questions. This design enhanced direct provision of data providing all the needed information on the topic. As per Kothari, (2003). This research design is mostly applied when studying social issues in communities like education, gender and culture. The study was therefore concerned with researching on learner characteristics that have influenced ICT integration in distance education programmes. The descriptive research, design involved observing and describing the situation without manipulating variables. It helped portray an accurate situation of ICT integration in MMUST Kakamega County.

3.3 Target population

Levy and Lemeshow,(2013), defines target population as a whole group that the researcher has interest in studying and analyzing. It's from it that a sample is drawn. In this study the target population consisted of all the students studying in MMUST DE programs. At the time of this research, the available population of DE learners on the campus was 500, since the other learners were out of the campus and the 500 present were doing examinations. They therefore formed the target population for the study from which a sample was drawn. Table 3.1 shows target population

Table 3.1 Target population

Category	population
Diploma	45
Degree	45
Masters	45
TOTAL	135

3.4 Sample size and sampling procedure

The part gives a description of the sample and procedure for sampling that was adopted by the researcher during research.

3.4.1 Sample size

Kothari (2008), holds that it is the number of respondents picked on by the researcher to represent target population. The subjects of this study were drawn from distance learners of MMUST. Where the available population was 500 students from whom a sample size of 150 respondents was selected translating to 30% of the available population, hence meeting the threshold for a descriptive research as believed by Peters et al (2013), that a sample size of between 10% and 30% of the available population can be used as representative of the population since it gives adequate information about the target population although 10% was seen as being too low, therefore the researcher picked on 30% of the available population to work with.

Category	Sample
Diploma	50
Degree	50
Masters	50
TOTAL	150

3.4.2 Sampling procedure:-

The simple random sampling procedure was adopted when choosing informants for this study. The procedure entailed giving a letter to individuals of the available population, putting the

letters in a carton box, then jumbling up the letters before picking any letter at random. This procedure was appropriate since it ensured that each person within the accessible population got similar chances of getting picked on.

3.5 Research instruments

These are tools used for collecting data. The nature of data collected and objectives guided the choice of instruments used, same to time available. The study aimed at finding out perceptions, feeling and attitudes, opinions and views of the respondents. The researcher then administered questionnaires and also asked oral questions to enable her collect desired information from respondents.

3.5.1 Pilot of the study

Prior to collection of actual data the researcher carried out a pre-study at Kibabii University Bungoma. This was through test-retest to ascertain the effectiveness of the questionnaire items; if the space provided was enough or not, check if questionnaire items were clear, precise and would lead to generation of required information by the researcher to check if research instruments were valid and reliable. It also fostered the researcher's preparedness in terms of familiarization with the procedure. A sample size was chosen from the entire population of distance learners available in line with the requirements of conducting a statistical analysis as stipulated by Mugenda and Mugenda (2003).

3.5.2 Validity of research instruments

It is the ability of research instruments to measure what they are supposed to measure as observed by Mugenda and Mugenda (2003). The accuracy of data collected was measured using content validity. The researcher's instruments were therefore confirmed valid before use. This was possible by the researcher seeking help from the supervisor and other lecturers from the ODEL campus UON, to judge the validity of the questions in the questionnaire for conducting the research before use, as noted by Borg and Gall(1989),arguing that content validity can be improved through expert judgment.

3.5.3 Reliability of research instruments

It is the ability of research instruments to give consistent or constant results over time. Reliability of data is a vital aspect of any research study and should be addressed in the research process. In

a research, reliability coefficient is calculated to show the extent to which data can be relied upon. Mugenda and Mugenda(2003), asserts that a coefficient of 0.80 and above means that the data is reliable. In this study cronbachs alpha coefficient of internal consistency was employed to tell relationship, which was achieved through the split-half method by the following formula.

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{(\sum x^2 - \frac{(\sum x)^2}{n})(\sum y^2 - \frac{(\sum y)^2}{n})}}$$

Where the first half=X

The second half =Y

The pilot results therefore indicated that the Cronbach Alpha's coefficient was 0.80 that was above the 0.7 threshold recommended by Peters (2013) meaning there was high consistency between the questionnaire items thus learners age and gender, geographical location and perception.

3.6 Data collection procedure.

Once the research proposal was approved the researcher acquired a letter of introduction from UON enabling her get a permission from Bungoma County education administrators. The researcher then carried out a pilot testing of respondents using questionnaires and interviews before the actual study to test how reliable the research instruments were. She then collected data from the field using data collection instruments mentioned above and analyzed it.

3.7 Data analysis technique.

The information acquired was coded, as well as organized into different categories then analyzed and interpreted into meaningful and final results. Descriptive and inferential statistics was applied in answering the research questions as well as objectives in relation to the topic. The research questions sought to establish the influence of learner characteristics, on ICT Integration, the results were conveyed as tables. The information was interpreted in reference to objectives of the study and was used by the researcher as a foundation to make recommendations and suggestions for further research. The statistical package for social science(SPSS) was used in interpretation of questions.

3.8 Operational definition of variables

Indicators are shown by the main variable and the study to ensure that they are measurable

Table 3.2 Operational Definition of Variables

Objective	Independent variable	Indicators	Measurement	Measurement scale	Method of date collection	Types of analysis
To establish how learner perception influence ICT integration	Learner perception	Positive attitude Negative Attitude	Learner motivation Reasons for learning Relationship between the program and their lives	Interval ordinal	Questionnaire	Descriptive Inferential
To assess the influence of learner entry level on ICT integration	Learner entry level	Previous schooling Possession of certificates	Relevant personal interests Perception of subject	ordinal	Questionnaire	descriptive
To determine how geographical location of learners influence ICT integration	Geographical location of learners	Convenience of residential area Accessibility to services	Urban and rural location. Accessibility to infrastructure and ICT tools. Accessibility to study centres Time available for study.	interval	Questionnaire	descriptive
To assess the extent to which age and gender of learners influence ICT integration	Age and gender	Ability to adjust to change	Male and female Young and adults	Ordinal interval	Questionnaire	Descriptive Inferential

3.9. Ethical consideration

The research aimed at acquiring information that would help improve the extent of ICT adoption in Distance education programs offered in our Kenyan universities and the world at large. Also before collecting data, permission was obtained from the county educational administrators and the information got from the resource persons or informants shall be kept confidential and made available for academic reasons alone.

CHAPTER FOUR

DATA ANALYSIS PRESENTATION AND INTERPRETATION

4.1 Introduction

The chapter presents results, discussions and quantitative analysis of data acquired from the field. Frequency tables have been used to enhance understanding of the results, as well as narrations, in relation to research questions and objectives. Firstly respondents response rate has been described ,the demographic characteristics of learners were described at last since they formed part of the topic under study. Descriptive statistics was then used to show results.

4.2 Response rate

One hundred and fifty questionnaires were administered to respondents. 141 questionnaire were returned while nine were missing due to the fact the respondents given the missing questionnaires were un reachable during questionnaire collection. Out of the 141 questionnaires returned 6 of them were not fully answered. This was due to the fact that the respondents involved were new and did not understand most the things in the university. The dully filled questionnaires were 135 translating to a response rate of 90% of the total sampled population. However this is quite a good response rate since a 50% response rate can effectively give a researcher information on the phenomena of research, Yin(2013). The number of respondents who didn't respond totaled up to 15 out of 150 making 10% non- response rate ,which was quite low and was outweighed by the 90% dully filled questionnaires, giving a go head to the researcher as it boosted reliability of the study.

Table 4.1 Response rate analysis.

Category	Frequent	Percentage
Sampled population	150	100%
Respondent	135	90%
Non- response	15	10%

4.3 Entry level of learners

Learner's entry level was sought under the following sub-titles

4.3.1 Respondents' level of previous schooling.

Respondents indicated their level of previous schooling on questionnaire . Table 4.2 shows results.

Table 4.2: level of respondents previous schooling

Level of schooling	Frequency	Percentage
Secondary	47	34.8.
Primary	0	0
College	80	59.3
University	8	5.9
TOTAL	135	100

The table 4.2 indicates that many students had college education and were therefore working towards a degree at 59.3%. Those who had only completed secondary education followed at 34.8% . The respondents who were post- graduates had the lowest percentage at 5.9%.

4.3.2 Respondent's experience with ICT

Respondents indicated the time they started using ICT to determine their experience with ICT Table 4.3 shows results.

Table 4.3.Respondents’ experience with ICT use.

Period	Frequency	Percentage
Before joining the programme	81	60
After joining the programme	54	40
TOTAL	135	100

From the table 4.3, it can be deduced that most respondents started using ICT before joining the distance education programme at 60% while those who started using ICT while in the programme had a lower percentage of 40%. They cited smart phones as the electronic gadget used mostly in this case.

4.3.3 Possession of ICT Knowledge and skills.

Respondents showed if they had trained and have ICT knowledge and skills. Table 4.4 shows.

Table 4.4:Learners training in ICT.

Training in ICT	Frequency	Percentage
I have training in ICT	90	67
I have no training in ICT	45	33
TOTAL	135	100

The table 4.4 stipulates most respondents have training and knowledge in using ICT at 66.7% Those who had no training had a lower percentage of 33.3% . They attributed this to the university offering training in ICT once one joins the university.

4.4: Learners’ perception.

Learners perception and use of ICT was sought under the following sub-headings.

4.4.1 Access and use of ICT Gadgets.

Respondents indicated if they access ICT gadgets for learning. The table 4.5 gives the outcome.

Table 4.5; Learners' accessibility and use of ICT tools.

Use of ICT	Frequency	Percentage
I use ICT for learning	131	97.04
I don't use ICT for learning	4	2.96
TOTAL	135	100

From the table 4.5, almost all respondents were using ICT at 97.04%. The gadget used by most of them was the smart phone as they said. Other gadgets like computer and laptops were cited by a few students to be used. Those who were not using stood at 2.96%

4.4.2 Learners' attitude towards ICT

Respondents indicated their feelings towards ICT. The table 4.6 gives the results.

Table 4.6 Learners' attitude towards ICT

Attitude	Frequency	Percentage
Positive	130	96.3
Negative	5	3.7
TOTAL	135	100

The table 4.6, indicates that most distance learners have a positive attitude towards using ICT at 96.3% and they use it often while 3.7% represents those learners who are negative and don't like using ICT. However, circumstances sometimes force them to use it even if they have a negative attitude towards it.

4.4.3 Learners' ICT tools ownership

Respondents indicated the various ICT gadgets, owned. Table 4.7 shows results.

Table 4.7: Learners' ICT gadgets ownership.

Gadgets	Frequency	Percentage
Personal computer	7	5.2
Laptops	22	16.3
Smart phones	101	74.8
Other like DVDs, CDs	5	3.7
TOTAL	135	100

From the table 4.7, most of the distance learners own and use smart-phones at 74.8% followed by those who own laptops at 16.3% personal computers are owned at lower percentage of 5.2% and other electronic gadgets are owned at 3.7% personal computers are owned mostly by those who come from areas with proper infrastructure and internet to support their use.

4.4.4 Learners' accessibility and use of computer library.

Respondents indicated their ability to access and use computer library in their learning centres, indicating how often they visit and use the computer library . Table

4.8 Shows results.

Table 4.8: Learners' Visits and use of computer library

No of visits	Frequency	Percentage
Daily	0	0
At least two times per week	121	89.6
Once per week	7	5.2
Three times per week	7	5.2
Not at all	0	0
TOTAL	135	100

The table 4.8, shows most respondents visiting the computer at least twice per week at 89.6%. Others visit the computer library thrice per week and at least once per week at a rate of 5.2% and 5.2% respectively they cited other factors as contributing to this low usage of computer labs despite the university opening it daily for them to use.

4.4.5 Difficulties in using ICT .

Respondents showed whether they experience difficulties in using ICT in respect to their age brackets. Table 4.9 shows results.

Table 4.9: Difficulties in using ICT in relation to age.

Difficulties experienced	Frequency	Percentage
Adults	113	83.7
Youth	22	16.3
TOTAL	135	100

The table 4.9, illustrates that most of the respondents who experience difficulties in operating ICT gadgets are adults at 83.7% while the youth experience less problems in using ICT at 16.3% . This is attributed to the fact that most adults have no ICT knowledge and skills.

4.5 Policy harmonization for ICT

Respondents indicated if there was an ICT policy in the university. Table 4.10 gives results.

Table 4.10: policy harmonization for ICT.

Presence of policy	Frequency	Percentage
ICT policy is in place	112	82.96
ICT policy is not in place	23	17.04
TOTAL	135	100

From the table 4.10, it can be deduced that the university has an ICT policy in place. The respondents who agreed were at 82.96% while those who answered No. were few at 17.04%.

4.5.1 Lecturer's use of ICT while teaching.

Respondents indicated if their lecturers/ tutors usage of ICT while teaching. Table 4.11 shows results.

Table 4.11: Lecturer's usage of ICT in teaching.

Lecturers use ICT	Frequency	Percentage
Lecturers use ICT in teaching	90	67
Lecturers don't use ICT for teaching	45	33
TOTAL	135	100

Table 4.11, shows lecturers are trying as much as possible to use ICT at 66.7% and others not using at 33.3% .This follows the inception of ICT policy in the university digitizing DE Learning .

4.6 Respondent's Geographical location.

Respondents showed their geographical locations as in Table 4.12. Learners were classified as originating from country wide, local community and outside the country.

Table 4.12: Respondents' geographical location.

Location	Frequency	Percentage
Country wide	87	63.7
Local community	43	32.6
Outside the country	5	3.7
TOTAL	135	100

The table 4.12, depicts that most distance learners of MMUST are drawn from all over the country represented by 63.7% others come from the local community at 32.6% those of the distance learners who come from outside the country are represented by a lower percentage thus 3.7%.

4.6.1 Respondents specific place of residence as to either rural or urban.

Respondents indicated their specific areas of residence as in table 4.13.

Table 4.13: Analysis of respondents areas of residence

Place	Frequency	Percentage
Urban	47	34.81
Rural	88	65.19
TOTAL	135	100

The table 4.13. Illustrates that most of the learners reside from rural areas at 65.19% while those who come from urban areas are at a lower percentage of 34.81. This explains why most distance learners are unable to use ICT's from their homes due to lack of necessary infrastructure for ICT use.

4.7 Demographic Characteristics of respondents

These comprised of the social aspects like; age, gender marital status, their employment state and years of study. This information was vital as it gave maximum understanding of the

respondent as well as forming part of the characteristics that influenced learners ability to use ICT in their studies.

4.7.1 Respondent's gender

The respondents gender was sought. One was to state weather male or female and the results are shown in table 4.14.

Table 4.14: Respondent's gender

Gender	Frequency	Percentage
Male	54	40
Female	81	60
TOTAL	135	100

Table 4.14, depicts the percentage of male respondents was low at 40% compared to the female respondents who stood at 60%. This indicates that a large number of the learners in distance education programs are females.

4.7.2 Respondent's age.

Respondents' age was sought. They were to show their age brackets. The table 4.15, gives the results.

Table 4.15; respondent's age analysis;

Age(years)	Frequency	Percentage
18-24	9	6.67
25-35	39	28.88
36-45	46	34.07
46-55	34	25.19
56 and above	7	5.19
TOTAL	135	100

The table 4.15, shows clearly respondents who were aged between 36 to 45 had the highest percentage at 34.07% followed by those between 25 and 35 years who constituted 28.88%. They were then followed closely by those between 46 and 55 years at 25.19%

Those who were between 18 and 24 years of age were a bit few at 6.67% and then the age brackets with least members was 56 years and above who had 5.19% This is evident that most distance learners lie between the age of 25 years and 50. They are mostly adults.

4.7.3 Respondent's marital status

Respondents were required to show their marital status as its one factor that characterizes their inability to use ICT in the course of their learning. The table 4.16 shows the results.

Table 4.16: Marital status of respondents

Marital status	Frequency	Percentage
Single	12	9
Married	72	53
Divorced	28	21
Widowed	23	17
TOTAL	135	100

From the table 4.16, its open that a large population of respondents were married at 53%. The lowest population was that of singles who stood at 9%. The divorced respondents were at 21% followed by the widowed at 17%. This confirms he many DE students are married, with families.

4.7.4 Respondent's state of employment.

Respondents were to show their state of employment as shown in the table 4.17

Table 4.17: Respondents state of employment.

Employment status	Frequency	Percentage
Full time job	75	55.56
Self-employment	41	30.37
Job less	19	14.07
TOTAL	135	100

The table 4.17, shows that respondents with full-time employment were more at 55.56% followed by the self –employed with 30.37%. Those without jobs were the least with 14.07% This is a clear indication that most distance learners are employed with jobs.

4.7.5 Academic years of respondents:

The respondents indicated their years of study. The results are tabulated.

Table 4.18: respondents academic year.

Academic year	Frequency	Percentage
First	41	30.37
Second	53	39.26
Third	27	20
Fourth	14	10.37
TOTAL	135	100

Second year students formed a larger part respondents at 39.26% followed by first year students at 30.37. The third year students formed 20% of the respondents and then the fourth year students had the lowest percentage at 10.37% .Most of the fourth year students were out of the campus.

4.7.6 Respondent’s levels of study

The respondents indicated their levels of learning at the university. Table 4.19 shows results.

Table 4.19: The results

Level of study	Frequency	Percentage
Diploma	51	37.8
Degree	76	56.3
Masters	8	5.9
TOTAL	135	100

Table 4.19, shows that most of the respondents were doing a bachelor’s degree at 56.3% followed by those doing diploma at 37.8% . The masters students were the fewest at

5.9% . This was because most masters students were out of campus and the few present had come for the purposes of examinations.

4.7.7 Respondent's number of dependants.

Respondents indicated their number of dependants .Table 4.20, has results.

Table 4.20 ; Number Of Dependents.

Number of dependants	Interval	Percentage
0	0	0
1-4	81	60
5-10	44	32.6
11 and above	10	7.4
TOTAL	135	100

The table 4.20,shows that most distance learners have dependants . Those with dependants between 1 and 4 are represented by 60% those with 5 to 10 are at 32.6% and those with 11 and more dependants are at 7.4% . This confirms that most distance learners have dependants.

CHAPTER FIVE
SUMMARY OF FINDINGS, DISCUSSION, CONCLUSION AND
RECOMMENDATIONS.

5.1 Introduction

The chapter gives a summary of findings, discussions, conclusions and also recommendations basing on objectives for study. It has also highlighted areas for further research as suggested by the researcher.

5.2 Summary of findings .

The study investigated influence of learner characteristics on ICT in DE programmes in MMUST, Kakamega . The study found out that truly learners' characteristics have made ICT use in the Universities DE programs remain low. It was revealed that the university has its ICT policy in place that saw the establishment of computer libraries in the university. The university had a well-connected internet bandwidth which facilitated effective use of electronic gadgets for learning. More so, the university offers training to its learners on how to use ICT as well as lecturers using ICT for teaching, The distance learners are encouraged to use ICT at all levels, but worse still various learner' characteristics drew back ICT use in the DE programs of this university. However most learners are making effort to use ICT though the rate of usage is still low, compared to the rate at which the world is evolving technologically.

5.2.1 Learners' entry level and ICT integration.

This study found out that learners entry level influence the integration of ICT in DE programmes. The aspects involved here include:-Learners previous schooling, previous experience with IT use and others matter a lot for effective use of ICT in DE . The research work found out that most distance learners are post-secondary learners and were working towards a degree, diploma and certificate which is a necessary condition for ICT adoption. The study also established that possession of ICT knowledge and skills makes it easier for use. The Institutions of higher learning should ensure that their DE learners are equipped with ICT skills making them to adopt ICT for learning. In this respect the university was making effort to ensure that its learners are ICT literate by training

them. It was also revealed that the DL who had used ICT before adopted it at a quicker pace compared to those who had no previous experience .Its therefore necessary that Institutions ensure that all its learners are able to work with ICT before adopting it for learning.

5.2.2 Learners' perception and ICT integration

The study revealed that some DE learners had negative attitude towards ICT and this had negatively affected their use. The Institutions should therefore encourage such learners to like and use ICT. However, It was also revealed that many learners liked ICT and were interested in using it although their rate of usage was still low in relation to world technology. The degree of ICT gadget ownership by students in the university was also low. The dominant electronic gadget owned by students in the university was smart phones. Almost every student had a smart phone although others were not even using them for learning attributing this failure to use ICT to lack of knowledge and the associated costs of air time in form of bundles. Personal computers and laptops were owned by just a few students and most of them did not have them. This failure to own such gadgets contributed to the low usage of ICT in DE programs.

The study also revealed that the institution had enough computer libraries for learners to use in the course of their learning. However, some learners were not using the computer libraries maximally attributing this to lack of time and having busy time schedules , consequently this has caused low usage of technology in the DE programs of the Institution.

5.2.3 Learners' geographical location and ICT adaption.

The study revealed that the DE learners come from within and outside the country. It was further revealed that most of the learners come from rural areas compared to those who come from urban areas. This affected the use of ICT for learning in that those who come from urban areas are accessible to ICT tools like cyber cafes for those ones who didn't have their own computers, ICT infrastructure like internet band width and Network boosters together with electricity and all other facilities that assist in effective use of the electronic gadgets. However those who come from remote areas without electronics'

boosters, cyber cafés and other ICT supporting infrastructure end up not using the electronic gadgets even if they had them due to lack of internet connectivity in turn this pulls back the use of ICT since their living environments cannot support it whereas they learn from home and their places of work.

The study also revealed that most DE do not stay on the university campus but prefer commuting from their homes during learning sessions. Very few of them live in the campus during residential sessions. It's unfortunate that those who commute from home lack enough time to utilize the electronic facilities installed in the campus. Its only those few who reside within and around the university that are able to use those gadgets on the university premises and though that way, their schedules are very busy and hence they are remitted by time to utilize these ICT facilities given that they come to the university for very short tutorial sessions. This has also dragged behind the integration of ICT in the University's distance education programs.

5.2.4 Learner's Demographics in terms of Age and gender and ICT Integration.

This study revealed that age and gender of the learners greatly affected the use of ICT in the university DE programs. It was revealed that most of the learners are adults and at least two-thirds of them are females. These female learners cannot learn conventionally because of their daily family chores. They are also married with dependants .These adult learners have no ICT skills and even some of them are not ready to use them. They are always tired and see learning new knowledge as a waste of time.

Their inability to learn and use ICT stands as a major challenge for using ICT tools even if they were available. It was also found out that the DE learners have jobs and busy times schedules. This characteristics has also kept ICT usage in the DE programs low because the learners spent most of their time on their jobs and have no extra time to learn the new skills associated with technology.

5.3 Discussion of the study

This part gives a comparative analysis of the study findings in relation to the views advanced by various scholars. The study sought to investigate the influence of learner characteristics on ICT in DE programmes. The findings of this study reveal agreement

with the views of other scholars on how learner characteristics influence ICT in DE programmes.

5.3.1 Learners' entry level and ICT integration:

This research work holds that the learners' entry level influence ICT integration in DE programs. It was revealed that DE learners have previous schooling where most of them have completed at least secondary education. A good number of them were either working towards a certificate, a degree or Diploma. Some have ICT knowledge and skills where they started using technology even before joining the DE programs. Others learn to use ICT after joining the DE programmes, where the university offers training.

This statements are in agreement with Adam,(2000), who believes that in DE students are to embrace ICT. Learners' previous schooling and experience with ICT is a necessary condition for ICT adoption, confirming Chongwony (2006), who holds that most distance or online learners are post-secondary learners. Training in computer before adoption of ICT in education also confirms the views of Han and Lex (2010), who believed that developing human capabilities in the field of ICT is paramount before introducing computer and other electronic gadgets to be used in education.

5.3.2 Learner's perception and ICT integration

The study also revealed that most learners have interest in using ICT although others do not like using it. Those who like using it have positive attitude towards ICT and they use it to learn. However, they mostly use smartphones. Those with negative attitude do not like using it. They see technology as being expensive and needs knowledge and skills to handle it. This statements confirms Tusubira and Mulira (2004), who observe that there is undesirable information that ICTS are expensive, requiring highly specialized knowhow.

The negative perception towards ICT also influence the ICT gadgets ownership. The dominant gadget owned by most DE learners is the smart phone. Other electronic devices such as computers and laptops are owned by just a few students since they are considered expensive and require high technological skills in conformity with Tusubira and Mulira(2004) as mentioned above. It was also revealed that the negative perception affects the use of computer libraries within the university premises. The DE learners do

not utilize the computer libraries maximally attributing this to lack of time and busy time schedules. This is in conformity with Ndume et al(2008), Who holds that a negative learning culture towards e- learning is a major obstacle to ICT integration in education. However those who view it positively maximally use it in conformity with Brush et al(2008), who says learners use ICTS to acquire new knowledge as well as benefitting from flexible learning.

5.3.3 Learners' geographical location and ICT integration

The study found out that distance learners are drawn from within and outside the country. Most of these DE learners reside from rural areas in comparison to those who come from urban areas . Those who come from urban areas are accessible to ICT infrastructure and tools. They are able to use their ICT gadgets like laptops smart phones, personal computers and even cyber cafes for those who have no computers. ICT infrastructure like internet bandwidth , network booster are available to them and hence facilitating ICT use for learning. This is in line with Anderson, (2007), who notes that infrastructure is key in using ICT.

On another hand those who reside from remote areas where there are no infrastructural facilities and if they are there, they are inadequate, find it difficult to use the electronic gadgets even if they have them due to poor internet connectivity and even sometimes they end up not using them. The study also established that most DE learners reside and commute to and from their homes during learning sessions in their Universities. Those who commute end up not utilizing the electronic devices within their institutions where there is enough internet connectivity which is not available in their homes, making their ICT usage very low. This statements agree with Dorothy and Makokha (2016), who observe that lack of network is a factor contributing to low usage of technology by DL.

5.3.4 Learner's Demographics in terms of Age and gender and ICT Integration.

The study establishment that age and gender of the learners greatly affects the use of ICT in the Institution's DE programs. This is because majority of the learners are adults and most of them are female between the age of 25 and 50 years. They are already adults without ICT knowledge and skills. They are married with dependants and tight work schedules, such that they have no time to learn extra knowledge in ICT , as its seen as a waste of time to them. This characteristic makes ICT usage among these learners very low.

Their age bracket is in conformity with Moore and Kearsly (2008) , who asserts that the DE students are adults between the age of 25 and 50 years . Also the statement are in agreement with Nyerere (2003) , who says that DE with ICT avails learning opportunities to the vulnerable like women the poor and others. However these women learners lack confidence in the use of ICT , making ICT usage very low. Its only the young learners who have interest in using ICT but worse still, ICT Usage among the DE learners has remained low.

5.4 CONCLUSION

This study found out that learner characteristics play a major role in influencing the ICT in distance education programs of MMUST. Despite the Institution putting in place all mechanisms that would assist learners to use ICT such as having an ICT policy in place, establishing computer libraries and installing all the necessary ICT infrastructural facilities, the learners' characteristics have made ICT integration in the university remain low. However over 60% of the interviewed students admitted using ICT for learning and in this case smart-phones are mostly used compared to other electronic gadgets like computers, laptops and others. The learner characteristics effecting ICT use include:- learners' age and gender; Most learners are adults of the age between 25 and 50 without ICT skills. They are mostly females with family responsibilities as most of them are married. These responsibilities have hindered them time to learn ICT skills and maximally exploit technology in their learning.

It was also found out that the learners are geographically spread within and outside the country. Some coming from very remote areas where there are no technological infrastructure and hence the use of ICT is impossible for them. They can only access the internet and use ICT when they are on the university premises and once they go back to their homes they can't use it. However those who come from towns or urban areas are able to access and use ICT though they are at a lower percentage. The learners' entry level has also affected the integration of technology in the DE programs of the university. Most learners are secondary school leavers, some with training in various fields. They are working for Degree's, Diploma's and certificates. Such learners adapt the use of ICT quickly although some of them have no ICT skills and therefore the university has to embark on training them in ICT first before they are able to use it.

It was also found out that learner perception also affected the use of ICT. Some learners had a negative attitude towards using ICT. They hated it and were not interested in using it. However other students were positive about it, they liked and embraced the use of ICT in

learning but at a lower percentage . All in all, the university had invested a lot in ICT and was working hard to ensure that all its learners embrace and use ICT for learning. The lecturers were also trying the much they could to use ICT for teaching as a way of motivating learners to embrace it too. The factors mentioned above have therefore dragged the integration of ICT in DE programs of the university behind.

5.5 Recommendations of the study

This study makes recommendations in relation to findings as follows.

1. Institutions of higher learning should ensure that all their DE learners embrace and use ICT for learning at all costs to facilitate flexible learning.
2. The Institutions of higher learning's ODEL Campus should have ICT departments that specifically deal with students technological needs and issues with employed specialist in ICT handling the same.
3. The ODEL Institutions should make possession of laptops a requirement for admission into the programs since it would facilitate maximum use of ICT making research easier as well as promoting ICT literacy for those who are ICT illiterate.
4. Computer literacy should be made mandatory for admission into the distance education programmes by ODEL institutions.

5.6 Suggested areas for further research.

The study makes suggestions for further research in the following areas.

1. Other factors affecting ICT integration in the same university DE programs such as Institutional and Resource based factors.
2. A comparison of the present level of ICT use in the same university in relation to other universities in Kenya.
3. The same study to be carried out in other universities to compare the outcome.

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION TO DISTANCE LEARNERS.

DORICE . M. MASINDE,

P.O BOX 314,

BUNGOMA.

0711965723

7TH JULY 2019.

Dear Sir/Madam,

TO WHOM IT MAY CONCERN,

REF: REQUEST FOR DATA COLLECTION

I am Dorice. M. Masinde, Registration No. L45/9707/2018, a masters student at the University of Nairobi ,ODEL Campus .I'm doing a research by the title; "Influence of learner characteristics on the integration of ICT in Distance education programmes". A case of Masinde Muliro University of Science and Technology. Kakamega County, Kenya.

DE students have been picked upon to be part of this research study. The information given will be handled confidentially and be used for academic purposes only. Kindly cooperate and assist by filling in the questionnaire attached here in. The research findings and hence report will be available to you upon request.

Thanking you in advance,

Yours Sincerely,

DORICE . M . MASINDE.
REG. NO. L45/9707/2018.

APPENDIX II: QUESTIONNAIRE FOR DISTANCE LEARNERS

This questionnaire consists of questions that will be used to collect data on learner characteristics that influence ICT integration in MMUST distance education programmes. The information acquired will be dealt with confidentially and reserved for academic reasons alone. The learners are expected to tick appropriately as they give the responses.

1. Indicate your gender

Male Female

2. . What is your marital status

Married Widowed

Single Divorced

3. What level is your previous schooling?

Secondary Primary College University

4. Categorize your age;

24 years and below

Between 25-35 years

Between 36-45 years

Between 46-55 years

56 ears and above

5. What age group of the learners is most interested in using ICT for learning

Youth Adults

6. Which group of learners enjoy using ICT most?

Adults

Youth

7. I experience much difficulties when using ICT I experience less difficulties in using ICT I don't experience any difficulties in using ICT

a.) What is the remedy for the above challenge?

Training in ICT

Using hardcopy

Abandoning the whole programme

8. Which age group experiences most difficulties in using ICT?

Youth

Adults

9. Where do you come from?

.....

.....

10. Categorize your geographical location in terms of:-

Urban area

Rural area

11. Which category of learners access ICT with ease from

Urban areas

Rural areas

12. I use ICT for learning I rarely use ICT for learning I don't use ICT for learning

1. I have ICT knowledge/ skills I have no ICT knowledge and skills

2. What is your attitude towards ICT?

Positive Negative

3. If positive how often do you use ICT for learning?

Always Once in a while Most often

13. When did you start using ICT?

Before joining the programme After joining the programme

14. Indicate the gadgets you own

- a) Personal computers
- b) Laptops
- c) Smart phones
- d) DVDS, CDs and others

15. How frequent do you visit the computer library

- a. Daily
- b. At least two times per week
- c. Once per week
- d. Not at all
- e. At least three times per week

16. There is ICT policy in place in the university There isn't an ICT policy in place in the university

17. Lecturers are using electronic devices to instruct Lecturers are not using electronic devices to instruct