ASSESSMENT OF PERCEIVED ATTRIBUTES AND INSTRUCTIONAL USE OF INFORMATION COMMUNICATION TECHNOLOGY BY LECTURERS IN TECHNICAL TRAINING INSTITUTIONS IN KENYA

Peace Byrne Agufana

A thesis submitted in partial fulfillment of the requirements for the award of the degree of Doctor of Philosophy in Curriculum Instruction and Educational Media of Moi University, Eldoret

NOVEBER 2015

DECLARATION

Declaration by the Candidate

This thesis is my original work prepared with no other than indicated sources and support and has not been presented elsewhere for a degree or any other award.

Signature..   Date………………………

Peace Byrne Agufana Ndavula Atsyaya

EDU/D.Phil.CM/40/09

Declaration by University Supervisors

The undersigned certify that they have read and hereby recommend for acceptance of Moi University a thesis entitled: Assessment of Perceived Attributes and Instructional Use of Information Communication Technology by Lecturers in Technical Training institutions in Kenya.

Signature   .... Date ………………………

Professor Chris W. Mukwa

Department of Curriculum Instruction and Educational Media

Moi University-Eldoret

Signature   .... Date ………………………

Professor Jackson K. Too

Department of Curriculum Instruction and Educational Media

Moi University-Eldoret

ABSTRACT

In the past ten years, Information Communication Technology (ICT) has become an essential part of our learning and development in education. Today it is no longer an option to learn the basic skills of ICT but rather a prerequisite for academic qualifications. The rapid development of these new technologies coupled with the worldwide challenge to educate all children has led to a global reform and development of teacher education and motivated educational institutions to redesign and restructure their teaching methods to enable students equip themselves for the future. The main purpose of this study therefore was to explore the relationship between Perceived Attributes and instructional use of ICT by Lecturers in Technical Training institutions in Kenya. The specific objectives of this study were, to establish the relationship between Perceived Attributes (ease of use, usefulness, cultural relevance, and government policy) and instructional use of ICT. The study adopted the quantitative research design. A sample size of 629 respondents was drawn from a total population of 2909 Lecturers in Technical Training institutions in Kenya. The sampling frame was obtained from a list provided by the Ministry of Education Science and Technology 2013. Data was collected using questionnaires. Piloting of the research tools was conducted and the sample obtained was subjected to the Cronbach's alpha. The quantitative data obtained from the administrated questionnaires was analyzed using descriptive statistics and inferential statistics. The study determined that ICT use has created a new platform for instruction. The findings also indicated that use of ICT by lecturers' greatly improved instruction. The study found out that; use of ICT improved ones relationship with others, and was fashionable. The study further found out that ICT policies enhanced use of ICT. The study concludes that perceived attributes are critical in instructional use of ICT. The study recommends that higher education qualifications are to be preferred for lecturers as it enables skilled use of available ICT technology. The study recommends the provision of Cisco Networking Academy Programme to provide more ICT exposure to students and staff. The study recommends that lecturers be encouraged to use ICT to access current and upto date information resources. The study recommends that the government should operationalize, the ICT lecturers competencies framework to enable lecturers have policy direction when planning for competence training. Lecturers are encouraged to use ICT for instructional purposes because it is the trend in modern communication, and has globalized the world. Lastly, the study recommends use of ICT for instruction as it greatly improves the instruction.

DEDICATION

To My parents; Samson Ndavula, and Janet Ingasian for their unending love, and

encouragement

Loving wife Valeria for her outpouring love, care, and support

My kids; Michelle, Brenda, Alvin, and Abby for their understanding

My brothers; Eng. Atsyaya, Dr. Obwavo, Samuel, and Sister; Esther for their

enthusiasm

Uncle; Hezekiah Aganya, and Late Mama Selina Kavai, Cousins; Violet Jemo, and

the late Caleb Olang'u

All of you contributed in a special way to ensure completion of this work

ACKNOWLEDGEMENT

First, I am indebted to Moi University for enrolling me into a Doctor of Philosophy degree programme. I am obliged to also thank my employer the Commission for University Education (CUE) for allowing me time to attend to my University studies. I also register my sincere gratitude to my supervisors Professor Chris W. Mukwa, and Professor Jackson K. Too who patiently guided me through the preparation of this thesis and my colleagues in class for the contribution they made to enable me succeed in my studies.

To Dr, Beatrice Odera-Kwach, Dr. Tom Mboya, Dr. Benard Misigo, Dr, Charles Too, Rose Makandi Kanira, Erastus Musa, Evans Kaleka, Susan Ndiema, Gilbert Opanga, Stella Chebiwott, Samuel Mureu, Martha Mburu, and Hillary Siele, I thank you all for your encouragement and support. To Zachary Waweru, Samuel Andebe, Ndolo Kimeu, and Elizabeth Mbugua, I appreciate the technical support you offered.

To Prof. David Some, the CEO Commission for University Education, Dr, Florah Karimi, the Deputy Commission Secretary-Accreditation, and Dr, Joyce Mutinda, the Head Programme Accreditation department, you went out of your way to allow me to attend to my studies when there was a lot of work to attend to at my desk. To Sarah Ooro, thank you for accepting to handle more workload on my behalf in our department during my study period. To Joseph Musyoki, the Head of Institutional Accreditation department, I appreciate the special support you gave me to ensure I go through with this programme when I felt overwhelmed.

May the Almighty God bless you all abundantly.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATION

AISI	Africa International Society Initiative
CAD	Computer Aided Design
CAI	Computer Assisted Instruction
CAM	Computer Aided Manufacturing
CBI	Computer Based Instruction
CD-ROM	Compact Disk Read Only Memory
CNC	Computer Numerical Control
CUE	Commission for University Education
EFA	Education for All
EMIS	Education Management Information system
ICT	Information Communication Technology
ICT4D	Information Communication Technology for Development
ICTD	Information Communication Technology Development
IITE	International Institute of Technology Education
KENET	Kenya Education Network
MoEST	Ministry of Education Science and Technology
MRTTT	Ministry of Research, Technical Training & Technology
NACOSTI	National Commission for Science, Technology, and Innovation
NEPAD	New Partnership for Africa's Development
OAU	Organization of African Unity
ODL	Open and Distance Learning
OECD	Organization for Economic Cooperation and Development
OLPC	One Laptop per Child
PC	Personal Computer
PEU	Perceived Ease of Use
PPP	Public Private Partnerships

PRSP	Poverty Reduction Strategy Papers
PS	Permanent Secretary
PU	Perceived Usefulness
SITE	Society for Information Technology and Teacher Education
SNS	Social Networking Sites
SRI	Strategic Resources Incorporated
TAM	Technology Acceptance Model
TEL	Technology Enhanced Lessons
TIVET	Technical, Industrial, Vocational Education and Training
UK	United Kingdom
UNESCO	United Nations Education, Science, and Cultural Organization
USAID	United States of America International Development
CISCO	Computer Information Systems Company

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

At the start of the 21ˢᵗ Century, the importance of Information Communication Technology (ICT) in all spheres of life cannot be gainsaid. Computers are involved in many aspects of our day to day lives, especially in the workplace, and this is likely to increase in the future. Therefore, our Technical Training institutions have to ensure that they maximize instructional use of ICT for the benefit of their students.

ICT policies in the East African Community began taking shape in the early years of 2000. Initially, there had been an increase in unregulated use of ICT that prompted the need for governments to offer direction in the use of these technologies. According to Farrell & Isaacs (2007), the first ICT policies were comprehensive for the whole education sector. These ICT policies, nonetheless, were and still are comprehensive and stress access to ICT tools and internet connectivity (Hare, 2007; Farrell, 2007).

According to the Republic of Kenya (2005), the Kenya National ICT policy was adapted in the year 2006. The aim of developing the policy was to improve the livelihoods of Kenyans by ensuring availability of accessible, efficient, reliable, and affordable ICT services. The national ICT policy has several sections, objectives, and strategies regarding ICT in education, which is spelt out in the information technology section. In this section, the objective regarding the use of ICT in schools, colleges, universities, and other educational institutions to improve the quality of teaching and learning are stipulated as documented by Farrell (2007). One important strategy outlined in this report is the promotion and development of specific e-learning resources that would address the educational needs of primary, secondary, and tertiary institutions. A significant step in this direction is the digitization of the curriculum which is ongoing at the Kenya Institute

of Education (Ratemo, 2009). The ICT policy goes on to outline the strategies to be used in the promotion and development of ICT in teaching and learning. Other strategies outlined in The National Information & Communications Technology Strategy for Education and Training (Republic of Kenya, 2006) are to:

- Promote the development of e-learning resources;

- Facilitate public-private partnerships to mobilize resources in order to support e-learning initiatives;

- Promote the development of an integrated e-learning curriculum to support ICT in education;

- Promote distance education and virtual institutions, particularly in higher education and training;

- Promote the establishment of a national ICT Centre of excellence;

- Provide affordable infrastructure to facilitate dissemination of knowledge and skills through e-learning platforms;

- Promote the development of content to address the educational needs of primary, secondary, and tertiary institutions;

- Create awareness of the opportunities offered by ICT as an educational tool to the education sector;

- Facilitate sharing of e-learning resources between institutions;

- Exploit e-learning opportunities to offer Kenyan education programmes for export

- Integrate e-learning resources with other existing resource.

These strategies are interdependent, for example, whereas it was important to develop e-learning resources, it would be meaningless if there was lack of awareness, skilled personnel, facilities, and public-private partnerships to support the e-learning initiatives.

The development of the curriculum and training of teachers both at in-service and pre-service level may be central to the government's efforts of achieving the policy objectives. In an effort to promote the development of content that will address the educational needs of primary, secondary, and tertiary institutions, the government came up with two ways in which the curriculum will be developed (Republic of Kenya (2005), First, by adapting existing educational materials, and distributing them to schools; and second, by starting the process of having schools create their own e-content. Capacity building in Kenya is also recognized as a means that can facilitate creation of instructional material for an increasing digital world as an important aspect of the curriculum that is expected to improve the quality of education.

In the past ten years, ICT has become an essential part of our learning and development in education. Today it is no longer an option to learn the basic skills of ICT but rather a prerequisite for academic qualifications. The rapid development of these new technologies coupled with the worldwide challenge to educate all children has led to a global reform and development of teacher education (Moon 2004a) and motivated educational institutions to redesign and restructure their teaching methods to enable students equip themselves for the future. Whether ICT is the best educational means for all societies is still a current and open debate among educationists and education implementers (Higgins 2004). However, one point they all agree upon is that ICT is rapidly spreading globally and whoever does not equip himself/herself with appropriate technologies and the knowledge required to apply them will lag behind in world development. According to the advocators of ICT use in education the question is no longer 'if' ICT is the best educational means but rather which and how ICT can be effectively implemented in education (Moon 2004b).

According to Auerswald, & Magambo (2006), in their paper titled 'Fostering ICT use in teacher education in Africa', ICT is seen as essential as they have the task of preparing students for their role in modern society. According to Zindi, & Aucoin (2006), only 35% of already trained teachers in secondary schools in Europe, Asia and Africa, have basic skills in ICT, which leaves the remaining 65% of the teaching work force on the three continents still in need of computer skills National governments are globally realizing the need to fill the gap in the teaching force and are seeking new strategies and programmes to enhance the integration of ICT in education.

Global organizations have joined forces with national governments, ministries, and institutions in implementing ICT in different sectors. Institutions of learning are reforming their systems to accommodate new media of learning. Within this framework, Africa is seeking to establish and improve its competence in ICT. In 2002, African states established the NEPAD (New Partnership for African Development) whose objectives strongly focus on the dual strategies of ICT Development (ICTD) and ICT for Development (ICT4D). The World Telecommunication/ICT Development Report (2010), identified a significant role for information and communication technologies in strategies for African development.

Gaible, Edmond, & Burns (2005), stress that Computers and the Internet can benefit all parts of the education system, including student learning, teacher development, school leadership, and management. Teachers may gain benefits from using these tools in the areas of content, instruction, and assessment. Many observers of Instructional use of ICT in technical training institutions in Kenya would agree that ICT is neutral technology and that the use of computers can bring about a change in the education system, it would not be true to say that the education system is driven by computers. Therefore there is a need

to find out how the current system of teaching in technical training institutions can be modified to raise the levels of Instructional use of ICT.

Another reason for increasing instructional use of ICT in schools is that rather than being time-consuming and a hindrance to students' coverage of the curriculum, as alleged by many lecturers who perceived the implementation of ICT as a challenge rather than an opportunity, computers actually facilitate the learning process. According to Kozma (2005) ICT can have an impact on students beyond their knowledge of traditional school subjects.

According to the UNESCO, IITE (2003), Analytical survey on The Use of ICT in Technical and Vocational Education and Training, Information and communication technologies drives the new economy and human capital is its fuel. In fact, ICT revolution makes knowledge a competitive resource. In this economic era, economic prosperity depends on brains rather than brawn and value is created by employing knowledge workers and continuous learning. The need for recurrent education and the changing labour market conditions, call for flexible access to TIVET.

On ICT integration in Technical Training institutions in Kenya, a draft ICT lecturers' competencies framework and e-resource Centre have been developed. Eight (8) technical institutions have started offering Cisco Networking Academy Programmes meant to provide trainees with industry-valued certification in skills to repair and maintain computers. A sensitization workshop and training of teachers on the application of ICT to teaching, learning, and management has also been undertaken. As a way of enhancing greater application of ICT in TVET, the Ministry of Education Science and Technology has developed a strategy for ICT integration in TVET; connected 43 TVET institutions to internet; started e learning in some programmes and integrated digital literacy course in

TVET curricula (Education Sector 2013/2014-2015/2016 Medium Term Expenditure framework, October 2012).

Continuing education models that will meet workers' lifelong learning needs have to be relevant and flexible to provide just-in-time learning without distance. ICT can play a crucial role in removing distance from education and in developing a lifelong learning culture in TIVET. In spite of these potentials, little is known regarding the instructional usage of ICT in Technical Training institutions in Kenya. Therefore, it is against this background that the present study based on to assess perceived attributes and instructional use of ICT in technical training institutions in Kenya.

1.2 Statement of the Research Problem

The institution instructional environment impacts on students learning differently. These critical issues exist in the physical, academic and social dimensions of the institution. Research studies indicate that students are negatively affected by poorly equipped learning environments. This problem requires urgent attention as it affects the quality of instruction.

Prior empirical studies have strived to explicate the determinants and mechanisms of users' adoption decisions on the basis of the Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989; Taylor & Todd, 1995; Venkatesh & Davis, 2000) with the conviction that the adoption process influences successful use of particular technology systems (Karahanna, Straub, & Chervany, 1999; Liao, Palvia, & Chen, 2009).

In East Africa, Zigama (2010) investigated the factors affecting primary school teachers' attitudes towards ICT in education in Rwanda, and found out that primary school teachers on overall had a positive attitude towards ICT in education. Ndawula (2002) also carried out a study on student attitudes on internet use for academic information at Kyambogo

University and found out that those students who had prior computer skills reported higher confidence in internet use than their counterparts without prior skills.

A few studies have been conducted in Kenya on acceptance of instructional use of ICT. Chemwei (2013) while investigating the factors influencing teacher educators' level of Information Technology Integration in teaching in primary teacher training colleges found out that while ICT's are integrated in primary teacher training colleges in Kenya, their level of integration is quite low. Menjo (2012) evaluated the effectiveness of the implementation of ICT in primary teacher training colleges in Kenya, and found out that the application of ICT in these colleges was still low. Wanami (2010) explored the factors influencing integration of computer skills in secondary school curriculum in Kenya, and found out that secondary schools in Kenya had not integrated computers in the curriculum. Wanjala (2010) carried out a study on factors affecting the integration of computers in mathematics instruction in secondary schools in Kenya and found out that teachers' attitudes, self-confidence, perceived usefulness/relevance, accessibility, pedagogical practices and policy formulation were among the determinants to teachers computer technology use.

It is difficult and maybe even impossible to visualize future learning environments that are not supported, in one way or another, by ICT. With the widespread adoption and use of ICT in the world, especially by the young who are at times referred to as the 'digital generation', it is clear that ICT will affect the complete learning process today and in the future.

From the above review, it is evident that little research has been done on perceived attributes and instructional use of ICT in technical training institutions in Kenya. It is against this background that the researcher in this study tries to address this gap by

investigating perceived attributes and instructional use of ICT, with a view of reporting the actual practice by lecturers in technical training institutions in Kenya.

The findings of the study will provide insightful reference for educational policy makers, and would benefit a cross-section of education stakeholders, researchers, and scholars in Kenya. The study would also add knowledge to the area of educational policy, and identify other areas that might require further study.

1.3 Purpose of the study

The purpose of the study was to investigate instructional use of ICT in technical training institutions in Kenya.

1.4 Objectives of the Study

The specific objectives of this study were to:

   i. Establish perceived ease of use of ICT;

   ii. Determine perceived usefulness of ICT;

   iii. Examine the effect of cultural relevance on use of ICT;

   iv. To find role of ICT Trends on use of ICT; and

   v. Assess the role of government policy on use of ICT

1.5 Research Hypotheses

The following research hypotheses were tested in the present study:

H_{01}: There is no significant statistical relationship between perceived ease of use and instructional use of ICT in technical training institutions in Kenya

H_{02}: There is no significant statistical relationship between perceived usefulness and instructional use of ICT in technical institutions training institutions in Kenya

H_{03}: There is no significant statistical relationship between cultural relevance and instructional use of ICT in technical training institutions in Kenya

H_{04}: There is no significant statistical relationship between ICT Trends and instructional use of ICT in technical training institutions in Kenya

H_{05}: There is no significant statistical relationship between government policy and instructional use of ICT in technical training institutions in Kenya

1.6 Significance of the Study

The findings of the study will provide insightful reference for educational policy makers, and would benefit a cross-section of education stakeholders, researchers, and scholars in Kenya. The findings would be relied upon in identifying the major problems hindering instructional use of ICT by lecturers in technical training institutions in Kenya and suggest solutions to these problems. The study would also add knowledge to the area of educational policy, and identify other areas that might require further study. This research would be a source of information for teachers and curriculum developers and shade light on existing practice on instructional use in ICT in Technical Training institutions in Kenya.

1.7 Justification of the Study

The philosophical justification for this study rested on the need to improve the learning experiences in Technical Training institutions in Kenya through instructional use of ICT. This study aimed at enabling instruction become more practical and enjoyable by use of ICT among other techniques used in teaching, this could only be possible if technical training institutions in Kenya make use of ICT for instructional purposes to be in tandem with the ever-changing ICT technologies to benefit instruction.

A final and perhaps most important doubt, concerns the narrowness of the traditional vision of what 'good instruction is and what it is meant to achieve. It can be argued today that good instruction given by the state to its college-going generation can only create impact if appropriate learning resources are used in teaching. The present research

studied the use of ICT in instruction in Technical Training institutions in Kenya. This research is therefore expected to shed light on the position of instructional use of ICT in our Technical Training institutions and show the effect ICT can have in enhancing instruction.

1.8 Scope of the Study

The research investigated the relationship between perceived attributes and instructional use of ICT in technical training institutions in Kenya. The study focused on perceived attributes, which are Ease of Use, Usefulness, Cultural Relevance, ICT trends, and Government Policy that contribute to acceptance and use of ICT in instruction.

Lecturers who teach in Technical Training institutions formed the study population. The questionnaire was the instruments used to collect quantitative data. The study was conducted in the year 2014 in Kenya.

1.9 Limitations of the Study

Firstly, instructional use of ICT is a very recent phenomenon in Kenya and Africa in general. Indeed, instructional use of ICT in Kenya has been effective for less than a decade. To this end, getting localized references and data on this study area was challenging. The limitations of country-specific studies for comparison on instructional use of ICT in Technical Training institutions was addressed through taking into account experiences from other countries where similar studies have been done.

Secondly, there was the limitation of the wide scope of the study which covered the entire country. This was coupled with the hands on nature of the teaching profession of lecturers who were the main respondents. Lecturers are very busy people who have to attend to all lessons allocated to them besides handling other administrative functions assigned to them. The bureaucratic procedures in institutions controlling access to staff

with the advent of the threat on security was also limiting. This limitation was mitigated by finding research assistants who had to get direct access to lecturers.

Thirdly, respondents were asked not to disclose their identities to ensure information could not be tracked back to them. In any case, the information sought did not require release of confidential information. Data was anonymized and normalized before analysis. In spite of these limitations, the findings of the study were relevant.

Finally, the study was hinged on the technology acceptance theory. There could be other theories or conceptual and theoretical frameworks outside the researcher's current scope that could produce other approaches, but the researcher considered these theories to be the most appropriate for this study.

1.10 Assumptions of the Study
The study will be based on the following assumptions:

   i.   The first assumption underpinning this study is that there are a wide range of factors that determine the use of ICT in technical training institutions;

   ii. It will be possible for respondents to report their personal opinion accurately; and

   iii. The study population selected for the study will be operating within the same environmental conditions.

1.11 Theoretical Framework
There are four research models and theories frequently used in technology adoption research. These include Rogers' (2003) Diffusion of Innovations, the Theory of Reasoned Action (Ajzen & Fishbein, 1980), Theory of Planned Behavior, and Technology Acceptance Model (Davis, 1989). The Technology Acceptance Model (TAM) is oftenly

used as the groundwork for more recent technology adoption research and is widely used in models of ICT adoption (Gefen et al., 2000).

TAM is based on the theory of planned behavior (Ajzen, 1991); this theory proposes that users form an intention to adopt based on the perceived usefulness of the technology and the perceived ease of use of the technology. Whereas the Theory of Reasoned Action is more general, the Technology Acceptance Model (TAM) adapted the Theory of Reasoned Action by incorporating technology into their model to predict and explain the usage behavior of computers. TAM has been widely applied, and there are a large number of studies in support of TAM (Venkatesh & Davis, 2000; Gilbert & Kelly, 2005).

Many researchers have conducted empirical studies to examine the explanatory power of the TAM, which produced relatively consistent results on the acceptance behavior of IT end users (Igbaria, Zinatelli, Cragg, & Cavaye, 1997; Venkatesh & Davis, 2000; Horton, Buck, Waterson, & Clegg, 2001). Researchers have agreed that TAM is valid in predicting the individual acceptance of numerous systems (Chin & Todd, 1995; Segars & Grover, 1993). In summary, TAM provided an explanation of the determinants of technology acceptance that enables explanation of user behavior across a wide scope of end-user information technologies and user populations (Davis et al, 1989).

With the ongoing development of ICT and the diversification of the fields it affects, various theoretical studies have been carried out in order to ensure better understanding concerning its diffusion, adoption, acceptance, and usage (Davis, 1989; Taylor & Todd, 1995; Venkatesh & Davis, 2000; Venkatesh, Morris, Davis, & Davis, 2003).

This study employed one major theoretical paradigm; the Technology Acceptance Model (TAM) (Gefen, 2004; Taylor & Todd, 1995; Davis et al., 1989) a model used for predicting and explaining behaviour in a range of contexts (Davis, Bagozzi & Warshaw,

1989). The TAM was derived to apply to any specific domain of human-computer interactions (Davis et al., 1989). The TAM asserts that two salient beliefs-Perceived Usefulness (PU) and Perceived Ease of Use (PEU)-determine technology acceptance and are the key antecedents of behavioral intentions to use information technology.

The TAM model has been used to explain technology acceptance in numerous fields such as education, medicine, agriculture, and information technologies. Hence, the aim of the present study was to study the dimensions of ICT usage by lecturers in technical training institutions in Kenya. In the present study TAM was used to explain the relationship between: Ease of Use, Usefulness, Cultural Relevance, ICT Trends, Government Policy, and Instructional Use of ICT.

1.12 Conceptual Framework

A concept is an abstract or general idea inferred or derived specific instances. A concept is a word or phrase that symbolizes several interrelated ideas. Unlike a theory, a concept does not need to be discussed to be understood (Smyth, 2004). According to Goetz and LeCompte (1984), a conceptual framework increasingly strengthens and keeps the research on track.

Technology acceptance issue has been occupying a central location in the literature concerning educational technology. This is mainly related to growing interest in integrating technology into classroom settings in an attempt to foster learning as well as advancing students' problem solving skills through utilizing technology. As Martin (2000) posits, without teachers' acceptance of technology, it is almost impossible to develop educational technology projects. This is because teachers are both gatekeepers of technology and the most important sources of delivering information in the classrooms.

Davis, Bagozzi & Warshaw (1989) first introduced the TAM as a theoretical extension of the Theory of Reasoned Action (TRA). TRA congregates beliefs, attitudes, norms, intentions, and behaviors of individuals and asserts that these are all linked. According to this model, a person's behavior is determined by his/her behavioral intention of performing it. This intention is itself determined by the person's attitudes and his/her subjective norms towards the behavior (Ajzen & Fishbein, 1980). Perceived usefulness is a belief that if a person uses a certain technology, this will help them increase their job performance. On the similar background, Perceived ease of use refers to both intrinsic and extrinsic motivations towards using technology.

The facilitating conditions for technology acceptance correspond to the type of support that the individuals get with the aim of affecting their use of technology (Venkatesh et al., 2008). Facilitating conditions could be varied in accordance with the settings and type of technology application. As for this study lecturers, ease of use, usefulness, cultural relevance, ICT trends, and policy factors, could be counted as facilitating conditions for instructional use of ICT. Facilitating conditions play an important role on both infusion and adoption of new information systems.

The present study attempted to test a model that predicts the level of instructional use of ICT by lecturers in technical training institutions in Kenya. It sets out to further our understanding about how perceived ease of use and perceived usefulness impact lecturers acceptance level of technology, and also explores the role of Culture, ICT Trends and Policy on adoption and acceptance of technology.

The study was based on the conceptual relationship between the independent variables and the dependent variable. The assumption was that there is significant statistical

relationship between perceived attributes and instructional use of ICT in Technical Training institutions in Kenya.

In this study, TAM model was adapted to explain instructional use of ICT in technical training institutions in Kenya. The dependent variable was Instructional Use of Information Communication Technology. The independent variables were; Perceived Ease of Use, Perceived Usefulness, Cultural Relevance, ICT Trends, and Government Policy. The moderating variables were Age and Education.

The research model used in this study showing the diagrammatic relationship between the independent variables and the dependent variable is shown in the figure 1.1:

Independent Variables   **Moderating Variables**   **Dependent Variable**

Perceived Attributes
 a) Perceived Ease of Use
 b) Perceived Usefulness

Technological Factors
 c) Cultural Relevance
 d) ICT Trends

Instructional Use of Information Communication Technology

Policy Factors
 e) Effect of Government Policy

- Age
- Education
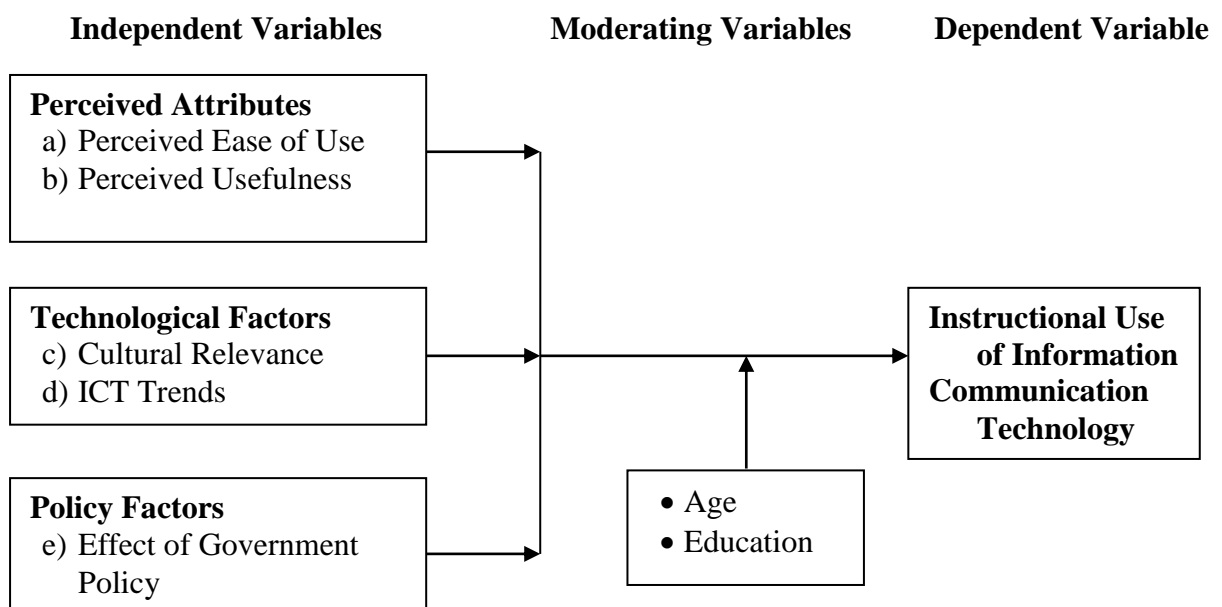
Figure 1. 1: Conceptual Framework
Source: (Adapted from Davis et al., 1989)

1.13 Operational Definition of Key Terms

The following terms defined the use of variables in this study:

Cultural Relevance: These are demonstrations that the evaluation methods used are appropriate for the cultures to which they are applied

Government Policy: The term 'government policy' can be used to describe any course of action which intends to change a certain situation. Think of policies as a starting point for government to take a course of action that makes a real life change

ICT Trends: This is the general direction in which ICT use is developing or changing

Information Communication Technology: The term ICT is plural, referring to a great many technologies and it is an all-encompassing term that includes the full gamut of electronic tools by means of which we gather, record and store information, and by means of which we exchange and distribute information to others (Source: UNESCO, 2010)

Perceived Ease of Use: Is the degree to which an individual believes that using a particular system would be free of effort (Source: Davis et al: 1989)

Perceived Usefulness: Is the degree to which an individual believes a particular system would enhance job performance within an organizational context (Source: Davis et al, 1989)

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature related to the study. Literature was reviewed with the aim of identifying and evaluating opinions, knowledge and attitudes from various studies about instructional use of ICT. The materials that were reviewed in this section gave insight into existing research gaps on instructional use of ICT as well as placed the research in a historical and educational context.

2.2 Instructional Use of ICT

It is apparent that ICT cannot be ignored any longer in the education sector. ICT has become indispensable in today's information age, making a dramatic impact on the lives of people globally. This effect is most significant in education. The computer has become a motivating tool for teaching and learning in schools (Mossom 1986; World Bank 1999). These authors seem to have assumed that instructional use of ICT in education systems of developed countries is the same all over the world. However, the situation in educational institutions in Kenya, including schools and technical training institutions, is one of relatively inadequate ICT resource use, as a consequence of poor ICT infrastructure, and low levels of computer literacy. Therefore, this study intends to address these issues in the interest of improving instructional use of ICT in technical training institutions.

Researchers have produced varied results on the effect of bio-data of teachers on use of ICT. Roza (1994), found no difference in attitude towards computers between male and female teachers, even when male teachers had greater computer literacy scores and experience with computers than female teachers.

Blankenship (1998) found that age was the most important demographic variable affecting computer use and attitude. On the other hand, Zigama (2010) found out that age

was not a very important demographic variable affecting computer use and attitude among primary school teachers. Professional qualification is among the variables that are most studied teacher quality variables (Welington, 2002; McCaffey, 2003; Stodolsky, 1996).

The incorporation of Information Communication Technology (ICT) into the educational curriculum has been identified as a key step in bridging the digital divide (Lombo, 1998). The long-term benefits of instructional use of ICT include greater computer literacy and economic growth, but the implementation must be done in a systematic and coherent manner, otherwise the prospective benefits could be jeopardized.

Wims (2007) posits that, there are several ways in which ICT can contribute to solving education problems in Developing Countries; some of the most pertinent of these problems include:

- Shortage of qualified teachers: GeSCI (2004) estimated that as many as 25% of teachers in sub-Sahara Africa are not adequately qualified; ICT can accelerate teacher training and the Imfundo Report (Unwin, 2004) concluded that ICT in education has most potential in pre - and in - service teacher training;

- Low learning achievement: Introducing ICT can help to counter some of the negative factors endemic in many schools in Developing Countries, such as high pupil: teacher ratios, shortage of basic instructional materials and poor physical infrastructure. Research on the Digital Education Enhancement Project in the Eastern Cape of South Africa (Leach, 2003) found that ICT had a positive impact on pupil achievement and classroom practice;

- High drop-out rates: ICT can be used to make the school curriculum more interesting. Studies have verified that children enjoy learning using technology

(Hepp et al., 2004; Osin, 1998). This motivation may deter children from dropping out of school; Gómez & Martinez (2001) described how using the internet in education programmes which is one of the ICT factor for street children in Colombia enticed a higher than usual number back to learning.

- Lack of opportunities in remote areas: Distance learning can help to overcome the problems associated with geographical isolation and is invaluable for students in remote areas. Distance learning educational software also benefits from economies of scale increasing cost efficiencies. Recruiting teachers for the more remote regions is often difficult in Developing Countries; ICT serves to counteract physical distance as teachers can maintain contact with family and friends through telephone and e-mail; and

- Lack of study material and resources: Study and teaching materials are very sparse in many schools in Developing Countries; ICT can play a significant role in providing teachers and students with access to educational content and up to date resources.

These issues lead towards the conclusion that education is one of the most important elements for achieving development success, and that ICT can contribute towards enhancing education. This relationship was succinctly summarized by Annan (2001) when he concluded that, while education unlocks the door to development, increasingly it is information communication technologies that can unlock the door to education.

The Republic of Kenya (2004a), sees education as the natural platform for equipping their nation with ICT skills in order to create a dynamic and sustainable economic growth Makau (1990), posits that apart from the traditional use of ICT in education, it is regarded as a vehicle for improving existing school curricula and school management processes. The Republic of Kenya (2004a) holds that the use of ICT in education and training

institutions will play a major role in disseminating skills to the wider society and thus create positive impacts in the economy

Neuman (1997) suggested that the advent of the computer has revolutionized learning related to accessing, evaluating, and using information resources in a digital library environment today in educational institutions. However, he did not take into account the fact that some educational institutions, particularly in the developing world, may not have up-to-date ICT hardware which may hinder them from utilizing ICT to the extent that they would wish. It is a general rule of thumb that the older ICT infrastructure is, the slower its speed of data retrieval. Since many of the ICT infrastructure donated to technical training institutions is old, the combination of second hand ICT infrastructure and an under-developed communication network are likely to hinder the maximization of Instructional use of ICT by technical training institutions. This is a one of the gaps that the present study investigated in relation to instructional use of ICT.

Information is exchanged at an exponential rate. Campbell (1996) is of the opinion that students need a new electrographic literacy to assimilate, digest, absorb, and express the huge quantities of information that are now available through the emerging electronic technologies. In technical training institutions in Kenya, this is being addressed in the Republic of Kenya (2006), National Information and Communication Technology Strategy for Education and Training. Therefore, the present study finds out if this strategy is benefiting instructional use of ICT.

Modern trends in micro-processors and semi-conductors have enabled the processing and storage of enormous amounts of data while integration of fiber-optics and fast Ethernet technology in networks has facilitated rapid distribution of information through communication networks (UNESCO, 2002). Technical training institutions can take

advantage of new technology to improve their connectivity to the internet, and use it to interact and share information with other institutions, which will boost their knowledge base, and increase their use of ICT. Since Technical Training institutions have internet connectivity which is funded by the government the present study seeks to find out if connectivity aids instructional use of ICT.

According to Ndlovu & Lawrence (2012), communicative tools are systems used for the teacher-learner or learner-learner interaction outside the classroom. Information and communication technology (ICT) can be used for communication to enhance instruction through; emails, chat, teleconferencing and electronic whiteboards. Such tools can be used to develop and negotiate meaning in a given context. Asynchronous participation for instance gives the writer time to think about his or her understanding and uses others' feedback to view it in different perspectives so as to facilitate formulation of a well-rounded knowledge. In Kenya, ICT can provide the platform for doing the above and should be taken as a very important technology in enhancing instruction in technical training institutions, and this is one of the factors investigated in this study.

While many authors have discussed the convergence of hardware, which enables diverse devices to communicate with each other, there is a corresponding convergence of information, with individuals and institutions all over the world sharing information. Carbo (1997) states that an information literate person must recognize the need for information, know how to access it, understand how to evaluate it, how to synthesize it, and be able to communicate it. Therefore, this study evaluates if lecturers have the requisite skills to reap the full benefits of this pooling of information, which they can use for instructional purposes.

According to Anderson & Weert (2002), tools such as community networks, social book-marking, wikis and blogs, podcasting, digital story-telling, project based learning initiatives, video blogging and other new technologies, are enable people to be producers of information'. The study on 'Teachers' tools for the 21st century (2000) found out, an unquestioning and over-use of tool in reference to digital technologies and ICT. Consequently, the ICT has reached unprecedented levels from the end to the 20th century and is even gaining more ground as more ICT tools and applications are being invented. The current study therefore investigated whether lecturers use ICT to give instruction.

ICT integration in instruction involves applying computer and internet technology to enhance the quality of teaching and learning as the end goal of ICT in education interventions. In fact, the deployment of equipment and the development of foundation skills is a means towards ICT integration in instruction. Using ICT to achieve learning objectives can happen at various levels. At the simplest level it allows for storage and display of information, ICT also foster exploration of materials and ideas. Lecturers should therefore embrace ICT and maximize its use for storing and retrieving information for instructional use. This is one of the factors investigated in this study.

The ICT Capacities and Capabilities in Secondary Schools in Kenya report (2009/2010), notes that students, teachers and administrators can use computers in a wide variety of ways. They can use ICT as a tool by the classroom teacher for course preparation, student and resource management, and record keeping as well as by the school administration for many of the tasks which are required in the running of a school. This can also be beneficial to technical training institutions as lecturers can develop programmes that can assist them in keeping student records including storing of marks, administrators can also use programmes that can keep student financial, progression and discipline records.

Administrators could also use the same to keep quality assurance, and performance contract records for their staff. Lecturer's use of ICT for administrative purposes was also investigated.

Luermann, & Peckham (1983), contend that computers are now essential tools for handling office information. Letters are typed on a word-processing system, memos are entered directly into a computer message system, and the person getting the memo can read it immediately on the computer screen in her or his office. In Kenya, ICT use can increase communication between lecturers, administrators, and other members of staff, and between lecturers and their students. The present study sought to investigate if communication through ICT benefits instruction.

According to the Internet World Stats (2014), Africa's population estimate as a whole, has a total of 1,125,724,559-population estimate in 2014. Internet users as at December 31 2012 on the continent were 167,385,751, a 15.6% penetration rate; it also had 51,612,460 Facebook subscribers as at December 31 2012, a 4.8% penetration rate. Kenya on the other hand has a population estimate of 45,010,056 as at year 2014, of these there were 21,273,738 Internet users as of December 31 2013, 47.3% of the population per the Communication Commission of Kenya (CCK), with a further 2,045,900 Facebook users as at December 31 2012, a penetration rate of 4.8%.

This data shows that many Kenyans are using the internet despite Kenya being a third world country. Since internet connectivity is an area of convergence of information resources, the present study sought to find out whether lecturers use ICT to benefit instruction through accessing relevant and current library resources, for instructional communication and research, were utilizing it.

The Republic of Kenya (2010) ICT Board conducted a research to help organizations understand how people in Kenya use the internet. The research found out that out of a sample of 1421 internet users who had visited a social networking site 56% contributed to a discussion. The above statistics point to the fact that social networking can contribute to non-institutionalized academic participation. The study therefore sought to find out if social networking is utilized for instructional communication.

2.3 Perceived Attributes

2.3.1 Ease of Use of ICT

Lundall & Howell (2000), found that the biggest problem with utilizing ICT in institutions was the lack of available staff trained to use computers, and that this was exacerbated by other problems, such as institutions' priorities for the use of computers, which are often to use them for management, administration and user support, while ignoring the role of the teacher. Furthermore, obsolete equipment and limited classrooms for ICT use are also hindrances to ICT use, and finally, cost of internet access is the most important factor limiting communication use of ICT.

As the SRI (2001) reported, despite the significant progress in instructional use of ICT, particular barriers persist. For example, in the nations of both Latin America and Africa, instructors reported that the lack of computers, inadequate hardware/software, unreliable internet access, and the scarcity of time constituted the major barriers keeping them from using computers in their teaching. A smaller number of instructors in selected countries also indicated a need for more technical support in integrating ICT into the curriculum and stronger national policies on the role of technology in student learning. This shows that while some instructors are aware of the potential benefits of ICT both in and out of the classroom, they are not able to enjoy the benefits of using ICT to enhance instruction.

Todd (1997) recommends that a sound understanding of computers and information technology with a pedagogy centering on developing students' knowledge and skills is required. However, this sound understanding is hampered by the slow speeds of data retrieval caused, in part, by low bandwidth. Nevertheless, Todd's (ibid) recommendation is to manage, process, and utilize the enormous variety, quantity, and variable quality of information that ICT provides. In Kenya, the fiber optic has brought a revolution in this area as it has eased access to internet in fast speeds. Lecturers in Technical Training institutions should utilize this for instructional purposes.

Tearle (2003) posits that integration of ICT in education is a slow process and observations bring to light a certain path or steps which are taken in the process. Researchers emphasize the notion of change as a staged process. In the first place, often investments are made in technology and skills training and ICT is seen as an object of education. ICT as object of education refers to learning *about* ICT and the acquisition of ICT skills: teachers and learners have to know how to work with the medium, the technology and therefore have to acquire the necessary skills to become ICT literate. The present study assessed if lecturers possessed the skills to manipulate and use ICT.

A study conducted by Doering, Hughes, & Huffman (2003), analyzed pre-service teachers' perspectives regarding ICT in their future classrooms before and after participation in a teacher preparation program. Prior to taking the preparation courses, teachers were doubtful about the utility of ICT in the classroom, implying that they would closely examine and consider technology integration, rather than blindly incorporate it into their teaching practices. After completing the courses, their doubt had transformed into positive perception on ICT use. The teachers had a better understanding about ICT use in the classroom. Although the teachers confronted other issues such as

technology availability, accessibility, professional support, and classroom management, their perceptions about technology's role had changed. They were more likely to believe that technology can assist in learning and to recognize its importance. The current study sought to find out whether induction of lecturers is one of the possible approaches that adopted by Technical Training institution to ensure lecturers demystify use of ICT and adapt it to classroom instruction.

According to Yusuf (2005), the field of education has been affected by ICT, which has undoubtedly affected teaching, learning, and research. Al-Ansari (2005) contends that a great deal of research has proven the great benefit ICT has on the quality of education. According to Davies & Tearle (1999), Lemke & Coughin (1998), ICT has the potential to accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices, create economic viability for tomorrow's worker, as well as strengthening teaching and helping schools change. Some educational institutions in Kenya, have subscribed to e-resources consortiums e.g., KLISC and KENET that have boosted access to educational resources. Some institutions have also gone ahead to start offering e-learning increasing access to education through instructional use of ICT. Kenyatta University a chartered public university in Kenya can be a reference point in regard to embracing e-learning as it offers virtual learning to ODEL students.

Where computers are set aside in a laboratory, for use on only special occasions, they remain objects of curiosity, fear, uncertainty, awe, or mystery, rather than being seen as the useful, enabling tools that they are. According to SITE (2002), the first principle on the use of ICT in teacher training, is to infuse technology into the entire teacher education program. Throughout their teacher education experience, students should learn about, learn with, and learn to incorporate technology into their own teaching. Restricting

technology experiences to a single course, or to a single area of teacher education, such as the methods courses, will not prepare students to be technology-using teachers. Most technical training institutes in Kenya are yet to expose majority of their students to use of ICT resources due to lack of adequate ICT infrastructure in their institutions. The current study sought to find out if lecturers used this to benefit instruction.

According to Pelgrum (2001), many school leaders still perceive the lack of ICT-related knowledge of teachers as a major obstacle to the realization of their ICT-related goals. The literature describes the kind of skills teachers may need when integrating ICT in new student-centred learning approaches. However, identifying which competencies each teacher needs to acquire is far from simple, as this depends very much on the circumstances of their particular school. According to Davis, Preston, & Sahin (2009), personal teaching styles also play a major role and, 'one size fits all' approach does not usually work. Therefore, the need to recognize that substantial learning can take place while teaching, and even learning, from students this can easily be achieved through use of ICT.

2.3.2 Usefulness of ICT

For lecturers in technical training institutions to appreciate the usefulness of ICT in instruction, teacher training should not just encompass ICT skills but rather a full understanding and complete mastery of ICT as pedagogical tools. Fisher et.al (2006), in a recent Future lab review of research on teacher education distinguished two different views on how to develop teacher training on digital technologies: retooling versus renaissance. The first instrumental model (retooling) consists of digitalizing analogue processes in the same way you would retool an industrial production line. This is seen as limited since it only attempts to capture, copy, and disseminate elements of 'good practice' out of the context in which they were developed. It may appear to meet short-

term needs, but does little to develop reflexive professionals capable of intelligent action in fast-changing contexts. The renaissance model, on the other hand, is a more comprehensive account of teacher development, as this is based on the strong involvement and empowerment of teachers to effect change. This second approach is the one that can to enable lecturers accept and adopt instructional use of ICT.

Ibid (2006) acknowledge that, there is a big challenge that is identified by many authors which is to make sure that the technologies resonate strongly with teachers' sense of professional and moral purpose so that they can employ digital technologies fully - that is, for understanding, reflection, ingenuity and creativity, and through these, support their own learning in new ways. At the moment, there is very little fundamental research that investigates how teachers might learn with digital technologies. According to ibid (2006), such research is needed, but it must be seen in the light of a holistic approach since many studies have indicated that the broader canvas of globalization and the information economy influence, both directly and indirectly, how education and the work of teachers is changing. This kind of research has not been conducted in Kenya in regard to lecturer's use of ICT in instruction which this study examined.

Hawkridge (1990), when considering the relevance of computers in education systems, is of the opinion that computers have become catalysts for teaching, helping students to be less dependent on instructors and enhancing collaborative learning. Although the relative independence of students is a good thing, it has to be evaluated in the context of the education system itself. In a system which encourages students to find information and develop knowledge on their own, the structures of computer based education will be beneficial to the students, not only in the classroom but in later life as well. Learning experiences of students in our Technical training institutions should adopt this mode of

study. This will enable lecturers do research as they will have time to do so and in the process enable our teachers cover more workload. This gap was examined in the present study.

Imel (1998) identified four different applications of ICT in adult education, namely: technology as curriculum, technology as a delivery mechanism, technology as a complement to instruction, and technology as an instructional tool. Following is a brief description of each approach.

When using technology as curriculum the focus is on developing ICT literacy skills. Kasworm & Londoner (2000), posit that, there are two types of ICT literacy skill sets. The first is generic ICT literacy skills such as keyboarding, word-processing, using databases, using spreadsheets, desktop publishing and using the Internet for research and communication In this networked society, every graduate from technical training institution needs to possess these essential ICT literacy skills which will enable them have basic skills to improve their learning. By doing this, students will conduct further research through ICT and access more learning materials to complement and on the learning materials, they receive from their lecturers to improve their study. The present study investigated this gap with regard to lecturers in Technical Training institutions in Kenya.

The second ICT skill sets are the occupationally specific ICT literacy skills. Examples of these skills include the ability to use CNC equipment, work with CAD/CAM, and operate equipment with digital system controls. These are among the skills that Technical Training institution graduates in Kenya are expected to acquire and hence their lecturers need to embrace ICT in instruction to enable their students have hands on experience during instruction, and this is what the present study investigated.

When technology is used as a delivery mechanism the focus is on packaging course content for digital delivery. Common approaches in current use include Computer-Assisted Instruction (CAI), Computer-Based Instruction (CBI), and web-based or online instruction. Open and Distance Learning programmes (ODL) make extensive use of technology as their delivery mechanism. The present study investigated if lecturers in our Technical Training institutions used the first two approaches.

According to ibid (2000), when technology is used to complement instruction, the emphasis is on providing opportunities to practice skills taught and extending learning by working with specific software applications. In its simplest form, technology can be used for drill and practice to complement instruction. The present study investigated if lecturers have adapted this approach in instruction in our technical training institutions.

Kupsh & Mason (1985), posit that people learn through the five senses and the contribution of each to the amount that we learn varies. Following is the estimated amount of learning from the five senses Taste – One (1) %, Touch – One and a half (1.5) %, Smell – Three and a half (3.5) %, Hearing - 11% and Seeing - 83%. The present study sought to find out if lecturers practice the last approach in instructing as our lecturers can achieve it through using varying methods of presentations during instruction, with the aid of ICT.

Internal variables greatly influence how teachers integrate technology in the classroom. Palak & Walls (2009) conducted a mixed study to investigate whether teachers who frequently integrate technology and work at technology-rich schools shift their beliefs and practices toward a student-centered paradigm. The results showed that their practices did not change; neither student-centered nor teacher-centered beliefs are powerful predictors of practices. However, teachers' attitudes toward technology significantly

predict teacher and student technology use, as well as the use of a variety of instructional strategies ($p < 0.05$). The present study also interrogated this aspect in relation to lecturers in our Technical Training institutions.

Sang et al. (2010) focused on the impact of Chinese student teachers' gender, constructivist teaching beliefs, teaching self-efficacy, computer self-efficacy, and computer attitudes on their prospective ICT use. The findings confirmed the results of the study by Palak & Walls (2009) that the strongest predictor of future ICT use were teachers' attitudes toward it. The current study investigated this aspect with regard to lecturers in our Technical Training institutions.

Sang et al. (2010) further indicate that pre-service teachers with highly constructivist teaching beliefs have stronger intentions to integrate technology into their future teaching practices. Furthermore, confident pre-service teachers were more capable of and interested in using computers in real classrooms. Thus, although teachers' attitudes towards ICT use were found to be the strongest predictor of technology integration, the impact of their beliefs and confidence in using ICT should not be disregarded either.

In Kenya, ICT can be used in Technical Training institutions to enhance the achievement of learning outcomes, such as managing student learning and assessment, researching professional development opportunities and preparing lessons. ICT can also help visually present information as well as demonstrate a concept, idea, phenomenon, law, or theory. ICT such as computer simulations and animations help explain abstract reality. Lecturers can also use the internet to collaborate on projects with other teachers in other institutions in the country or elsewhere, or even with scientists in the field. The present study examined if lecturers in Technical Training institutions have explored this kind of use of ICT in instruction.

According to Zulu (1994), ICT has a qualitative edge over the human muscle as it leverages the brainpower. If a student is consciously pursuing information on the Internet or on CD-ROMs, they gain a greater understanding of certain questions, issues, or concepts. ICT allow learners to apply a concept or understanding to a new situation; to analyze ideas by organizing them and manipulating them; and to learn how to evaluate and problem solve. Republic of Kenya (2005), points out that, at the highest level, ICT is used to foster the design or construction of integrating projects, whereby students must explore wide range of ideas and resources, analyze and evaluate them, and synthesize them in a project. Lecturers can utilize ICT to enrich the multimedia environment to support the learning process.

According to Todd (1997), computers which are part of ICT infrastructure are immensely powerful educational tools. Their ability to enable interactivity in a multimedia (sound and vision) environment, to connect people in different places, and to store vast amounts of information in a small space can completely transform educational practices Nevertheless, instructors must be wary of giving their students too much information, not all of which may be relevant. Instructors often complain of not having enough time to complete the syllabus. Lecturers can take advantage of ICT use to do more workload.

Bringing ICT into the classroom can have a considerable impact on the practice of lecturers, in particular when ICT is conceptualized as a tool that supports a real change in the pedagogical approach. Not only do the lecturers need to change their roles and class organization, they also need to invest energy in themselves and their students in preparing, introducing and managing new learning arrangements. Some need to acquire basic ICT skills. Lecturers need to determine which applications have benefit for learning in their subject area. While doing this they need to be aware that this is not a one-time

activity, as the information environment is continuously changing. Perhaps most important and challenging for lecturers is determining which basic subject, social and management skills students need to function in such environments. The change can impact on assessment tasks, with new learning environments moving away from summative methods of assessment to formative approaches and open-ended products (such as reports and research papers created by groups of students). These different aspects are time consuming, and result in an increased teacher workload. However, lecturers and students can save time when ICT is used in doing research and in preparation of class presentations.

According to Hawkridge (1990), computers as pedagogical tools in Computer Assisted Learning (CAL), or Computer Assisted Instruction (CAI), offer advantages over other methods of teaching and have revolutionized education in advanced countries. Tinsley & van Weert (1995) concur with Hawkridge (1990) that computers are useful tools for pupils' drill and practice, tutorial activities, guided discovery learning, building intellectual structures, data retrieval and data manipulation. Although the value of computers in education is not in dispute, it must be recalled that students in Kenya, at all levels of education, are accustomed to the teacher-centred, 'chalk-and-talk' system of learning. This is radically different from Computer Assisted Learning, which is more interactive, and where students are expected to actively participate in the process of seeking out new knowledge and that should be the direction that lecturers in technical training institutions should take to make learning interesting to their students.

The resource-based method of teaching, which is a hallmark of Computer Assisted Learning, defines the position of a teacher as a facilitator in the learning process, rather than a source of knowledge (Karaliotas, 1997). Therefore, the implementation of ICT in

education systems should be well thought out as it requires a paradigm shift from the current way of doing things.

2.4 Technological Factors

2.4.1 Cultural Relevance of ICT

For the term culture, many possible definitions exist. One way of describing it would be as the distinct set of behaviors, habits, rules, traditions, customs, attitudes, values, and beliefs of an individual or a group of individuals. This definition can also include language, history, religion, ideology, cosmology, art, and one's overall way of life. An element of culture that is not so visible at first sight, but only unfold after some time of interaction, is sometimes referred to as 'deep culture'. Therefore, within a society, the worldviews embodied in the society's culture is expressed through laws, political policies, and social norms.

According to Maslowski (2001), school culture encompasses the vision, plans, norms, and values that are shared by school members. Focusing on the importance of school culture for ICT integration, Pelgrum & Law (2009) indicated that effective ICT integration depends on the perceptions and vision of school leaders rather than teachers' ICT skills. Chai, Hong, & Teo (2009), posit that school culture has a mediating role that influences teachers' actions, beliefs, and attitudes. Tezci (2011b), in addition to the external and internal variables mentioned previously, school culture also plays an important role in successful technology integration. The present study investigated if culture affects ICT use in instruction.

Ward & Parr (2010) state that teachers need to feel confident in their ability to facilitate student learning with technology in order to integrate technology into their classrooms. To achieve this goal, more professional development is required with a focus on

increasing lecturers' skills so that they are able to overcome apprehensions associated with using technology. There is need for new teaching approaches and technical support to allow lecturers retain control while facilitating learning with ICT. According to Ertmer & Otternbreit-Leftwich (2010), implementing effective teaching with technology integration requires changes in teachers' knowledge, beliefs, and school culture.

Many researchers have cautioned about the current lack of attention to cultural beliefs and their impact on ICT adoption in developing countries (Loch, et.al., 2003; Hill et.al., 1998). Researchers suggest that force - fitting the culture to technology can create an unfavorable climate for the acceptance of ICT in different organizations in the importing country. In fact, Hill et.al. (1998) asserts that, unless taken into consideration, socio - cultural factors may put ICT transfer at risk in certain developing countries. In the field of education, it has been noticed that teachers' reactions to technological innovations are mediated by their cultural perceptions (Watson, 1998; Harper, 1987). Cultural perceptions 'embody group understanding based on common beliefs and values' (Jones & Maloy, 1996). According to Hofstede (1997), with regard to use of ICT, lecturers are influenced by not only national norms and values but school regularities and practices as well. The present study investigated if this aspect is true to lecturers in Technical Training institutions in Kenya.

A number of studies have shown that cultural perceptions toward different computer-related technologies are key factors related to both the initial acceptance of these technologies as well as future behavior regarding their usage (Al-Oteawi 2002; Chen, et. al., 1999; Loch, et. al., 2003; Straub, Keil & Brenner, 1997; Hill, Loch, Straub, & El-Sheshai, 1998). Studying teachers' cultural perceptions is particularly important in developing countries where ICT is not usually part of the culture. Due to its novel

presence in society at large and in schools in particular, ICT may not be well received by developing-country teachers under various cultural influences. Lecturers should therefore be encouraged to take advantage of the prevailing cultural acceptance to infuse ICT technologies in instruction.

Martinez (1999) suggests that one of the major challenges facing developing countries is to make technology an essential part of the culture of the people. Roblyer, Dozier-Henry & Burnette (1996) posit that, the reverence with which technology is held in technologically developed countries may be in contradiction to the perceptions of cultures that are relationship-oriented which is an aspect investigated in the present study.

Harper (1987) contends that cultural factors play an important role in creating negative perceptions toward computers: One direct cultural cause is people's cultural perceptions apprehension that life is becoming too mechanized, so they resist contributing to a 'computer culture.' Another cause is the concern that there are other social problems that need to be solved before computer-education is addressed. Intellectuals from different developing nations have been aware of the difficulty involved in accommodating 'the computer culture' within their home cultures. For example, Modum (1998), noting Nigerians' cultural conservatism toward computers, urges his people to 'imbibe the values of the computer as a tool that can be used by all for problem solving, no matter their profession'. This was investigated in the present study with a view of reporting on the actual situation in regard to the relationship between culture and instructional use of ICT.

Similarly, Dewachi (2001) notes that 'cultural impediments' are responsible for the Arab States' slow launch into the new information and communication age and their inadequate exploitation of the Internet. Obviously, the change initiated through the

diffusion of technological innovations is a complex process characterized by many obstacles, regressions and cultural challenges (Benzie, 1995). Rather than being transposed through ready-made models, change often evolves as a response to societal needs originating from the inside culture. Therefore lecturers should impress upon their students the idea that knowledge about ICT use earns one respect as ICT makes one more knowledgeable through accessing a lot of information which is also current.

According to the World Youth Report (2003), young people today live in a world characterized by dramatic cultural, economic, social, and educational differences; individual circumstances depend largely on where a person is born and raised. More than 800 million adults (two-thirds of them women) still lack basic literacy skills; at the other end of the spectrum, the use of information and communication technologies (ICT) is skyrocketing. Notwithstanding the immense diversity in living environments, an unprecedented and unifying global media culture has developed that challenges and often surpasses such traditional forms of socialization as family and school.

This complex cultural situation, in which young people are struggling to find direction in their lives or simply to survive, to improve their living conditions, and to develop their identities - has been given various names. Some call it the information or informational age, while others prefer the term techno-culture or techno-capitalism, global media culture, or simply globalization, referring to the dialectic process in which the global and the local exist as combined and mutually implicating principles. Labels such as post-industrial, virtual and cyber society are also in use. The idea behind all these terms is that across the globe, ICT is playing a central role in young people's lives and in society at large.

Learners in our institutions should be taught to uphold their cultural values and traditions and use ICT for educational purposes, they can even prepare documentaries on their cultures and post them on the web for other people to learn and appreciate their culture. They can also learn about other peoples' culture through the internet for purposes of creating a global village in which we indeed currently live in.

Stromquist (2011) says that those who are familiar with the internet assure us that the most important property of cyberspace is its ability to promote social interaction, and that such environments generate a peer-based knowledge economy in which like-minded students gather, and interact with friends over issues of common interest. In such an environment, peers share knowledge and expertise. These peer-to-peer exchanges enable individuals to know more about phenomena, which in turn make them more recognized and sought out by peers who seek to share in that knowledge. This is an aspect investigated by the present study.

According to Ndavula, & Mberia (2012), when commenting on the effect of internet on culture say that Social Networking Sites (SNS) are bringing in a sense of community that we had experienced before independence and therefore SNS have a great potential for changing the way we do politics. Today, the society in Kenya still enjoys a vibrant associational life which finds fulfillment in social media. These associations clustering around friendships, family, relatives, alumni associations, localities, counties, ethnic identity, churches, interest groups, media stations both in urban and rural settings have the capability of increasing non-institutionalized instructional participation.

Al-Oteawi (2002) found that teachers refrain from using the internet in the classroom for fear of the ethically inappropriate material on the internet. He particularly pointed to the teachers' reluctance to endorse the internet for teaching and learning 'because of

concerns about the evil aspects of the internet'. The present study investigated the importance of the internet in learning. Lecturers in our Technical Training institutions should insist on constructive use of the internet to enhance instruction. Chen, et.al, (1999), in a study carried out in Singapore, urged for a consideration of cultural factors in computer-based learning environments. This should be the case in our technical training institutions.

2.4.2 ICT Trends

The digital generation is making use of weblogs, social networking sites, podcasting, and other bottom-up ICT tools outside the formal learning environments. As the number of these informal and non-formal learning experiences on-line rises dramatically, more attention should be paid to these ICT trends, as these experiences are often as valuable as formal ones in terms of skills development and knowledge building and sharing (Aceto, et al., 2006).

ICT is composed of many different tools that enable capturing, interpreting, storing, and transmitting information in a fast and easy way. This large number of ICT tools makes our life easier and they are very helpful in organizing the big amount of information that we receive each day. We know that we do not use all of them everyday but also we know that students are in continuous contact with them and we cannot ignore this fact. For this reason, the changing role of lecturers is an essential issue. There is a need to move from a 'push educator' to a 'pull educator'. The first one fills the heads of their students with content without causing any activity or desire in them in order to deepen the knowledge and the potential of the resources around them. The second one awakes in students the motivation to learn and will help them seek meaningful information that generates knowledge. This is what we expect lecturers in our technical training institutions to embrace.

According to Anderson & Weert (2002), a good starting point is to join with fellow enthusiasts at the school, to meet together informally to talk about ICT issues and share knowledge. A process where two or more teaching colleagues work together to discuss problems, share experiences, and provide support for one another with a view to improving their teaching is often called peer coaching.

It is worth noting that good use of online learning resources stimulates active learning in the classroom, it ends up motivating students to continue learning beyond the institutions formal learning spaces. Such online learning, then, in combination with sound face-to-face teaching is an influential approach to learning. Both students and lecturers can take advantage of these ways of learning and communication to enhance their knowledge base.

Laudon & Laudon (2010), state that the most important drive behind globalization has been the explosion in Information Communication Technology (ICT) sectors. For these authors the main ICT´s characteristic are:

- *Mobile learning***:** New advances in hardware and software are making mobile "smart phones" indispensible tools;
- *Cloud computing***:** The implications of this trend for education systems are huge; they will make cheaper information appliances available which do not require the processing power or size of the PC;
- *One-to-One computing***:** The trend in classrooms around the world is to provide an information appliance to every learner and create learning environments that assume universal access to the technology;
- *Ubiquitous learning***:** School systems around the world are developing the ability to provide learning opportunities to students 'anytime, anywhere';

- *Gaming:* The phenomenal success of games with a focus on active participation, built in incentives and interaction suggests that current educational methods are not falling short and that educational games could more effectively attract the interest and attention of learners;

- *Personalized learning***:** Education systems are increasingly investigating the use of technology to better understand a student's knowledge base from prior learning and to tailor teaching to both address learning gaps as well as learning styles;

- *Redefinition of learning spaces***:** Schools around the world are re-thinking the most appropriate learning environments to foster collaborative, cross-disciplinary, students centered learning;

- *Teacher-generated open content:* OECD school systems are increasingly empowering teachers and networks of teachers to both identify and create the learning resources that they find most effective in the classroom. Many online texts allow teachers to edit, add to, or otherwise customize material for their own purposes, so that their students receive a tailored copy that exactly suits the style and pace of the course;

- *Smart portfolio assessment***:** The collection, management, sorting, and retrieving of data related to learning will help teachers to better understand learning gaps and customize content and pedagogical approaches; and

- *Teacher managers/mentors:* The role of the teacher in the classroom is being transformed from that of the font of knowledge to an instructional manager helping to guide students through individualized learning pathways.

The above-mentioned are indicators that can guide lecturers in technical training institutes in using ICT progressively in enhancing instructional experiences.

Learning with, for instance**,** mobile game technologies can indeed make learning more pleasant and more effective. Naismith et al. (2004) conducted a study on a mathematics video game that used the Nintendo Game Boy Advance system to supplement traditional curricula and teaching methods. In this study, drills in addition and subtraction were presented as a game with advanced scoring and record keeping, character creation and variable difficulty levels. Findings of the 'Skills Arena' project were that students completed three times more exercises compared to what would be expected with traditional worksheets. Moreover, teachers found the activity was easy to administer and control. This in itself shows how instructional use of ICT is important in enhancing learning, and grasping of skills pertinent to the job market outside our Technical Training institutions.

According to Sanford (1995), the internet is a unique collection of networks, or a network of networks, that was made possible by scientists with the vision to implement a compatible communication standard. These standards allow computers built by a variety of manufacturers running on different operating systems to exchange data. The internet, therefore, is able to facilitate sharing of resources among participating organizations, which include government agencies, educational institutions, and private corporations. This is evident in Kenya through use of e-government an ICT platform used by government departments to offer essential government services. These resources may be the computers themselves, databases, printers, and even human expertise. According to Singh (2002), the internet provides several opportunities for the academia. It is a mechanism for information dissemination and a medium for collaborative interaction between individuals and their computers irrespective of their geographic limitations of space.

Buckingham, (2003), argues that computers bring about new forms of learning which transcend the limitations of older methods, particularly 'linear' methods such as print and television. Moreover, it is children who are seen to be most responsive to these new approaches: the computer somehow releases their natural creativity and desire to learn, which are apparently blocked and frustrated by old-fashioned methods.

The global trend in ICT growth has manifested itself in the African continent. Kenya in particular has garnered considerable interest due to the country's emergent status as a leader in use of transformational technology with some reports touting it a potential 'Silicon Valley of Africa' (World Bank, 2010). Academic research on ICT enabled interventions in the country over the past decade has been extensive. Omwenga (2001) studied the technology strategy analysis for the deployment of broadband connectivity for economic development in emerging economies on M-PESA in Kenya which dwelt on technology interventions, there are also studies on patterns of diffusion of technology and effects of such diffusion (Opiyo & K'Akumu, 2006; Mbarikaa et al, 2007).

The government of Kenya should create a conducive environment to enable the lecturers exhaust all available avenues of enabling instructional use of ICT in Kenya. Both lecturers and students can easily achieve this through provision of the necessary ICT infrastructure in our Technical Training institutions to increase access to ICT use.

2.5 Policy Factors

2.5.1 Government Policy on ICT
The Republic of Kenya (2006) Kenya National ICT policy, states that there are a number of challenges concerning access to and use of ICT in Kenya. This includes high levels of poverty, limited rural electrification, and frequent energy disruptions as well as lack of computers and adequate connectivity.

Jones & Kozma (2003), note that national ICT policies can serve several important functions. Firstly, ICT policies provide a rationale, a set of goals, and a vision of how education systems work if ICT is introduced into teaching and learning, and they can benefit students, teachers, parents, and the general population of a given country. Secondly, ICT policies provide guidance, and failure to do so means that individual institution and classroom innovations would unlikely be sustained. Additionally, individual efforts are less likely to be felt across the country unless there is a shared vision clearly laid out in the policy.

Education has been identified as one of the public sectors most influenced by technological developments (Kozma, 2005). The improvement of educational systems and increased educational attainment are primary to countries' preparation for global, technology-based changes in all sectors (OECD, 1999). The formation of ICT policies in education, although embedded in the national ICT policies of the East African countries, is seen to be crucial as ICT plays an important role in preparing individuals in school for the workplace (Were, Rubagiza, Denley & Sutherland, 2007). ICT, if carefully integrated in education, has a potential to facilitate the acquisition of relevant life skills that buttress the development process in the prevailing economic and information order.

Policies on developing teacher training should look not only at quantitative measures such as significant investments and numbers of training courses but also at the qualitative impact of the actions promoted. It is particularly interesting to note that these considerations emerge not only in countries where e Learning is still in the early stages but also in countries usually considered forerunners.

The formation of ICT policy in Kenyan education has its roots in the Ministry of Research of the time. The motivation was to develop national policy guidelines for the

development of ICT in the country in order to address the then prevailing haphazard growth of the sector. This was complemented by the readiness of donor agencies including UNESCO, in funding the current policy-making process.

Reports by both Waema (2005) & Farrell (2007) seem to agree with the idea that fast and haphazard growth of information technology lacking direction and regulation provided an impetus for ICT policies as mentioned earlier. The second reason reported was a desire by the then Permanent Secretary (PS) in the then Ministry of Research, Technical Training, and Technology (MRTTT) to develop national policy guidelines. This, as the Ministry expected, would steer the development of ICT in the country in order to address the haphazard growth that was taking shape. The third factor was the readiness by the donor agency and in this case UNESCO to fund the policy making process.

Accompanying the acceptance of ICT as an educational tool in developing countries, there has been increasing focus on the interactions of ICT and teaching and learning. Although learning to use ICT remains the most prevalent use of ICT in schools, a shift in favor of the use of computers and the internet to support activities intended to build complex and higher-order skills is taking place. Many factors influence this shift, but these factors may be effectively organized around the linkage of education policy to workforces prepared to contribute to a globalizing world economy. In strategic development plans like the 'Poverty Reduction Strategy Papers' and vision papers like 'Kenya, Vision 2030' efforts to address both globalization and the potential of the knowledge economy in broader society tend to emphasize education as a means to develop communication and higher-order cognitive skills.

Policy facilitation, especially insofar as it draws on experiences in technology-rich education systems, tends to characterize ICT integration and enhanced learning across the

curriculum as broadly accepted best practices. However, the concept of 'technology integration' as it is reflected in program designs and pedagogical models takes on diverse and in some cases very limited forms in some instances. Policy makers in Kenya should ensure that the ICT policies in place support integration of ICT in instruction.

In their ICT for education policies, all the East African countries express the need for integrating ICT in both formal and informal education. There is a stated commitment to invest in ICT infrastructure in schools with deliberate plans to ensure that the digital divide between rural (poor) and urban (rich) schools does not escalate and that children with special needs are catered for as well. The policies point to a desire for a nationally coordinated effort in the creation, dissemination and sharing of e-learning content to improve the quality of teaching and learning in schools.

Management and maintenance of the ICT infrastructure as well as use of ICT in school management (business processes) are also catered for in the policies. Training of teachers in both ICT skills and pedagogical application of ICT is given prominence alongside the development of relevant curricula for teaching ICT at the different levels of the school system. The role of coordinating different ICT investments in schools which were until then uncoordinated and fragmented was vested in the respective country ministries responsible for education.

The use of Public Private Partnerships (PPP) and a phased approach to investment in ICT in education by governments are some of the mechanisms set out for the achievement of policy objectives. These ICT policies are indeed comprehensive and well-articulated statements of intention. It is imperative, however, to examine evidence available for their implementation and in so doing expose some of the apparent gaps therein.

There is strong evidence to show that PPP have been exploited: ICT initiatives based on such partnerships are the most prevalent in schools in East Africa. Notable among these are School Net, One Laptop per Child (OLPC), New Partnerships for African Development (NEPAD) e-schools initiative, the Microsoft Partners in Learning Program, and Connect-ED, among others.

According to Ang'ondi (2010), the development of ICT policies has not always equated to implementation and results on the ground, but to some extent has set up mechanisms to specifically attract donors (Farrell & Isaacs, 2007). For instance, the Kenya ICT trust and the Tanzanian and Rwandan ICT policies specified ICT regulations in order to attract donors.

Donors have, indeed, played a crucial role in the development of the ICT policies in the region, and the impact of this is seen in the purposes, outcomes, performance indicators, monitoring, evaluation and implementation strategies that are set out. To elaborate this point further it is necessary to mention some of the donor agencies that have played a crucial role in influencing the ICT policy making.

According to Etta & Parvyn-Wamahiu (2003), resourceful donor partners such as USAID, the Carnegie Corporation and the International Telecommunications Union (ITU) supported the Africa Information Society Initiative (AISI) which was concerned with promoting ICT policy formation in Africa. AISI, an action framework to build Africa's information and communications infrastructure, was adopted by Ministers of Economic and Social Development and Planning and endorsed by the then Organization of African Unity (OAU) in 1996. This initiative has helped many countries, not just in East Africa, but Africa as a whole to complete elaborate national information and communication infrastructure plans.

The Ministry of Education is the main agent in policy formulation, implementation, evaluation, and regulation of the ICT in education system. It is a common misconception that access to technology on its own motivates teachers to apply it in their teaching.

National policies need to make more commitment to helping teachers effectively integrate computers and internet technologies into the classroom by aligning curricula, exams, and incentives with the educational outcomes that they hope to gain. In the end, computers by themselves bring very little to the learning process − they are only tools for teaching and learning.

The Education Management Information System (EMIS) set up in all the East African countries with the aim of providing quality education statistics in a cost-effective and sustainable manner is a useful coordination mechanism that has not been appropriately harnessed. Information on the current levels of investments in ICT in schools, for example, was not readily available from the respective education ministries. EMIS could have been designed to provide such information which would be handy in monitoring the progress of ICT integration in schools.

According to Hannessy (2010), the five countries forming the East African Community have formulated national ICT policies and most of them have drawn out plans for ICT integration in schools. These policies were formulated at the turn of the millennium (about the year 2000) against a backdrop of haphazard and uncoordinated ICT developments; with a national ICT policy preceding the education-sector-specific ICT policy formulation. Although the reasons for the formation of these policies varied from one country to another, the bottom line was the eradication of poverty through the training of skilled human resources and provision of education in line with the Education

for All (EFA) agenda. The policy formulation processes was led by the respective government ministries with evident donor support.

The Republic of Kenya (2007), Vision 2030 states that the government recognizes the strategic role played by ICT in the economy as an important aspect of the implementation of Vision 2030, the country's development blueprint. Vision 2030's key goal is that Kenya will be one of the top three investment destinations in Africa by 2030. This will be achieved by addressing three pillars – Economic, Social, and Political. The political pillar envisages Kenya as an issue-based, people-centred, and accountable, democratic political system

Kenya has a national policy framework that supports access to ICT. The Republic of Kenya (2006) National ICT policy deals with convergence, ICT in health, education, e-commerce, e-governance, privacy and cybercrimes. The policy aims to use ICT for creating employment, poverty reduction, enabling economic recovery and achieving national developmental goals. It is aligned with Vision 2030. This policy plays an important role in ICT in enhancing instruction in Kenya.

2.6 Critique of Existing Literature Relevant to the Study

Literature reviewed singles out the attributes that influence instructional use of ICT. These include ease of use, usefulness, culture, ICT trends, policy factors (Wims, 2007; Yusuf, 2005; Fisher, et al. 2006; Pelgrum & Law, 2009; Anderson & Weert 2002; Jones & Kozma, 2003). Other studies point to demographic factors of lecturers as important determiners of technology acceptance and adoption. These demographic factors include a lecturer's age, gender, and education level (Francis, 1994; Roza, 1994; Blankenship, 1998; Zigama, 2010; Welington, 2002; McCaffey, 2003; Stodolsky, 1996). These studies

therefore provide a reference point for the construction of the conceptual framework on which this study is hinged.

A majority of the literature reviewed reveals that there is increasing use of ICT in instruction by teachers (Neuman, 1997; Yusuf, 2005; Al-Ansari, 2005; Davies & Tearle, 1999; Lemke & Coughin, 1998); however, most of these studies are carried out on teachers in developed countries. Literature reveals that there are studies which have been carried out in Kenya on the use of ICT in instruction (Makau, 1990; Chimwei, 2013; Menjo, 2012; Wanami, 2010; Wanjala, 2010). Although these studies are contextual to Kenya, most of them have examined the use of ICT in instruction from the teacher perspective.

Most scholarship about instructional use of ICT has focused on ICT use among teachers in Primary, Secondary, and Teacher Training Colleges and in some cases in specific subject areas (Wanjala, 2010; Doering, Hughes, & Huffman, 2003; Pelgrum, 2001). There are few studies which address instructional use of ICT by teachers in other learning institutions and none which addresses instructional use of ICT by lecturers in Technical Training institutions.

The literature also reveals that Kenya has in the last decade showed marked interest in improving ICT access and skills and which has been increasing over the years (Kenya ICT Board, 2010; Msimang, 2011). This is a pointer to a possibility of marked increase in instructional use of ICT. Literature does not, however, tie this increased access to use of ICT in instruction. This research therefore investigated the variables that influence the use ICT in instruction by lecturers in Technical Training institutions in Kenya.

2.7 Research Gaps

Prior empirical studies have strived to explicate the determinants and mechanisms of users' adoption decisions on the basis of the Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989; Taylor & Todd, 1995; Venkatesh & Davis, 2000) with the conviction that the adoption process influences successful use of particular technology systems (Karahanna, Straub, & Chervany, 1999; Liao, Palvia, & Chen, 2009).

All over the world, it is apparent that ICT cannot be ignored any longer in the education sector. ICT has become indispensable in today's information age, making a dramatic impact on the lives of people globally. This effect is most significant in education. The computer has become a motivating tool for teaching and learning in schools (Mossom, 1986; World Bank, 1999; Blankenship, 1998; Wims, 2007).

Studies conducted in East Africa on integration of ICT in instruction (Zigama, 2010; Ndawula, 2002) show confidence in use of ICT for instructional purposes. Studies conducted in Kenya also show how instructional use of ICT is gaining pace (Chimwei, 2013; Menjo, 2012; Wanami, 2010; Wanjala, 2010), but the studies do not expressly address the issue of instructional use of ICT by lecturers in Technical Training institutions.

In addition, most research has focused on instructional use of ICT in Primary Schools, Secondary Schools and Teachers Training Colleges (Chimwei, 2013; Menjo, 2012; Wanami, 2010; Wanjala, 2010) but little is known about what actually happens in so far as instructional use of ICT by lecturers in Technical Training institution. In Kenya, this is more particular because Technical Training institutions for a long time had been forgotten, and infact universities are taking over majority of existing Technical Training institutions and converting them into University Colleges and Campuses. A gap exists in

conducting a holistic research on these Technical Training institutions among lecturers in Kenya. The present study addressed this gap by researching on instructional use of ICT by lectures in Technical Training institutions.

Again, much attention has focused on the attitudes, effectiveness, and influence of Computers in instruction on teachers (Wanjala, 2010; Menjo, 2012; Chimwei, 2013), but comparatively little consideration has been given to the attributes that shape lecturers instructional use of ICT. In general, there has been little, if any, systematic study of the perceived attributes of instructional use of ICT in Kenya. Essentially, factors that drive lectures to integrate ICT in instruction remain largely unknown.

2.8 Summary

Generally, ICT proficiency is now at the centre of required skills in the teaching profession. Integrating ICT in instruction is crucial, as it means harnessing technology to perform learning skills. It encompasses the use of ICT to manage complexity, solve problems, and think critically, creatively, and systematically towards the goal of acquiring, thinking, and problem solving skills. Lecturers also have to use ICT to access, manage, integrate, evaluate, create, and communicate information in order to develop information and communication skills that can fit in the present technological world.

According to Punie & Canberra (2006), the role of ICT in instruction should be seen in the light of its contribution to emancipation, empowerment, and self-fulfilment of individuals using it. Learning objectives such as social competence, critical thinking, knowledge sharing, and cooperation techniques are becoming more and more important as we move further into the knowledge society. As a result, it is clear that thinking about the future of learning cannot avoid asking the fundamental questions about the objectives of learning.

Finally, the key to quality instructional use of ICT largely depends on the lecturers' capability to teach effectively without ICT. There is no doubt that lecturers are critical in facilitating learning and in making it more effective, they hold the key to the success to instructional enhancement in Technical Training institutions. The instructional use of ICT on its own cannot enhance learning it requires individual lecturers' effort to utilize it in a way that will help achieve the outcomes they have for instruction. This can only be possible if lecturers accept that ICT can be adopted to enrich instruction.

Generally, the literature review examined the relationship between ICT and instruction in line with the variables examined in the present study. From the literature reviewed, it has come out clearly that very little research has been carried out the relationship between perceived attributes and instructional use of ICT Technical Training institutions; this is the gap that the present study tries to address.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY AND DESIGN

3.1 Overview

This chapter focuses on the methodology used in the study. It describes the research

design, target population, sample and sampling techniques, instruments of data collection,

pilot study, reliability of instruments, and data analysis plan.

3.2 Geographical Location of the Study

This study was conducted on Lecturers in Technical Training institutions in Kenya (See

Appendix: III). Kenya is an Eastern African country officially named The Republic of

Kenya. It is bordered by Ethiopia to the north, Somalia to the east, Tanzania to the south,

Uganda to the west, and Sudan to the northwest, with the Indian Ocean running along the

southeast border. Kenya became independent on December 12, 1963, and has a country

area of 58,367 square kilometers.

3.3 Research Paradigm

A research paradigm or a worldview is how we view the world and, thus, go about

conducting research. A research paradigm is a basic set of beliefs that guide action during

research (Guba, 1990). There are four (4) research paradigms that guide research. These

are Post-positivist, Constructivist, Transformative, and Pragmatic paradigms.

Creswell (2014) holds that Post-positivists hold a deterministic philosophy in which

causes (probably) determine effects and outcomes. The problems studied by post

positivists reflect the need to identify and assess the causes that influence outcomes, such

as found in experiments. It is also reductionist in that the intent is to reduce the ideas into

a small, discrete set to test, such as the variables that comprise hypotheses and research

questions. According to Creswell & Clark (2007), the post-positivism world view is used

where the researcher; rejects or fails to reject hypotheses, objectively collects data on

instruments, uses checks to eliminate bias, tests on a priori theory and uses agreed-on definitions of variables.

The present study adopted the post-positivism research paradigm as it intended to see how data provided by participants fits into the Technology Acceptance Model (TAM) in line with the structure model and hypotheses proposed and to be able to report on what lecturers in Technical Training institutions do in reference to instructional use of ICT.

The positivist philosophy is derived from that of natural science and is characterized by the testing of hypothesis developed from existing theory (hence deductive or theory testing) through measurement of observable social realities (Saunders, Lewis & Thornhill, 2009). This position presumes the social world exists objectively and externally, that knowledge is valid only if it is based on observations of this external reality and that universal or general laws exist or that theoretical models can be developed that are generalizable, can explain cause and effect relationships, and which lend themselves to predicting outcomes (Eriksson & Kovalainen, 2008).

3.4 Research Methodology

Henning, Rensburg, & Smit, (2004) describes research methodology as coherent group of methods that complement one another and that have the ability to fit to deliver data and findings that will reflect the research question and suit the researcher's purpose. According to Polit & Hungler (2004), research methodology is a way of obtaining, organizing and analyzing data and thus methodology decisions often depend on the nature of the research question. In this study, the methodology refers to how the research was done and its logical sequence.

3.5 Research Design

Various scholars have defined research design and the definitions seem to move towards the same direction. Beck (2003) defines research design as the overall plan for obtaining answers to the questions being studied and for handling some of the difficulties encountered during the research process. According to Lavrakas (2008), a research design is the structure, or the blueprint, of research that guides the process of research from the formulation of the research questions and hypotheses to reporting the research findings. A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Kothari, 2004).

The research adopted the quantitative research design as it tried to identify broad trends in a population, and in the end generalize the findings over a large population who are lecturers in technical training institutions in Kenya. The characteristics of the design were non-experimental and dealt with variables in their natural settings.

Kerlinger (1992) argues for the use of quantitative research design in educational fact finding because they provide a great deal of information which is accurate. Sproul (1995) recommends the quantitative research design technique for research where attitudes, ideas, comments, and public opinion on a problem or issue are studied.

Quantitative research designs lend themselves to probability sampling from large populations. Thus, quantitative research is very appealing when sample generalizability is a central research goal. In fact, quantitative research is often the only means available for developing a representative picture of the attitudes and characteristics of a large population (Wikipedia, the free encyclopedia). The researcher settled on the quantitative research design for the present study because it seeks to gain insight into an occurrence as

a way of providing information on the instructional use of ICT in technical training institutes which are many in Kenya.

Within the quantitative design, this study used descriptive and correlational analysis where the relationship of the independent variables and dependent variable were identified by regressing the independent variables with the dependent variables.

3.6 Target Population

Leedy (1993) defines a study population as the group of people or study subjects who are similar in one or more ways and who form the subject of the study in a particular study.

Burns & Grove (2003) describe population as all the elements that meet the criteria for inclusion in a study. Burns and Grove also state that population includes all elements that meet certain criteria for inclusion in a study. In other words, population is the aggregate of all that conforms to a given specification. All items in the field of enquiry constitute a 'Universe' or 'Population' (Kothari, 2004).

The sampling frame of the study population is shown in appendix III, a sampling frame describes the list of all population units from which the sample is selected (Cooper & Schindler, 2006). The elementary units or the group or cluster of units may form the basis of sampling process in which case they are called sampling units. A list containing all such sampling units is known as a sampling frame

The population for this study therefore was the 2090 lecturers in Technical training institutions in Kenya. Staffing data in Technical Training institutions in Kenya was sourced from the ministry of Education Science and Technology (2013) this is summarized in strata's in Table 3.1.

Table 3. 1: Target Population

Code	Strata	Population
1.	Central	405
2.	Coast	136
3.	Nairobi	326
4.	Rift Valley	492
5.	Western	153
6.	Nyanza	300
7.	North Eastern	32
8.	Eastern	246
TOTAL		2090

Source: MoEST (2013)

3.7 Sampling Size and Sample Procedure

3.7.1 Sample Size

According to Polit & Beck (2003), a sample is a proportion of population to be researched, while according to Wimmer & Dominick (2006), a sample is a subset of the population that is representative of the entire population. Kothari (2004) defines a sample as the selected respondent representing the population.

To get the desired representative sample for quantitative data, the Fisher's Formula for finite population was adopted. Daniel (1999), and Naing, Winn & Rusli (2006) support the use of the Fisher's Formula in studies which have a finite population. Fisher's Formula yielded a sample 629 respondents who were lecturers in Technical Training institutions in Kenya.

3.7.2 Sampling Procedure

For the purpose of obtaining a representative sample for the quantitative study, the Fisher's Formula for finite population (Naing, Winn, & Rusli, 2006) was adopted as follows:

$$n' = \frac{NZ^2P(1-P)}{d^2(N-1)+Z^2P(1-P)}$$

Where

n' = sample size with finite population correction,

N = Population size,

Z = Z statistic for a level of confidence,

P = Expected proportion (in proportion of one), and

d = Precision (in proportion of one).

Fisher's Formula yielded a sample of 629 respondents who were lecturers in Technical Training institutions across Kenya. Stratified random sampling was used to get representation from lecturers in Technical Training institutions across the country. Wimmer & Dominick (2006) support the use of stratifying in cases where respondents belong to identifiable subgroups, in order to give each person in the population an equal chance of being selected. Stratifying lecturers according to the regions they taught guaranteed the desired distribution across the country hence improved the representativeness of the sample. To get the desired representative distribution across the eight (8) strata's, the following sample was drawn with respect to the actual population ratios of lecturers in Technical Training institutions in strata's was as follows: Central (n=122); Coast (n=41); Nairobi (n=98); Rift Valley (n=148); Western (n=46); Nyanza (n=90); North Eastern (n=10); Eastern (n=74) (see Table 3.2). The total sampled respondents were 629. This is summarized in Table 3.2.

Table 3. 2: Sample Size

Code	Strata	Population	Sample Size
1.	Central	405	122
2.	Coast	136	41
3.	Nairobi	326	98
4.	Rift Valley	492	148
5.	Western	153	46
6.	Nyanza	300	90
7.	North Eastern	32	10
8.	Eastern	246	74
TOTAL		2090	629

Source: MoEST, (2013)

3.8 Instrumentation

The choice of data collection instrument is often very crucial to the success of a research and thus when determining an appropriate data collection method, one has to take into account the complexity of the topic, response rate, time and the targeted population. According to Parahoo (1997), a research instrument is a tool used to collect data. Research instruments are therefore useful to researchers because they help in data collection. The researcher used a standardized questionnaire for data collection.

The primary technique for collecting the quantitative data was a self-developed questionnaire. The questionnaire was guided by the objectives and research questions in order to ascertain the relationships between perceived attributes and instructional use of ICT. The research used questionnaires presented in structured and semi-structured questions and a four (4) point Likert scale. Likert scales are good because they show the

strength of the persons feelings to whatever is in the questions, they are easy to analyze, they are easy to collect data, they are more expansive and they are quick (Kothari, 2004).

The questionnaire for lecturers was in seven sections. Section one, covered background information of the respondents; Section two to section seven obtained the specific information on research questions.

The questionnaire translated the research objectives of the study into specific questions and answers to those questions provided the data for testing relationships. In essence, the questionnaire addressed the perceived attributes and instructional use of ICT. The questionnaire was divided into seven (7) parts which conform to the research objectives. The first part of the questionnaire sought to establish the demographic information about lecturers. The second part sought to determine the level of instructional use of ICT. The third part of the questionnaire sought to establish the perceived ease of use of ICT. The fourth part sought to determine the perceived usefulness of ICT. The fifth part sought to examine the effect of cultural relevance on use of ICT. The sixth part sought to find the role of ICT Trends on use of ICT. The final part of the questionnaire sought to assess the role of government policy on use of ICT (see Appendix 1).

According Orodho (2004), in social science research, the most commonly used instruments are questionnaires. The questionnaire was used because all the respondents were literate and therefore could read, interpret the questions, and answer them appropriately. Questionnaires also enable easy and cheap collection of data, save time, ensure confidentiality, are free from bias of the interviewer hence results are made more dependable and reliable (Mugenda & Mugenda, 2003).

3.9 Pilot Study

Various authors have described pilot study as an exercise that ensures that errors are restricted at a very little cost. Kothari (2004) describes a pilot survey as a replica and a rehearsal of the main survey. Newing (2011) states that the importance of field pilot cannot be over emphasized; you will always find that there are questions that people fail to understand or interpret in different ways, places in the questionnaire where they are not sure where to go next, and questions that turn out simply not to elicit useful information. According to Beck (2003), a pilot study is a small scale version, or trial run, done in preparation for a major study. According to Saunders, Thornhill & Lewis (2009), pilot testing refines the questionnaire so that respondents will have no problems in answering the question. For high precision pilot studies, 1% to 10% of the sample should constitute the pilot test size (Lancaster, Dodd, & Williamson, 2010).

The pilot test was carried out immediately after the approval by the dean School of Education in April 2013. Using simple random sampling across all departments and all levels of staff, sixty-three respondents which is ten (10%) percent of the sampled population (629), took part in the pilot study. The subjects participating in the pilot study were not included in the final study to avoid survey fatigue.

3.9.1 Reliability of Research Instruments

According to Gay & Airason (2009), reliability is the degree to which a test consistently measures what it is measuring. An instrument is considered reliable if it produces the same or similar result each time it is administered to the same respondents. However, Punch (2003) contends that reliability of an instrument depends on whether the questionnaire can be steadily and sincerely responded to, using scales and options given and the respondents' attitudes while responding to the instrument. It could be argued that an instrument may not be absolutely reliable even when participant's responses can be

predicted each time the instrument is administered, as it may be influenced by respondent's disposition. Reliability relates to the consistency of the data collected (Wallen & Fraenkel, 2001).

The researcher used the most common internal consistency measure known as Cronbach's Alpha (α). It indicates the extent to which a set of test items can be treated as measuring a single latent variable (Cronbach, 1951). Nunnally, et al. (1994) offered a rule of thumb of 0.7 which has been adopted as the threshold to test the reliability of data. This research used Cronbach's alpha to test the reliability of all the variables. The technical training institutions survey instrument was tested in its entirety, and the subscales of the instrument were tested independently, the results are summarized in Table 3.3.

The data collected in the pilot study was used to determine the reliability of the questionnaire. Cronbach's Alpha with a value of between 0.7 and 0.8 was taken as being acceptable which enhances the identification of the dispensable variables which were deleted from the instruments. The tests of Cronbach's alpha for the results of the pilot study ranged from 0.756 for Instructional use of ICT, 0.771 for Perceived Ease of Use, 0.742 for Perceived Usefulness, 0.758 for Cultural Relevance, 0.778 for ICT Trends, and 0.744 for Government Policy. This revealed a high degree of reliability. Since all the reliability results exceeded the 0.7 lower level of acceptability (Sekeran, 1992), the internal reliability of the research instruments was considered to be sufficient.

Table 3. 3: Analysis of Research Instruments' Reliability

Variable	Cronbach's Alpha	No of Items
Instructional Use of ICT	.756	5
Perceived Ease of Use	.771	5
Perceived Usefulness	.742	5
Cultural Relevance	.758	5
ICT Trends	.778	5
Government Policy	.744	5

Source: Research Data (2013)

3.9.2 Validity of Research Instruments

An instrument is valid if it measures what it is intended to measure and accurately achieves the purpose for which it was designed (Patten, 2004; Wallen & Fraenkel, 2001). Patten (2004) emphasizes that validity is a matter of degree and discussion and should focus on how valid a test is, not whether it is valid or not. According to ibid (2004), no test instrument is perfectly valid. The researcher needs some kind of assurance that the instrument being used will result in accurate conclusions (Wallen & Fraenkel, 2001).

Validity involves the appropriateness, meaningfulness, and usefulness of inferences made by the researcher on the basis of the data collected (ibid, 2001). Validity can often be thought of as judgmental. According to Patten (2004), content validity is determined by judgments on the appropriateness of the instrument's content. Ibid (2004) identifies three principles to improve content validity: (1) use a broad sample of content rather than a

narrow one, (2) emphasize important material, and (3) write questions to measure the appropriate skill.

These three principles were addressed when writing the survey questionnaire items. To provide additional validity of the survey instrument, the researcher formed a focus group of five (5) experts in the field of educational technology who provided input and suggestive feedback on survey items. Members of the focus group were educators of educational technology at the school of education and doctoral students in the department of curriculum instruction and educational media at Moi University, Eldoret.

Comments from the focus group indicated that the skills listed in the survey were appropriate for technical training institution lecturers. Some members of the focus group suggested that the study might take long and that skills could be generalized and consolidated for a more concise study. The researcher categorized application skills and condensed the application component items from ten per application to five (5) items per variable.

3.10 Data Collection Procedure

The researcher sought clearance to conduct the research from the National Council of Science and Technology (NACOSTI). In addition, permission was sought from the Dean School of Education, Moi University-Eldoret, and County Directors of Education in the selected counties/clusters. The researcher visited selected Technical Training institutions to seek permission from the Principals, present copies of his introduction letter, research permit, and also get acquaintance with targeted respondents.

The researcher thereafter identified research assistants to assist him collect data. The researcher trained the research assistants on how to use of the research instruments. The

research instruments aimed at a general assessment of instructional use of ICT in the Technical Training institutions.

3.11 Data Analysis Techniques

Data Analysis is the processing of data to make meaningful information (Sounders, Lewis & Thornhill, 2009). Burns & Grove (2003) define data analysis as a mechanism for reducing and organizing data to produce findings that require interpretation by the researcher. According to Hyndman (2008), data processing involves translating the answers on a questionnaire into a form that can be manipulated to produce statistics. This involves coding, editing, data entry, and monitoring the whole data processing procedure.

In data analysis, descriptive statistics (Percentages and frequencies) were calculated on the variables to summarize and describe the data collected. Inferential statistics (regression analysis) was used to reach conclusions and make generalizations about the characteristics of populations based on data collected from the respondents. Data analysis was based on the research objectives and research questions. At the end of the data collection, data was coded and analysed using the IBM Statistical Package for Social Sciences 20. Quantitative data was displayed using appropriate tables, pie-charts and bar-graphs that depicted the relationship between the dependent variable and the independent variables.

The study was based on the premise that perceived attributes influence instructional use of ICT but this influence is moderated by age and education factors. Five hypotheses had been set to guide the study as highlighted in the conceptual framework in chapter one. In order to establish the statistical significance of the respective hypotheses, simple and multiple regression analyses were conducted as appropriate at 95 percent confidence level ($\alpha = 0.05$). The following sections present the results of the hypotheses tests

The following research hypotheses were tested in the present study:

H_{01}: There is no significant statistical relationship between perceived ease of use and instructional use of ICT in technical training institutions in Kenya

H_{02}: There is no significant statistical relationship between perceived usefulness and instructional use of ICT in technical institutions training institutions in Kenya

H_{03}: There is no significant statistical relationship between cultural relevance and instructional use of ICT in technical training institutions in Kenya

H_{04}: There is no significant statistical relationship between ICT Trends and instructional use of ICT in technical training institutions in Kenya

H_{05}: There is no significant statistical relationship between government policy and instructional use of ICT in technical training institutions in Kenya

Regression is the statistical tool with the help of which we are in a position to estimate (or predict) the unknown values of one variable from known values of another variable (Gupta & Gupta, 2009). The definition is in tandem with that of Kothari,(2004) who defines regression as the determination of a statistical relationship between two or more variables where one variable (defined as independent variable) is the cause of behavior of another one (defined as dependent variable).

To test and analyze the quantitative data, a multiple regression model was used as shown in below, where the independent variables were regressed against the dependent variable to obtain inferential results. The use of multiple regression models is preferred due to its ability to show whether there is a positive or a negative relationship between independent and dependent variables. In addition, multiple regressions are useful in showing linear elasticity/sensitivity between independent and dependent variables (Cohen, West & Aiken, (2003).

Therefore, the study used the following model to test whether instructional use of ICT is a function of the independent variables:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where

Y = Instructional use of ICT (dependent variable)

B_0 = Intercept

$\beta_1 - \beta_5$ are Coefficients of the independent variables

X_1 = Ease of Use,

X_2 = Usefulness

X_3 = Cultural Relevance

X_4 = ICT Trends

X_5 = Government Policies

ε = error term-random variation due to other unmeasured factors

3.12 Ethical Considerations

McNamara (1994) identifies five ethical concerns to be considered when conducting survey research. These guidelines deal with voluntary participation, no harm to respondents, anonymity and confidentiality, identifying purpose and sponsor, and analysis and reporting. Each guideline is addressed with explanations to help eliminate or control any ethical concerns.

For the purpose of this study, the following ethical considerations were observed: the researcher explained the purpose of the study to the respondents (i.e., research for doctoral degree qualification), and informed them that participating in the study was voluntary and that they were free to withdraw from it at any time they deemed it fit. The principle of free and informed consent was adhered to by emphasizing voluntarism, clear explanation and sufficient detail of the nature of the research and procedures. The

sponsor of the research was given as Moi University, Eldoret. The respondents were also given an opportunity to ask questions before, during and at the end of the study.

The study ensured privacy and confidentiality by allowing respondents to have pre-eminence over time and the extent to which they can withhold or share information. All the respondents were treated with respect and equality. There were no names or personal identification numbers reflected on the questionnaires except the numbering for questionnaires, which was done for purposes of identification of data during data analysis.

CHAPTER FOUR

4.0 DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

4.1 Introduction

This chapter describes the main results obtained by analyzing the data collected. Subsequently, the research results are presented in frequency tables using a variety of descriptive and inferential statistics that sets out the key characteristics of the data and test the study's hypotheses.

4.2 Instruments Return Rate

The sample population of lecturers in Technical Training institutions in Kenya was 2090. This study intended to collect data from 629 respondents which is 30% of the sample population (see sampling frame in Appendix III), data was successfully collected from 558 respondents. This represents a response rate of eighty-nine percent of the target population and falls within the confines of a large sample size (n $\geq$30). This provides a smaller margin of error and good precision (Anderson, Sweeney, & Williams, 2003). The response rate is summarized in table 4.1.

Table 4. 1: Target Population

Category	Population	Sample size	Frequency	Response rate
Lecturers	2090	629	558	89%

Source: Primary Research Data (2013)

4.3 Demographic Information

This section assessed the moderating effect of demographic characteristics on the relationship between perceived attributes and instructional use of ICT in Technical Training institutions in Kenya. This section therefore, gives valuable data that helps in the interpretation and inference making on instructional use of ICT by lecturers in Technical Training institutions in Kenya with respect to demographics.

4.3.1 Distribution of Lecturers by Age

To determine the distribution of lecturers by age, respondents were asked to indicate their age and the results are summarized in Figure 4.1. The data indicated that the greater proportion of lecturers 30% were in the age bracket of between 31 and 35 years of age, with another 22.5% aged between 36 and 40 years of age. The implications of these findings are that generally, lecturers teaching in Technical Training institutions in Kenya were young in age.

The study therefore infers that respondents' age moderates on the relationship between Perceived Attributes and Instructional use of ICT. In particular, lecturers who are younger i.e., between age twenty (20) and Forty (40) i.e., seventy eight percent (78%) found Instructional use of ICT- ease to use, useful, and trendy. They also tended to use ICT in instruction more frequently.

It can therefore be concluded that age affects the adoption of ICT in instruction despite the effort done by the government of providing resources to ensure that the country does not remain behind in ICT uptake for instructional purposes. Generally, lecturers who were young adapted the use of ICT in instruction as opposed to those who were old.
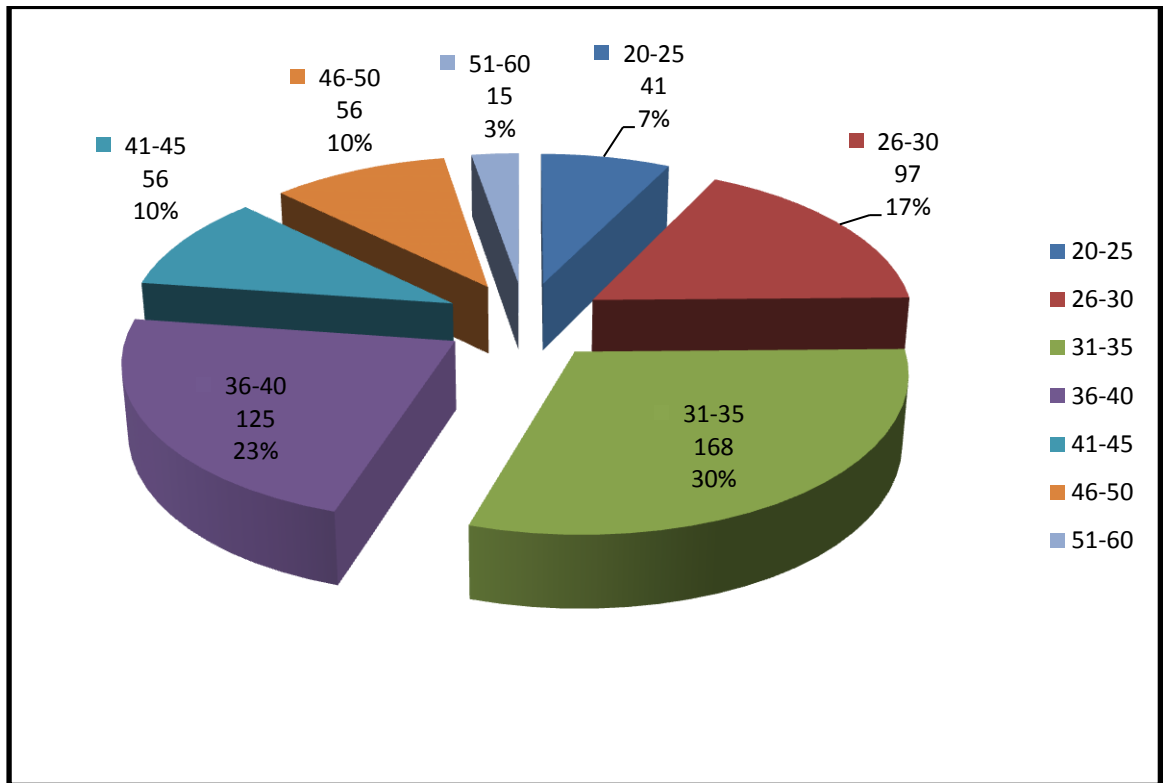
Figure 4. 1: Lecturers by Age

Source: Primary Research Data (2013)

4.3.2 Distribution of Lecturers by Qualification

The distribution of lecturers by professional qualification was summarized in Figure 4.2.

Data in Figure 4.2 shows that the greater population of lecturers 50% held a bachelor's

degree with another 22.5% holding masters degrees. Only 27.5% of all lecturers had

qualifications lower than the bachelor's degree. It can therefore be inferred that a

majority of lecturers had university education. Infact, majority of lecturers in Technical

Training institutions were over-qualified to teach various certificate and diploma

programmes offered in the institutions. This surpassed the minimum level of education

for lecturers who should hold at least one level of education above the level they are

teaching.

Qualification was a variable factor that moderated the relationship between Perceived Attributes and Instructional Use of ICT. This is because lecturers who held Bachelor's degree and above i.e., seventy two percent (72%), accepted that Perceived attributes affected Instructional Use of ICT. This study found that CISCO training which had been implemented for lecturers in eight (8) Technical Training institutions had shown keen interest in instructional use of ICT. The implication of these findings is that CISCO training had improved the uptake of ICT for instructional purposes.

It can therefore be inferred that higher levels of education could account for a higher adoption of instructional use of ICT as Fisher et al. (2006) posits, that technologies resonate strongly with teachers' sense of professional and moral purpose.

Professional Qualification

Qualification	Frequency
Diploma	98
Higher diploma	56
Degree	279
Masters	125
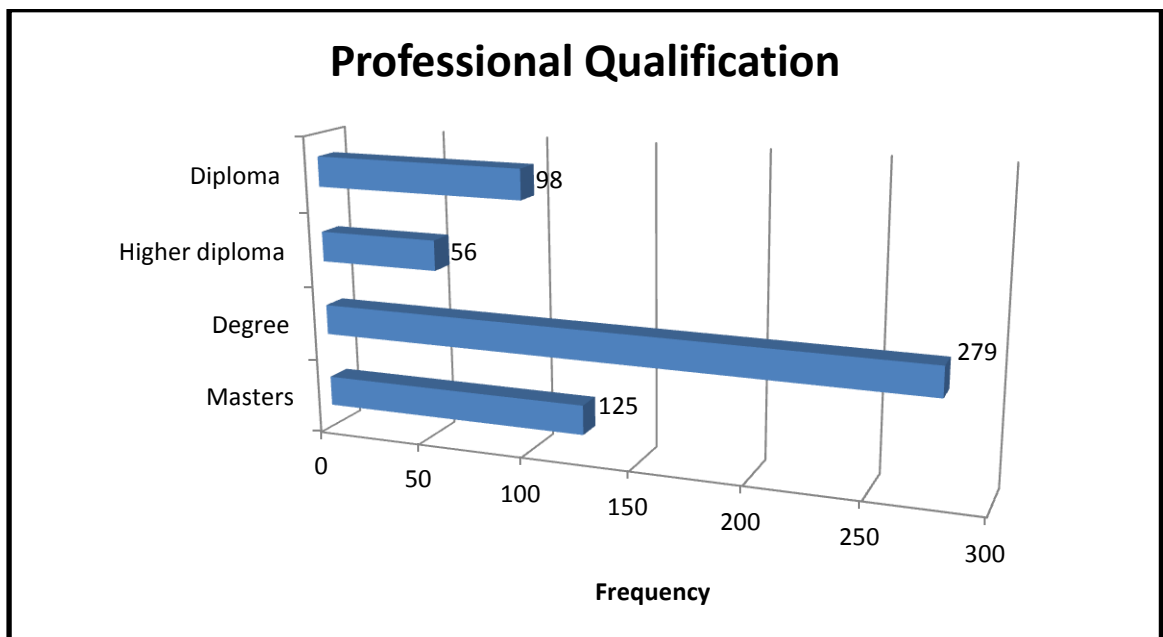
Figure 4. 2: Professional Qualification
Source: Primary Research Data (2013)

4.4 Findings on Instructional Use of ICT

The key instructional use of ICT factors of interest to the study were use of ICT for computing, use of ICT for communication, use of ICT for instruction, use of ICT for administrative purposes and use of ICT for internet connectivity. The following sections highlight the study results on these set of instructional use of ICT factors.

4.4.1 Use of ICT for Computing

Information on use of ICT for computing was sought. The response from lecturers on this questionnaire item is summarized in Table 4.2. The study results revealed that 50% of the respondents used ICT daily, while another 17.5% used ICT two (2) to three (3) times a week.

From the research data presented, we can make several inferences. Firstly, the high rate of daily use of ICT for computing by lecturers is useful as it can be useful for instructional purposes. Secondly, the skills acquired by lecturers through computing can be instrumental in instruction. Evans-Andris (1995) asserts that, there are three styles of computing use among teachers: avoidance, integration, and technical specialization. In general, the use of ICT for computing can be useful in instruction.

Table 4. 2: Use of ICT for Computing

	Frequency	Percent
Once a month	84	15.0
2 to 3 times a week	98	17.5
Once a week	84	15.0
Daily	279	50.0
Never	14	2.5

Source: Primary Research Data (2013)

4.4.2 Use of ICT for Communication

In our earlier findings in (4.4.1), it was observed that majority of lecturers used ICT for computing daily. The current section investigated the use of ICT for communication. To this end, Table 4.3 shows the response on use of ICT for communication. The study results revealed that 70% of the respondents used ICT daily, while another 15% of the respondents use ICT two (2) to three (3) times a week.

Several inferences can be made from the above findings. Firstly, most lecturers had acquired ICT skills. Secondly, most lecturers had access to ICT infrastructure which they used for communication. Thirdly, skills acquired from ICT use for communication could be useful for instructional communication. In general, ICT use for communication was a factor that lecturers could use in enhancing instruction.

Table 4. 3: Use of ICT for Communication

Use of ICT for Communication	Frequency	Percent
Once a month	42	7.5
2 to 3 times a week	84	15.0
Once a week	42	7.5
Daily	390	70.0

Source: Primary Research Data (2013)

4.4.3 Use of ICT for Instruction

In our earlier discussion (4.4.2), it was noted that generally majority of lecturers in Technical Training institutions used ICT for Communication. To this end, the study investigated the use of ICT for Instruction. To find out the level of ICT use for instruction, analyses were made and are represented in Table 4.4. The data revealed that 40% of the respondents used ICT daily, while another 22.5% of the respondents used ICT two (2) to three (3) times a week.

From the above data, several inferences can be made. Firstly, instructional use of ICT was not a new phenomenon. Secondly, lecturers made their own individual effort to use ICT in instruction. Thirdly, lecturers voluntarily chose to use ICT for instruction. Fourthly, lecturers appreciated the benefits of ICT in instruction. Moon (2000b) posits that, the question is no longer 'if' ICT is the best educational means but rather which and how ICT can effectively be implemented in education. In general, use of ICT for instruction was popular among lecturers.

Table 4. 4: Use of ICT for Instruction

	Frequency	Percent
Once a month	70	12.5
2 to 3 times a week	125	22.5
Once a week	112	20.0
Daily	223	40.0
Never	28	5.0

Source: Primary Research Data (2013)

4.4.4 Use of ICT for Administrative Purposes

In our earlier discussion (4.4.3), we found out that most lecturers used ICT for instruction, and therefor need to explore further to check whether ICT was used for administrative purposes in Technical Training institutions. Data in Table 4.5 indicated the response on use of ICT for administrative purposes. The study results revealed that 42.5% of the respondents used ICT once a month, while another 32.5% of the respondents used ICT daily.

From the above findings, several inferences can be made. Firstly, ICT was being used for administrative purposes. Secondly, various administrative records were kept using ICT. Thirdly, use of ICT helps in keeping effective student records. This finding agree with

Gaible, Edmond, & Burns (2005) who posit that, Computers and the Internet can benefit all parts of the education system, including student learning, teacher development, school leadership, and management. In general, use of ICT for keeping student administrative records was gaining group among lecturers.

Table 4. 5: Use of ICT for Administrative Purpose

	Frequency	Percent
Once a month	237	42.5
Once a week	70	12.5
Daily	182	32.5
Never	69	12.5

Source: Primary Research Data (2013)

4.4.5 Use of ICT for Internet Connectivity

In our earlier discussion (4.4.4), most lecturers were using ICT for administrative purposes. To this end, the study investigated the use of ICT for internet connectivity. The study results given in Table 4.6, revel that 55% of the respondents used ICT daily, while another 22.5% of the respondents used ICT two (2) to three (3) times a week.

Several inferences can be made from the findings. Firstly, most lecturers used ICT for internet connectivity. Secondly, lecturers accessed a lot of instructional resources through internet connectivity. Thirdly, internet connectivity improved the kind of instructional materials prepared by lecturers. Fourthly, lecturers used internet connectivity to research on topics they did not know well.

These inferences agree with Sanford (1995), who posits that the internet is a unique collection of networks, or a network of networks, that was made possible by scientists

with the vision to implement a compatible communication standard. In general, internet connectivity aids in all facets of knowledge management.

Table 4. 6: Use of ICT for Internet Connectivity

	Frequency	Percent
Once a month	56	10.0
2 to 3 times a week	125	22.5
Once a week	42	7.5
Daily	306	55.0
Never	29	5.0

Source: Primary Research Data (2013)

4.5 Perceived Attributes

4.5.1 Findings on Perceived Ease of Use of ICT

The first objective of the study investigated perceived Ease of Use of ICT by lecturers in Technical Training institutions in Kenya. In the previous section (4.4), we discussed issues on instructional use of ICT. To bring out the relationship between the dependent variable and independent variables, we now embark on the discussion of data of the first independent variable – Ease of Use. The key Ease of Use factors of interest to the study were ICT is cumbersome to use, learning to use ICT is easy, ICT is flexible to interact with, mental effort and effort required to become skillful. The following sections highlight the study results on these set of perceived ease of use factors.

a) ICT Use as Cumbersome

The study investigated on if lecturers regarded use of ICT as cumbersome. The study results provided in Table 4.7 revealed that 37.5% of lecturers sometimes regarded ICT use as cumbersome, while 32.5% of lecturers rarely regard ICT use as cumbersome.

We can therefore make several inferences from this finding. Firstly, majority of lecturers did not regard use of ICT as being cumbersome, and secondly, since most lecturers did not find instructional use of ICT cumbersome, they could comfortably use it for instruction. This relationship was succinctly summarized by Annan (2001) when he concludes that, while education unlocks the door to development, increasingly it is information technologies that can unlock the door to education. In general, use of ICT in instruction was not cumbersome.

Table 4. 7: ICT Use as Cumbersome

	Frequency	Percent
Often	42	7.5
Sometimes	209	37.5
Rarely	182	32.5
Never	125	22.5

Source: Primary Research Data (2013)

b) Ease of Learning to Operate ICT

The second question item investigated how easy it was to operate ICT. Table 4.8 shows the response on this item. The study results revealed that 47.5% of lecturers often regarded learning to operate ICT as easy, while another 37.5% of lecturers sometimes regarded learning to use ICT use as easy.

From these findings, we can make several inferences. Firstly, learning to operate ICT was easy. Secondly, lecturers could easily acquire ICT skills to use in instruction. Thirdly, lecturers could easily use ICT in instruction. This agrees with Karaliotas (1977), who posits that resource-based method of teaching, which is a hallmark of Computer Assisted

Learning, defines the position of a teacher as a facilitator in the learning process, rather than a source of knowledge. In general, learning to operate ICT was easy.

Table 4. 8: Ease of Learning to Operate ICT

	Frequency	**Percent**
Often	265	47.5
Sometimes	209	37.5
Rarely	42	7.5
Never	42	7.5

Source: Primary Research Data (2013)

c) Flexible Interaction with ICT

The third item in this question item investigated flexibility of interacting with ICT and result data presented in Table 4.9. The study results revealed that 52.5% of lecturers often find it flexible to interact with ICT, while another 32.5% of lecturers sometimes find it flexible to interact with ICT.

From the research data, we can infer that lecturers interacted with ICT flexibly. Tully (2003) in light of this states that the environment where one grows up can determine his or her ability to fully use modern technologies. In general, lecturers interacted with ICT flexibly.

Table 4. 9: Flexibility of Interacting with ICT

	Frequency	Percent
Often	293	52.5
Sometimes	181	32.5
Rarely	56	10.0
Never	28	5.0

Source: Primary Research Data (2013)

d) Mental Effort of Interacting with ICT

The study investigated the mental effort required to interact with ICT. Table 4.10 shows the response on the level of mental effort required to interact. The study results revealed that 47.5% of lecturers sometimes find that they required a lot of mental effort to interact with ICT, while another 32.5% rarely required a lot of mental effort to interact with ICT.

From the above findings, we can infer that lecturers did not require a lot of mental effort to interact with ICT. This is echoed by Punie & Canberra (2006), who posit that the role of ICT in instruction should be seen in the light of its contribution to emancipation, empowerment, and self-fulfilment of individuals using it. In general, interacting with ICT was easy.

Table 4. 10: Mental Effort of Interacting with ICT

	Frequency	Percent
Often	56	10.0
Sometimes	265	47.5
Rarely	181	32.5
Never	56	10.0

Source: Primary Research Data (2013)

 e) Effort and Skill of Using ICT

The fifth and last question item in this section investigated the effort required to become skillful at using ICT. The findings are presented in Table 4.11. The study results revealed that 47.5% of lecturers sometimes required a lot of effort to become skillful at using ICT, while another 27.5% often required a lot of effort to become skillful at using ICT.

We can make several inferences from this research data. Firstly, it needs to put in a lot of effort to be skillful at using ICT. Secondly, to be skillful in using ICT there is need for a lot of exposure. Thirdly, practical handling of ICT was necessary in order to enhance use of ICT. This agrees with Lankshear & Snyder (2000), who posit that there is no doubt that teachers who use ICT in classrooms have to demonstrate high levels of energy, hard work and perseverance, often in the 'face of considerable odds'. In, general, a lot of effort is required to become skillful at using ICT.

Table 4. 11: Effort required to become Skillful at Using ICT

	Frequency	Percent
Often	153	27.5
Sometimes	265	47.5
Rarely	70	12.5
Never	70	12.5

Source: Primary Research Data (2013)

4.5.2 Relationship between Ease of Use and Instructional Use of ICT

To assess the relationship between perceived ease of use and instructional use of ICT by lecturers in Technical Training institutions, the study had set the following null hypothesis:

Ho1: There is no significant statistical relationship between perceived ease use and instructional use of ICT by lecturers in Technical Training institutions in Kenya.

The aggregate mean scores of perceived ease of use measures (independent variable) were regressed on the aggregate mean scores of instructional use of ICT measures (dependent variable). The relevant results are as presented in Table 4.12.

Table 4. 12: Regression Analysis of Perceived Ease of Use against ICT Use

Goodness-of-fit

Sample size	R	R Square	Adjusted R Square	Std. Error of the Estimate
558	.910	.828	.814	.25570

Predictors: (Constant), Perceived ease of use

Overall significance: ANOVA (F-test)

	Sums of Squares	Degrees of Freedom	Mean Square	F	Significance (p-value)
Regression	4.083	1	4.083	62.451	.000
Residual	.850	13	.065		
Total	4.933	14			

Predictors: (Constant), Perceived ease of use
Dependent Variable: Instructional use of ICT

Individual significance

	Unstandardized Coefficients		Standardized Coefficients		
	Beta	Standard Error	Beta	t-value	Significance (p-value)
(Constant)	.350	.375		.933	.368
Aggregate Mean-Perceived ease of use	.875	.111	.910	7.903	.000

Dependent Variable: Instructional use of ICT

Source: Primary Research Data (2013)

The regression results in Tables 4.12 reveal statistically significant positive linear relationship between perceived ease of use and instructional use of ICT ($\beta = 0.910$, p-

value = 0.000). Hence, Ho1 is rejected since β ≠ 0 and p-value is less than 0.05. The results also show that perceived ease of use had high explanatory power on instructional use of ICT as it accounted for 82.8 percent of its variability (R square= 0.828). On the basis of these results, the following simple regression equation that can be used to estimate the instructional use of ICT by lecturers in Technical Training institutions for a given level of Perceived Ease of Use is given by:

IU = 0.350 + 0.910PEU

    (0.368)   (0.000)

Where;

IU = Instructional use of ICT

PEU = Perceived Ease of Use

0.350 = y-intercept; constant

0.910 = an estimate of the expected increase in instructional use of ICT corresponding to change in Perceived Ease of Use

0.368 and 0.000 = p-value (a measure of how significant the sample results are; the smallest value of α for which Ho1 can be rejected).

The study, therefore, fails to accept the null hypothesis, Ho1 at 95% confidence interval and concludes that there is no statistical significant relationship between Ease of Use and Instructional Use of ICT by lecturers in Technical Training institutions in Kenya.

4.5.3 Findings on Perceived Usefulness of ICT Use

The second objective of this study was to determine Perceived Usefulness of ICT by lecturers in Technical Training institutions in Kenya. The key perceived usefulness of ICT factors of interest to the study were quality of instruction, control over teaching,

quick accomplishment of tasks, accomplishment of more workload and enhancement of effectiveness during teaching. The following sections highlight the study results on these set of perceived usefulness of ICT factors.

a) ICT and Quality of Instruction

This study item sought to establish whether lecturers felt that using ICT improves the quality of instruction they gave. The study data revealed that 90% of lecturers agreed to this fact that instructional use of ICT greatly improved the instruction they gave as shown in Table 4.13.

From this research data, we can infer that ICT use benefits instruction. This finding agrees with Cox et al, (1999); & Pedretti et al, (1999), who posit that from research conducted, teachers who have a high value for ICT and perceive it to be useful completely transform their teaching. In general, use of ICT greatly improves instruction.

Table 4. 13: ICT and Quality of Instruction

	Frequency	Percent
Agree	502	90.0
Tend to agree	28	5.0
Tend to disagree	14	2.5
Disagree	14	2.5

Source: Primary Research Data (2013)

b) ICT and Control over Instruction

This questionnaire item sought to establish the level of control lecturers had over their instruction. Research data showed that 57.5% of lecturers agreed that using ICT gave them greater control over instruction, while another 35% tended to agree, Table 4.14 shows the results.

We can infer the following from this research data. Firstly, ICT is useful in instruction. Secondly, ICT makes students attentive during instruction. Thirdly, ICT use in instruction can revolutionize learning experiences. Fourthly, ICT use motivates learning. This agrees with Mossom (1986), who posits that, the computer has become a motivating tool for teaching and learning in schools. In general, ICT use improves control during instruction.

Table 4. 14: ICT and Control over Instruction

	Frequency	Percent
Agree	321	57.5
Tend to agree	195	35.0
Tend to disagree	42	7.5

Source: Primary Research Data (2013)

c) ICT and rate of accomplishing Tasks

The study sought to establish whether using ICT enables quick accomplishment of tasks. Research data revealed that 80% of lecturers agreed to the fact that using ICT enables them accomplish tasks more quickly, while another 17.5% tended to agree to this fact. The research data findings are as presented in Table 4.15.

The result data leads us to infer the following. Firstly, use of ICT can ease accomplishment of tasks. Secondly, ICT use is time saving. In general, ICT use improves the rate of accomplishment of tasks. This agrees with Corea (2000), who posits that there is need for a better solution to address digital inequality by fostering the "long-term nurturing of behaviors intrinsically motivated to engage with such technologies." In general, ICT use improves the rate of accomplishing tasks.

Table 4. 15: ICT and Rate of Accomplishing Tasks

	Frequency	Percent
Agree	446	80.0
Tend to agree	98	17.5
Tend to disagree	14	2.5

Source: Primary Research Data (2013)

d) ICT and rate of accomplishing Workload

This study item sought to establish whether using ICT enables lecturers accomplish more workload. The study results as presented in Table 4.16 revealed that 52.5% of lecturers agreed to the fact that using ICT enables them accomplish more workload, while a further 35% tended to agree to this fact.

From the above research findings, we can infer the following. Firstly, ICT enables handling of more Workload. Secondly, ICT use reduces work backlog. Thirdly, ICT use enables efficiency at work. Fourthly, ICT creates avenues for rest. Ertmer & Otternbreit-Leftwich (2010), suggest a solution to this when they observe that overall, implementing effective teaching with technology integration requires changes in teachers' knowledge, beliefs, and school culture In general, accomplished of tasks can easy with use of ICT.

Table 4. 16: ICT and rate of accomplishing Workload

	Frequency	Percent
Agree	293	52.5
Tend to agree	195	35.0
Tend to disagree	14	2.5
Disagree	56	10.0

Source: Primary Research Data (2013)

e) Enhancement of Instruction through ICT

This study item sought to establish whether using ICT enhances lecturers' effectiveness. The study results as presented in Table 4.17 revealed that 80% of lecturers agree that using ICT enhances their effectiveness, while another 12.5% tended to agree to this fact.

From this research data, we can make several inferences. Firstly, ICT enhances school management. Secondly, ICT improves traditional instruction processes. Thirdly, ICT improves school curricula presentation. This agrees with Makau (1990) who posits that, apart from the traditional use of ICT in education, it can be a vehicle for improving existing school curricula and school management processes.

Table 4. 17: Enhancement of Instruction through ICT

	Frequency	Percent
Agree	446	80.0
Tend to agree	70	12.5
Tend to disagree	42	7.5

Source: Primary Research Data (2013)

4.5.4 Relationship between Perceived Usefulness and Instructional Use of ICT

To establish the influence of perceived usefulness on instructional use of ICT in Technical Training institutions the relevant null hypothesis was stated as follows:

Ho2: There is no significant statistical relationship between perceived usefulness and instructional use of ICT by lecturers in Technical Training institutions in Kenya.

The aggregate mean scores of perceived usefulness factors measures (independent variable) were regressed on the aggregate mean scores of instructional use of ICT measures (dependent variable). The relevant regression results are as presented in Table 4.18.

Table 4. 18: Regression Analysis of Perceived Usefulness against ICT Use

Goodness-of-fit

Sample size	R	R Square	Adjusted R Square	Std. Error of the Estimate
558	.724	.678	.617	.24250

Predictors: (Constant), Perceived usefulness

Overall significance: ANOVA (F-test)

	Sums of Squares	Degrees of Freedom	Mean Square	F	Significance (p-value)
Regression	3.081	1	3.081	52.457	.001
Residual	.740	13	.068		
Total	3.855	14			

Predictors: (Constant), Perceived usefulness
Dependent Variable: Instructional use of ICT

Individual significance

	Unstandardized Coefficients		Standardized Coefficients		
	Beta	Standard Error	Beta	t-value	Significance (p-value)
(Constant)	.280	.300		.843	.293
Perceived Usefulness	.765	.121	.810	7.903	.001

Dependent Variable: Instructional use of ICT

Source: Primary Research Data (2013)

The regression results in Tables 4.18 reveal statistically significant positive linear relationship between perceived usefulness and instructional use of ICT ($\beta = 0.724$, p-value = 0.001). Hence, Ho2 is rejected since $\beta \neq 0$ and p-value is less than 0.05. The results also show that perceived usefulness had high explanatory power on instructional use of ICT as it accounted for 67.8 percent of its variability (R square= 0.678). On the basis of these results, the following simple regression equation that can be used to estimate the instructional use of ICT in public Technical Training Institutions for a given level of perceived usefulness is given by:

IU = 0.280 + 0.724PU

    (0.293)   (0.001)

Where;

IU = Instructional use of ICT

PU = Perceived usefulness

0.280 = y-intercept; constant

0.724 = an estimate of the expected increase in instructional use of ICT corresponding to change in perceived usefulness

0.293 and 0.001 = p-value (a measure of how significant the sample results are; the smallest value of α for which Ho2 can be rejected)

The study, therefore, fails to accept the null hypothesis, Ho2 at 95% confidence interval and concludes that there is no statistical significant relationship between Usefulness and Instructional Use of ICT by lecturers in Technical Training institutions in Kenya.

4.6 Technological Factors

4.6.1 Findings on Cultural Relevance

The third objective was to examine the effect of Cultural Relevance on use of ICT by lecturers in Technical Training institutions in Kenya. The key perceived cultural relevance factors of interest to the study were; the effect of ICT use in our lives, respect from others, respect to tradition, relationship with others and social ills. The following sections highlight the study results on these set of perceived cultural relevance factors.

   a) Effect of ICT on Our Lives

This question item sought to investigate the effect ICT had on lecturer's lives. Table 4.19 shows the responses. The study results revealed that 40% of lecturers tended to disagree that use of ICT makes a difference in their lives, another 35% disagreed with the fact that.

From the research data, we can make the following inferences. Firstly, other factors affect lives. Secondly, School practices affect lives. Thirdly, national norms affect lives. Fourthly, school regularities affect lives. This agrees with Hofstede (1997), who posits that teachers are influenced by not only national norms and values but school regularities and practices as well. In general, use of ICT on its own does not significantly affect our lives.

Table 4. 19: Effect of ICT Use on Our Lives

	Frequency	Percent
Agree	84	15.0
Tend to agree	56	10.0
Tend to disagree	223	40.0
Disagree	390	35.0

Source: Primary Research Data (2013)

b) The Respect and Knowledge about ICT

This question item sought to find out whether knowing about ICT earns one respect. The study results as shown in Table 4.20 revealed that 57.5% of lecturers agree that one earns a lot of respect by knowing about ICT, while another 35% tend to agree to this fact.

From the research data, we can make several inferences. Firstly, ICT use improves group understandings. Secondly, ICT use affects cultural perceptions. Thirdly, use of ICT is culturally valued. Fourthly, ICT use enhances common beliefs. This finding agrees with Jones & Maloy (1996), who posit that cultural perceptions 'embody group understanding based on common beliefs and values'. In general, ICT use enhances ones position in society.

Table 4. 20: Respect and Knowledge about ICT

	Frequency	Percent
Agree	321	57.5
Tend to agree	195	35.0
Tend to disagree	42	7.5

Source: Primary Research Data (2013)

c) Effect of ICT on Traditions

Table 4.21 shows the responses on whether use of ICT hinders the youth from learning and respecting their traditions. The study results revealed that 45% of lecturers disagree that ICT hinders the youth from learning and respecting their traditions, while another 32.5% tended to disagree to this fact.

We can infer the following from these research findings. Firstly, we learn more through use of ICTT. Secondly, ICT use does not affect respect to traditions. Fourthly, ICT is an essential part of people's culture. This finding agrees with Martinez (1999), who posits that one of the major challenges facing developing countries is to make technology an essential part of the culture of the people. In general, use of ICT does not affect cultural traditions.

Table 4. 21: Effect of ICT on Traditions

	Frequency	Percent
Agree	28	5.0
Tend to agree	98	17.5
Tend to disagree	181	32.5
Disagree	251	45.0

Source: Primary Research Data (2013)

d) Relationship between ICT Users' with Others

This question item sought to establish whether use of ICT does not reduce use users relationship with others. The study results are as presented in Table 4.22. The data revealed that, 90% of lecturers d that use of ICT do not reduce users' relationship with others.

From the research data, we can make several inferences. Firstly, ICT improves relationships. Secondly, ICT use improves cultural understanding. Thirdly, ICT use improves the way we relate culturally. This is also observed by Roblyer, Dozier-Henry & Burnette (1996), who posits that, the reverence with which technology is held in technologically developed countries may be in contradiction to the perceptions of cultures that are relationship-oriented. In general, ICT use improves relationships.

Table 4. 22: Relationship between ICT Users' with Others

	Frequency	Percent
Agree	502	90.0
Tend to agree	28	5.0
Tend to disagree	14	2.5
Disagree	14	2.5

Source: Primary Research Data (2013)

e) Social Ills and Use of ICT

This question item sought to find out whether there were many social ills that were associated with the use of ICT. The study results as shown in Table 4.23 revealed that, 42.5% of lecturers disagreed with the fact that, many social ills were associated with use of ICT, while another 27.5% tend to disagree with this fact.

From these findings, we can make several inferences. Firstly, the benefits of using ICT outweigh the demerits. Secondly, ICT use is not the only source of social evils. Thirdly,

individuals can choose to use ICT positively. Al-Oteawi (2002), in a study found out that, teachers refrain from using the internet in the classroom for fear of the ethically inappropriate material on the Internet. In general, ICT use does not solely bring social ills.

Table 4. 23: Social Ills and Use of ICT

	Frequency	Percent
Agree	56	10.0
Tend to agree	112	20.0
Tend to disagree	153	27.5
Disagree	237	42.5

Source: Primary Research Data (2013)

4.6.2 Relationship between Cultural Relevance and Instructional Use of ICT

To establish the influence of Cultural Relevance on instructional use of ICT by lecturers in Technical Training institutions in Kenya, the relevant null hypothesis was as stated follows:

Ho3: There is no statistical significant relationship between Perceived Cultural Relevance and Instructional use of ICT by lecturers in Technical Training institutions in Kenya

The aggregate mean scores of Cultural Relevance factors measures (independent variable) were regressed on the aggregate mean scores of instructional use of ICT measures (dependent variable). The relevant results are as presented in Table 4.24.

Table 4. 24: Regression Analysis of Cultural Relevance against ICT Use

Goodness-of-fit				
Sample size	R	R Square	Adjusted R Square	Std. Error of the Estimate
558	.121	.015	-.011	1.081

Predictors: (Constant), Cultural Relevance

Overall significance: ANOVA (F-test)

	Sums of Squares	Degrees of Freedom	Mean Square	F	Significance (p-value)
Regression	.665	1	.665	.569	.455
Residual	44.435	38	1.169		
Total	45.100	39			

Predictors: (Constant), Cultural Relevance
Dependent Variable: Instructional use of ICT

Individual significance

	Unstandardized Coefficients		Standardized Coefficients		
	Beta	Standard Error	Beta	t-value	Significance (p-value)
(Constant)	2.215	.859		2.580	.014
Cultural Relevance	.242	.321	.121	.754	.455

Dependent Variable: Instructional Use of ICT

Source: Primary Research Data (2013)

The regression results in Tables 4.24 reveal statistically insignificant linear relationship between Cultural Relevance and Instructional Use of ICT ($\beta = 0.121$, p-value = 0.455). Hence, the study fails to reject Ho3 since $\beta \neq 0$ and p-value is greater than 0.05. The results also show that Cultural Relevance had low explanatory power on instructional use of ICT as it accounted for only1.5 percent of its variability (R square= 0.015). Based on these results, the following simple regression equation can be used to estimate the instructional use of ICT by lecturers in Technical Training institutions for a given level of Cultural Relevance is given by:

$IU = 2.215 + 0.121RA$

        (0.014)   (0.455)

Where;

IU = Instructional use of ICT

CR = Cultural Relevance

2.215 = y-intercept; constant

0.121 = an estimate of the expected increase in instructional use of ICT corresponding to change in Cultural Relevance

0.014 and 0.455 = p-value (a measure of how significant the sample results are; the smallest value of α for which Ho3 can be rejected)

The study, therefore, fails to reject the null hypothesis, Ho3 at 95% confidence interval and concludes that there is no statistical significant relationship between Cultural Relevance and Instructional Use of ICT by lecturers in Technical Training institutions in Kenya.

4.6.3 ICT Trends Factors

The fourth objective was to find role of ICT Trends on use of ICT by lecturers in Technical Training institutions in Kenya. The key ICT trends factors of interest to the study were to find out if use of ICT is; fashionable, makes one have an edge over others, gives one access to a lot of information, is the trend in modern communication, and if it makes the world a global village. The following sections highlight the study results on these set of ICT trends.

a) Use of ICT as Fashionable

This research question item sought to find out whether use of ICT was fashionable and should be encouraged. The study results are shown in Table 4.25. The data revealed that 52.5% of lecturers agree to the fact that use of ICT is fashionable and should be encouraged, another 35% tend to agree with this fact.

From this finding we can make several inferences. Firstly, use of ICT is trending. Secondly, use of ICT can bridge the digital divide. Thirdly, use of ICT should be encouraged. This agrees with Lombo (1998), who posits that, the incorporation of Information Communication Technology (ICT) into the educational curriculum has been identified as a key step in bridging the digital divide. In general, ICT use is fashionable.

Table 4. 25: Use of ICT as Fashionable

	Frequency	Percent
Agree	293	52.5
Tend to agree	195	35.0
Tend to disagree	14	2.5
Disagree	56	10.0

Source: Primary Research Data (2013)

a) Advantage of using ICT

This research question item sought to find out whether knowledge about ICT makes one have an edge over others. The study results are as shown in Table 4.26. The study results revealed that 57.5% of lecturers agree that knowledge about ICT makes them have an edge over others, while another 35% tend to agree to this fact.

From the data presented we can make several inferences. Firstly, ICT knowledge is essential. Secondly, ICT prepares students for the modern society. Thirdly, ICT knowledge uplifts status. This agrees with Auerswald, & Magambo (2006), who posit that, ICT is seen as essential as it has the task of preparing students for their role in modern society. In general, ICT use makes one gain an edge over others.

Table 4. 26: Edge gained through ICT

	Frequency	Percent
Agree	321	57.5
Tend to agree	195	35.0
Tend to disagree	42	7.5

Source: Primary Research Data (2013)

b) Information access through ICT

This research question item sought to find out whether ICT use gives one access to a lot of information. The study results are as shown in Table 4.27. The study results revealed that 77.5% of lecturers agree to the fact that ICT use gives one access to a lot of information, while the remaining 22.5% tend to agree with this fact.

The following inferences can be made from the data collected. Firstly, ICT facilitates access to a lot of information. Secondly, huge quantities of information are digested through ICT. Thirdly, ICT makes the world a global village. Fourthly, ICT brings a convergence of many electronic technologies. This agrees with Campbell (1996), who is of the opinion that students need a new electrographic literacy to assimilate, digest, absorb, and express the huge quantities of information that are now available through the emerging electronic technologies. In general a lot of information is accessed through use of ICT.

Table 4. 27: Information Access through ICT

	Frequency	Percent
Agree	433	77.5
Tend to agree	125	22.5

Source: Primary Research Data (2013)

c) ICT in Modern Communication

The study sought to find out whether use of ICT is the trend in modern communication. Table 4.28 shows the data on this question item. The study results revealed that 90% of lecturers agree to the fact that use of ICT is the trend in modern communication, another five (5) % tend to agree to this fact.

From the above data several inferences can be made. Firstly, ICT has revolutionized the communication platform. Secondly, communication is channeled fast through ICT. Thirdly, ICT processes communication in a short time. Fourthly, there are various avenues of communication through ICT. This agrees with Carbo (1997) who states that an information literate person must recognize the need for information, know how to access it, understand how to evaluate it, how to synthesize it, and be able to communicate it. In general, modern communication is trending through use of ICT.

Table 4. 28: ICT in Modern Communication

	Frequency	Percent
Agree	502	90.0
Tend to agree	28	5.0
Tend to disagree	14	2.5
Disagree	14	2.5

Source: Primary Research Data (2013)

d) Globalization through ICT

The present study sought to find out whether lecturers believe that use of ICT makes the world a global village. Table 4.29 presents the data on this question item. The study results revealed that 77.5% of lecturers agree to the fact that use of ICT makes the world a global village, and the remaining 22.5% say they tend to agree with the fact.

From the presented data, the several inferences can be made. Firstly, ICT use has developed rapidly. Secondly, ICT technology has become a global platform for communication. Thirdly, ICT use is the future in communication. Fourthly, the world brings together many ideas through ICT. Fifthly, ICT enables wider discussion and appreciation of ideas.

This agrees with Moon (2004a) who posits that, the rapid development of these new technologies coupled with the worldwide challenge to educate all children has led to a global reform and development of teacher education and motivated educational institutions to redesign and restructure their teaching methods to enable students equip themselves for the future. In general, ICT has made the world a global village.

Table 4. 29: Globalization through ICT

	Frequency	Percent
Agree	433	77.5
Tend to agree	125	22.5

Source: Primary Research Data (2013)

4.6.4 Relationship between ICT Trends and Instructional Use of ICT

To establish the influence of Perceived ICT Trend on instructional use of ICT in public Technical Training Institutions the relevant null hypothesis was stated as follows:

Ho4: There is no statistical significant relationship between Perceived ICT Trends and Instructional Use of ICT

The aggregate mean scores of ICT Trends factors measures (independent variable) were regressed on the aggregate mean scores of instructional use of ICT measures (dependent variable). The relevant results are presented in Table 4.30.

Table 4. 30: Regression Analysis of ICT Trends Factors against ICT Use

Goodness-of-fit

Sample size	R	R Square	Adjusted R Square	Std. Error of the Estimate
558	.885	.784	.664	.34428

Predictors: (Constant), ICT Trends

Overall significance: ANOVA (F-test)

	Sums of Squares	Degrees of Freedom	Mean Square	F	Significance (p-value)
Regression	3.867	5	.773	6.524	.003
Residual	1.067	9	.199		
Total	4.933	14			

Predictors: (Constant), ICT Trends
Dependent Variable: Instructional use of ICT

Individual significance

	Unstandardized Coefficients		Standardized Coefficients		
	Beta	Standard Error	Beta	t-value	Significance (p-value)
(Constant)	.073	.810		.090	0.001
Aggregate Mean- ICT Trends	.147	.238	.139	.618	0.046

Dependent Variable: Instructional use of ICT

Source: Primary Research Data (2013)

The regression results in Tables 4.30 reveal statistically significant positive linear relationship between ICT Trends and Instructional use of ICT ($\beta = 0.139$, p-value = 0.003). Hence, Ho4 is rejected since $\beta \neq 0$ and p-value is less than 0.05. The results also show that ICT Trends had high explanatory power on instructional use of ICT as it accounted for 78.4 percent of its variability (R square= 0.784). On the basis of these results, the following simple regression equation that can be used to estimate instructional use of ICT for a given level of ICT Trends is given by:

IU = 0.073 + 0.139CR

(0.001)   (0.046)

Where;

IU = Instructional use of ICT

ICTT = ICT Trends

0.073 = y-intercept; constant

0.139 = an estimate of the expected increase in instructional use of ICT due to change in cultural relevance

0.001 and 0.046 = p-value (a measure of how significant the sample results are; the smallest value of α for which Ho4 can be rejected)

The study, therefore, rejects the null hypothesis, Ho4 at 95% confidence interval and concludes that there is statistical significant relationship between ICT Trends and Instructional Use of ICT by lecturers in Technical Training institutions in Kenya.

4.7 Policy Factors

4.7.1 Government Policy Factors

The fifth and final objective of this study was to assess the role of government policy on use of ICT by lecturers in Technical Training institutions in Kenya. The key government policy factors of interest to the study were; policy guidelines enhance use of ICT, enhance access to funds to develop ICT, makes availability of ICT easy, importance of policy to ICT use, and frequency by administration to sensitize staff on policy guidelines. The following sections highlight the study results on these set of government policy factors.

a) ICT Policy Guidelines

This question item sought to assess whether policy guidelines enhance use of ICT. The study results are as presented in Table 4.31. The study results revealed that 52.5% of

lecturers agreed to the fact that policy guidelines enhanced ICT use, another 35.5% tended to agree with this fact.

The research data results presented make us make several inferences. Firstly, policy guidelines on ICT direct ICT use. Secondly, lecturers are aware about them. Thirdly, lecturers use them to access ICT. Fourthly, ICT policies create impact on ICT use. This agrees with the Republic of Kenya (2004a), position which state that the use of ICT in education and training institutions will play a major role in disseminating skills to the wider society and thus create positive impacts in the economy. In general, ICT policies enhance ICT use.

Table 4. 31: Policy Guidelines on use of ICT

	Frequency	**Percent**
Agree	293	52.5
Tend to agree	195	35.0
Tend to disagree	14	2.5
Disagree	56	10.0

Source: Primary Research Data (2013)

b) Policy Guidelines on Access of Funds

The study sought to find out whether policy guidelines make it easy to access funds for ICT development. Table 4.32 presents the data on this item. The study results revealed that 57.5% of lecturers agreed to the fact that policy guidelines makes it easy to access funds for ICT development, while another 35% tended to agree this fact.

Data findings presented allow us to make us make several inferences. Firstly, policy guidelines guided access to funds. Secondly, policy guidelines assisted ICT development. Thirdly, ICT policies set mechanisms to attract funds for ICT projects.

This is as observed by Ang'ondi (2010) when he observes that, the development of ICT policies to some extent has set up mechanisms to attract donors. For instance, the Kenya ICT trust and the Tanzanian and Rwandan ICT policies specified ICT regulations in order to attract donors. In general, ICT policies aid in access to funds.

Table 4. 32: Policy Guidelines on access to Funds

	Frequency	Percent
Agree	321	57.5
Tend to agree	195	35.0
Tend to disagree	42	7.5

Source: Primary Research Data (2013)

c) Policy and availability of ICT

The study sought to find out whether policy makes availability of ICT easy. Table 4.33 presents the data on this item. The study results revealed that 45% of lecturers agreed to the fact that policy makes availability of ICT easy, another 32.5% tend to agree with this fact.

We can make the following inferences from these findings. Firstly, other factors determine ICT access. Secondly, enforcement of policy improves access to ICT. Thirdly, availability of ICT policies determines implementation. This agrees with Hare (2007), & Farrell (2007) who posit that, Ministry of Education should ensure that the available ICT policies should be enforced to ensure ease of access to ICT. In general, ICT policies dictate access to ICT.

Table 4. 33: Policy guidelines on availability of ICT

	Frequency	Percent
Agree	251	45
Tend to agree	181	32.5
Tend to disagree	98	17.5
Disagree	28	5.0

Source: Primary Research Data (2013)

d) Policy Guidelines on Use of ICT

The study sought to find out whether policy guidelines on ICT use are not important. Table 4.34 presents the data on this item. The study results revealed that 42.5% of lecturers disagree to this fact, another 27.5% tended to disagree with this fact.

The data results lead us to make the following inferences. Firstly, policy guidelines determine access to ICT. Secondly, ICT adoption comes from other motivators. Thirdly, ICT acceptance is from a natural platform. This view agrees with the Republic of Kenya (2004a) which sees education as the natural platform for equipping their nation with ICT skills in order to create a dynamic and sustainable economic growth. In general, policy is important to ICT access.

Table 4. 34: Policy Guidelines on use of ICT

	Frequency	Percent
Agree	56	10.0
Tend to agree	111	20.0
Tend to disagree	154	27.5
Disagree	237	42.5

Source: Primary Research Data (2013)

e) Use of ICT Policies by Staff

The study sought to find out whether staffs use ICT policy guidelines to enhance instruction. Table 4.35 presents the data on this item. The study results revealed that 45% of lecturers disagree to this fact, another 32.5% tended to disagree.

From the data presented, we can infer the following. Firstly, availability of policy does not improve use of ICT. Secondly, some members of staff do not value incentives embedded in policy. Thirdly, institutions do not enforce adherence to policy. Fourthly, staff lacked time to enforce ICT policy.

Kozma, McGhee, Quellmalz, & Zalles (2004), agree with this observation when they posit that, the biggest barriers to the use of computers identified by teachers were the lack of time available in classes, and in their own schedules for planning; and the lack of a national policy on the use of computers in schools. In general, staffs do not use ICT policy to improve ICT use.

Table 4. 35: Enhancement of Use of ICT

	Frequency	Percent
Agree	28	5.0
Tend to agree	98	17.5
Tend to disagree	181	32.5
Disagree	251	45.0

Source: Primary Research Data (2013)

4.7.2 Relationship between Government Policy and Instructional Use of ICT

To establish the influence of Government policy on instructional use of ICT in public Technical Training Institutions the relevant null hypothesis was stated as follows:

Ho5: There is no statistical significant relationship between Government Policy and Instructional Use of ICT by lecturers in Technical Training institutions in Kenya

The aggregate mean scores of Government Policy factors measures (independent variable) were regressed on the aggregate mean scores of instructional use of ICT measures (dependent variable). The relevant results are as presented in Table 4.36.

Table 4. 36: Regression Analysis of Government Policy against ICT Use

Goodness-of-fit

Sample size	R	R Square	Adjusted R Square	Std. Error of the Estimate
558	.825	.680	.502	.43553

Predictors: (Constant), Government Policy

Overall significance: ANOVA (F-test)

	Sums of Squares	Degrees of Freedom	Mean Square	F	Significance (p-value)
Regression	3.626	5	.725	3.823	.039
Residual	1.707	9	.190		
Total	5.333	14			

Predictors: (Constant), Government Policy
Dependent Variable: Instructional use of ICT

Individual significance

	Unstandardized Coefficients		Standardized Coefficients		
	Beta	Standard Error	Beta	t-value	Significance (p-value)
(Constant)	.0798	1.025		.778	0.045
Aggregate Mean-Government Policy	.803	.278	.832	2.888	0.018

Dependent Variable: Instructional use of ICT

Source: Primary Research Data (2013)

The regression results in Tables 4.36 reveal statistically significant positive linear relationship between government policy and instructional use of ICT ($\beta = 0.832$, p-value $= 0.039$). Hence, Ho5 is rejected since $\beta \neq 0$ and p-value is less than 0.05. The results also show that Government Policy had high explanatory power on instructional use of ICT as

it accounted for 82.5 percent of its variability (R square= 0.825). On the basis of these results, the following simple regression equation that can be used to estimate instructional use of ICT for a given level of Government Policy is given by:

IU = 0.0798 + 0.832C

(0.045)   (0.018)

Where;

IU = Instructional use of ICT

GP = Government Policy

0.0798 = y-intercept; constant

0.832 = an estimate of the expected increase in instructional use of ICT due to change in Government Policy

0.045 and 0.018 = p-value (a measure of how significant the sample results are; the smallest value of α for which Ho5 can be rejected)

The study, therefore, fails to accept the null hypothesis, Ho5 at 95% confidence interval and concludes that there is no statistical significant relationship between government policy and instructional Use of ICT by lecturers in Technical Training institutions in Kenya.

CHAPTER FIVE

5.0 SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of key findings of the study, relevant discussions, conclusions and the necessary recommendations. The study sought to assess the relationship between perceived ease of use, perceived usefulness, cultural relevance, ICT trends, and government policies on instructional use of information communication technology by lecturers in Technical Training institutions in Kenya.

The summary was done in line with the objectives of the study based on the output of the descriptive and inferential statistical analyses guided to test the research hypothesis of the study. Each recommendation traces directly to each conclusion in line with practice and policy.

5.2 Summary of the Findings

5.2.1 Ease of Use of ICT

The first objective of the study investigated Ease of Use of ICT in instruction. Various methods were used to arrive at the findings. These methods included descriptive statistics and regression analysis.

The regression results revealed that there was a statistically significant positive linear relationship between perceived ease of use and instructional use of ICT ($\beta = 0.910$, p-value = 0.000). The results also show that perceived ease of use had high explanatory power on instructional use of ICT as it accounted for 82.8 percent of its variability (R square= 0.828).

The first research question item on ease of use of ICT sought find out whether lecturers used ICT daily for computing. Descriptive statistics on this question item revealed that,

50% of lecturers used ICT daily for computing. From these findings, the following was inferred. Firstly, lecturers used ICT daily for computing for instructional purposes. Secondly, lecturers had acquired ICT skills through computing. Thirdly, the acquired ICT skills were instrumental in instruction. In general, lecturers used ICT daily for computing.

The second research question item on ease of use sought to find out whether lecturers used ICT daily for communication. Descriptive statistics revealed that 70% of lecturers used ICT daily. From the descriptive statistics, the following was inferred. Firstly, most lecturers had acquired requisite ICT skills. Secondly, lecturers had access to ICT infrastructure which they used for communication. Thirdly, skills acquired from ICT use for communication was useful for instructional communication. In general, lecturers used ICT daily for communication.

The third research question item on ease of use of ICT sought to find out whether lecturers used ICT daily for instruction. Descriptive statistics revealed that 40% of lecturers used ICT daily for instruction. From the above data, the following was inferred. Firstly, instructional use of ICT was not a new phenomenon. Secondly, lecturers made their own individual effort to use ICT in instruction. Thirdly, lecturers voluntarily chose to use ICT for instruction. Fourthly, lecturers appreciated the benefits of ICT in instruction. In general, use of ICT for instruction was popular among lecturers.

The fourth research question item on ease of use of ICT sought to find out whether lecturers used ICT for administrative purposes. Descriptive statistics revealed that, 42.5% of lecturers used ICT once a month, for administrative purposes. From the above findings, the following was inferred. Firstly, lecturers used ICT for administrative purposes. Secondly, lecturers kept administrative records using ICT. Thirdly, use of ICT

enabled lecturers to keep effective student records. In general, ICT was used by lecturers for administrative purposes.

The fifth research question item on ease of use sought to find out whether lectures used ICT use for internet connectivity. Descriptive statistics revealed that 55% of lecturers used ICT daily. The following was inferred from the findings. Firstly, lecturers used ICT for internet connectivity. Secondly, lecturers accessed a lot of instructional resources through internet connectivity. Thirdly, internet connectivity improved the kind of instructional materials prepared by lecturers. Fourthly, lecturers used internet connectivity to research on topics they did not know well. In general, internet connectivity aids in all facets of knowledge management.

5.2.2 Usefulness of ICT Use

In order to determine the extent to which Perceived usefulness influence instructional use of ICT by lecturers in Technical Training institutions in Kenya, descriptive statistics, and regression analysis were calculated.

The regression results revealed statistically significant positive linear relationship between perceived usefulness and instructional use of ICT (β = 0.724, p-value = 0.001). The results also showed that perceived usefulness had high explanatory power on instructional use of ICT as it accounted for 67.8 percent of its variability (R square= 0.678).

The first research question item on ease of use sought to find out whether ICT use greatly improved the instruction they gave. Descriptive statistics revealed that 90% of lecturers agreed to this fact that instructional use of ICT greatly improved the instruction they gave. From this research data, it was inferred that ICT use is of benefit to instruction. In general, use of ICT greatly improves instruction.

The second research question item on ease of use sought to find out whether ICT use gave them greater control over instruction. Descriptive research statistics revealed that 57.5% of lecturers agreed that using ICT gave them greater control over instruction, while another 35% tended to agree. The following was inferred from this finding. Firstly, ICT is useful in instruction. Secondly, ICT makes students attentive during instruction. Thirdly, ICT use in instruction revolutionized learning experiences. Fourthly, ICT use motivates learning. In general, ICT use improves lecturers control during instruction.

The third research question item on ease of use sought to find out whether ICT use enables lecturers accomplish tasks more quickly. The descriptive research statistics revealed that 80% of lecturers agreed to the fact that using ICT enables them accomplish tasks more quickly, while another 17.5% tended to agree to this fact. From these findings, the following was inferred. Firstly, use of ICT eases accomplishment of tasks. Secondly, ICT use saves time. In general, ICT use improves the rate of accomplishment of tasks.

The fourth research question item on ease of use sought to find out whether ICT enables lecturers to accomplish more workload. Descriptive statistic results revealed that 52.5% of lecturers agreed to the fact that using ICT enables them accomplish more workload, while a further 35% tended to agree to this fact. From the above research findings, the following was inferred. Firstly, ICT enables handling of more Workload. Secondly, ICT use reduces work backlog. Thirdly, ICT use enables efficiency at work. Fourthly, ICT creates avenues for rest. In general, ICT use enabled accomplished of more workload.

The fifth research question item on ease of use sought to find out whether ICT enhanced lecturers effectiveness. The descriptive study results revealed that 80% of lecturers agreed that using ICT enhanced their effectiveness. From this research finding, the following was inferred. Firstly, ICT enhances school management. Secondly, ICT

improves traditional instruction processes. Thirdly, ICT improves school curricula presentation. In general, use of ICT enhanced lecturer's effectiveness.

5.2.3 Cultural Relevance of ICT Use

The third objective of the study was to determine the effect of Cultural relevance on instructional use of ICT by lecturers in Technical Training institutions in Kenya. To meet this objective, descriptive statistics, and regression analysis were calculated.

The regression results revealed statistically insignificant linear relationship between Cultural Relevance and Instructional Use of ICT ($\beta = 0.121$, p-value = 0.455). The results also show that Cultural Relevance had low explanatory power on instructional use of ICT as it accounted for only 1.5 percent of its variability (R square= 0.015).

The first research question item on cultural relevance sought to find out whether ICT use makes a difference in lecturers lives. The study descriptive statistics revealed 40% of lecturers tended to disagree that use of ICT makes a difference in their lives, another 35% disagreed with this fact that. From the descriptive statistics, the following was inferred. Firstly, other factors apart from culture also affect our lives. Secondly, school practices affect our lives. Thirdly, national norms affect the way we live. Fourthly, school regularities affect lives. In general, use of ICT did not significantly affect lecturer's lives.

The second research question item on cultural relevance sought to find out whether knowing about ICT earns one respect. The descriptive statistics revealed that 57.5% of lecturers agree that one earns a lot of respect by knowing about ICT, while another 35% tend to agree to this fact. From the research data, the following was inferred. Firstly, ICT use improves group understandings. Secondly, ICT use affects cultural perceptions. Thirdly, use of ICT is culturally valued. Fourthly, ICT use enhances common beliefs. In general, ICT use enhanced ones position in society.

The third research question item on cultural relevance sought to find out whether use of ICT hinders the youth from learning and respecting their traditions. The descriptive data results revealed that 45% of lecturers disagree that ICT hinders the youth from learning and respecting their traditions, while another 32.5% tended to disagree to this fact. The following was inferred from these research findings. Firstly, we learn more through use of ICT. Secondly, ICT use did not affect respect to traditions. Fourthly, ICT use is essential in propagating people's culture. In general, use of ICT does not affect cultural traditions.

The fourth research question item on cultural relevance sought to establish whether use of ICT does not reduce use users relationship with others. The descriptive statistics revealed that, 90% of lecturers agreed that use of ICT do not reduce users' relationship with others. From the research findings, the following was inferred. Firstly, ICT improves ones relationships with others. Secondly, ICT use improves cultural understanding. Thirdly, ICT use improves the way we relate culturally. In general, ICT use improves relationships.

The fifth question item on cultural relevance sought to find out whether there were many social ills associated with the use of ICT. The study results revealed that, 42.5% of lecturers disagreed with the fact that, many social ills were associated with use of ICT, while another 27.5% tend to disagree with this fact. From these findings, the following was inferred. Firstly, the merits of using ICT outweigh the demerits. Secondly, ICT use is not the only source of social evils. Thirdly, individuals can choose to use ICT positively. In general, ICT use is not the only source of social ills.

5.2.4 Trends of ICT Use

The study attempted to investigate whether ICT Trends contributes to instructional use of ICT by lecturers in Technical Training institutions in Kenya. The type of analysis used includes descriptive statistics, and regression analysis.

The regression results revealed statistically significant positive linear relationship between ICT Trends and Instructional use of ICT (β = 0.139, p-value = 0.003). The results also revealed that ICT Trends had high explanatory power on instructional use of ICT as it accounted for 78.4 percent of its variability (R square= 0.784).

This first research question item on ICT Trends sought to find out whether use of ICT was fashionable and should be encouraged. The descriptive statistics revealed that 52.5% of lecturers agree to the fact that use of ICT is fashionable and should be encouraged, another 35% tend to agree with this fact. From this finding, the following was inferred. Firstly, use of ICT is trending. Secondly, use of ICT can bridge the digital divide. Thirdly, use of ICT should be encouraged. In general, ICT use is fashionable, and should be encouraged.

This second research question item on ICT trends sought to find out whether knowledge about ICT makes one have an edge over others. The study descriptive statistics revealed that 57.5% of lecturers agreed that knowledge about ICT makes them have an edge over others, while another 35% tend to agree to this fact. From the data presented, the following was inferred. Firstly, ICT knowledge is essential. Secondly, ICT prepares students for the modern society. Thirdly, ICT knowledge uplifts status. In general, ICT use makes one gain an edge over others.

The third research question item on ICT trends sought to find out whether ICT use gives one access to a lot of information. The study results revealed that 77.5% of lecturers

agreed to the fact that ICT use gives one access to a lot of information, while the remaining 22.5% tend to agree with this fact. The following was inferred from these finding. Firstly, ICT facilitates access to a lot of information. Secondly, ICT use enabled digestion t of huge quantities of information. Thirdly, ICT makes the world a global village. Fourthly, ICT brings a convergence of many electronic technologies. In general, ICT enabled access to a lot of information.

The fourth study item on ICT trends sought to find out whether use of ICT is the trend in modern communication. The study results revealed that 90% of lecturers agreed to the fact that use of ICT is the trend in modern communication. From the above results, the following was inferred. Firstly, ICT has revolutionized the communication platform. Secondly, communication is fast through ICT. Thirdly, ICT processes communication in a short time. Fourthly, ICT provides various avenues of communication. In general, modern communication through ICT is trending.

The fifth question item on ICT trends sought to find out whether lecturers believe that use of ICT makes the world a global village. The study results revealed that 77.5% of lecturers agree to the fact that use of ICT makes the world a global village, and the remaining 22.5% tend to agree with the fact. From this descriptive data, the following was inferred. Firstly, ICT use has developed rapidly. Secondly, ICT technology has become a global platform for communication. Thirdly, ICT use is the future in communication. Fourthly, the world brings together many ideas through ICT. Fifthly, ICT enables wider discussion and appreciation of ideas. In general, ICT has made the world a global village.

5.2.5 Government Policy Factors on Use of ICT

The fifth and last objective of the study was to determine the role of Government policy on instructional use of ICT by lecturers in Technical Training institutions in Kenya. Descriptive statistics and regression analysis were calculated.

The regression results revealed statistically significant positive linear relationship between government policy and instructional use of ICT (β = 0.832, p-value = 0.039). The results also showed that Government Policy had high explanatory power on instructional use of ICT as it accounted for 82.5 percent of its variability (R square= 0.825).

This first question item on government policy sought to assess whether policy guidelines enhance use of ICT. The descriptive study results revealed that 52.5% of lecturers agreed to the fact that policy guidelines enhanced ICT use, while another 35.5% tended to agree with this fact. The descriptive statistics, the following was inferred. Firstly, policy guidelines on ICT direct ICT use. Secondly, lecturers are aware about available policy. Thirdly, lecturers use policy to access ICT. Fourthly, ICT policies create impact on ICT use. In general, ICT policies enhanced ICT use.

The second study item on government policy sought to find out whether policy guidelines make it easy to access funds for ICT development. The study results revealed that 57.5% of lecturers agreed to the fact that policy guidelines makes it easy to access funds for ICT development, while another 35% tended to agree this fact. From this descriptive data, the following was inferred. Firstly, policy guides access to funds. Secondly, policy guidelines assist ICT development. Thirdly, ICT policies set mechanisms to attract funds for ICT projects. In general, ICT policies aid in access to funds.

The third question item on government policy sought to find out whether policy makes availability of ICT easy. The study results revealed that 45% of lecturers agreed to the fact that policy makes availability of ICT easy, another 32.5% tend to agree with this fact. From this descriptive statistics, the following was inferred. Firstly, other factors determined ICT access. Secondly, enforcement of policy improved access to ICT. Thirdly, availability of ICT policies determined implementation. In general, ICT policies influenced access to ICT

The fourth question item on government policy sought to find out whether policy guidelines on ICT use are not important. The study results revealed that 42.5% of lecturers disagree to this fact, another 27.5% tended to disagree with this fact. The following was inferred from this descriptive statistics. Firstly, policy guidelines determined access to ICT. Secondly, other motivators accounted for acceptance of ICT. Thirdly, ICT acceptance is from a natural platform. In general, policy is important to ICT access.

The fifth question item on government policy sought to find out whether members of staff use ICT policy guidelines to enhance instruction. The study results revealed that 45% of lecturers disagreed to this fact, another 32.5% tended to disagree. From the data presented, the following was inferred. Firstly, availability of policy does not improve use of ICT. Secondly, some members of staff do not value incentives embedded in policy. Thirdly, institutions do not enforce adherence to policy. Fourthly, staff lacked time to enforce ICT policy. In general, staffs do not use ICT policy to improve ICT use.

5.2.6 Instructional Use of ICT

The study investigated the instructional use of ICT by lecturers in Technical Training institutions in Kenya

The first question item on instructional use of ICT sought to find out information on use of ICT for computing. Descriptive statistics revealed that 50% of lecturers used ICT daily, while another 17.5% used ICT two (2) to three (3) times a week. From the findings, the following was inferred. Firstly, the high rate of daily use of ICT for computing by lecturers is useful for instructional purposes. Secondly, the skills acquired by lecturers through computing were instrumental in instruction. In general, the use of ICT for computing was useful in instruction.

The second question item on instructional use of ICT sought to find out the use of ICT for communication. The study results revealed that 70% of lecturers used ICT daily for communication, while another 15% of lecturers use ICT two (2) to three (3) times a week. From the findings, the following was inferred. Firstly, most lecturers had requisite ICT skills. Secondly, most lecturers had access to ICT infrastructure which they used for communication. Thirdly, skills acquired from ICT use for communication were useful in instructional communication. In general, ICT use for communication was a factor that lecturers used in enhancing instruction.

The third question item on instructional use of ICT sought to find out the use of ICT for Instruction. The data revealed that 40% of lecturers used ICT daily for instruction, while another 22.5% of the respondents used ICT two (2) to three (3) times a week. From the study results, the following was inferred. Firstly, instructional use of ICT was not a new phenomenon. Secondly, lecturers made their own individual effort to use ICT in instruction. Thirdly, lecturers voluntarily chose to use ICT for instruction. Fourthly, lecturers appreciated the benefits of ICT in instruction. In general, use of ICT for instruction was popular among lecturers.

The fourth question item on instructional use of ICT sought to find out whether lecturers used ICT for administrative purposes. The study results revealed that 42.5% of lecturers used ICT once a month for administrative purposes, while another 32.5% used ICT daily for administrative purposes. From the above findings, the following was inferred. Firstly, ICT was utilized for administrative purposes. Secondly, various administrative records were kept using ICT. Thirdly, use of ICT helped in keeping effective student records. In general, use of ICT for administrative purposes had gained popularity among lecturers.

The fifth question item on instructional use of ICT sought to find out the use of ICT for internet connectivity. Descriptive statistics reveal that 55% lecturers used ICT daily for internet connectivity, while another 22.5% lecturers used ICT two (2) to three (3) times a week for internet connectivity. From the study results, the following was inferred. Firstly, lecturers used ICT for internet connectivity. Secondly, lecturers accessed instructional resources through internet connectivity. Thirdly, internet connectivity improved the kind of instructional materials prepared by lecturers. Fourthly, lecturers used internet connectivity to research on topics they did not know well. In general, internet connectivity aided all facets of knowledge management.

5.3 Conclusion

The study sought to assess instructional use of ICT by lecturers in Technical Training institutions in Kenya. Based on the findings of this study, the following conclusions were made:

The study determined that ICT use has created a new platform for instruction. This new technology in essence has enabled lecturers to use ICT daily for computing, communication, instruction, administrative purposes, and for internet connectivity.

The findings also indicated that use of ICT by lecturers' greatly improves the instruction they give, enables them have more control of their lessons during instruction, enables them accomplish more workload, and makes them more effective when instructing.

The study also found out that; use of ICT enhanced their position in society, and improved their relationship with others.

The study also found out that ICT use was fashionable, uplifts status, enables access to more information, is the trend in modern communication, and has made the world a global village.

The study also found out that ICT policies enhanced use of ICT, aid in access to funds, influenced and determined access to ICT.

The use of ICT for computing is useful in instruction. Use of ICT in communication enhanced instruction, was popular among lecturers, had gained popularity for administrative purposes, and that internet connectivity aided instructional knowledge access and management.

The study also found out that ICT Trends positively affect instructional use of ICT in essence lecturers found ICT Trends to be influencing use ICT in instruction. In particular, lecturers who find ICT trends acceptable are more likely to develop effective use of ICT in instruction.

Demographic factors such as age and professional qualifications also affected the way lecturers' perceived instructional use of ICT. Lower age of lecturers determined greater use of ICT. Higher qualifications also determined acceptance of use of ICT. This was because lecturers got the challenge of carrying out research to better their knowledge and in the process give better instruction.

Cisco training that had started in eight (8) technical training institutes for students had challenged lecturers to accept using ICT in instruction; this is because they did not want students to outsmart them in using ICT. However, cultural relevance factors did not affect instructional use of ICT. This scenario came out because ICT had not penetrated the cultural landscape. Therefore, ICT use in cultural settings had not gained momentum as cultural heritage literature and history in Kenya was slowly getting its space through ICT use.

The findings of this study support the thesis that Perceived attributes are critical in instructional use of ICT. The results of the study demonstrated that some TAM constructs had a direct and indirect effect on lecturer's acceptance and adoption of ICT for instructional use. For that reason, there is potential for practical application in the development and management of instructional use of ICT in technical training institutions.

In conclusion, perceived attributes such as: ease of use, usefulness, ICT trends, and government policy, have an effect on instructional use of ICT by lecturers in Technical Training institutions. This potential can be harnessed for use of ICT for instructional purposes. In, general, a real learning revolution had started, in which educators use information technologies to provide learning experiences that are qualitatively different from their predecessors.

5.4 Recommendations

From study results and conclusions, the recommendations were as follows:

a) In relation to demographics, the study recommends that higher education qualifications are to be preferred for lecturers because they are more comfortable with, and skilled in the use of available ICT technology. Such lecturers would be

more aware of alternative forms of instructional use of ICT. This could potentially increase instructional use of ICT;

b) The study recommends that the provision of Cisco Networking Academy Programme currently being offered in eight (8) Technical Training institutions meant to provide students with industry-valued certification in skills and repair and maintenance of computers should be extended to other Technical Training institutions to enable provision more ICT exposure to students and staff;

c) The study recommends that lecturers should be encouraged to use ICT for computing and for internet connectivity as this enables them access current and up to date information resources and through this enhance instructional use of ICT;

d) The study recommends that the government should operationalize, the draft ICT lecturers competencies framework to enable lecturers have policy direction when planning for competence training;

e) Lecturers should be encouraged to use ICT for instructional purposes because it is the trend in modern communication, and has made the world a global village, hence could assist them in concretizing concepts they use in instruction to make them have a global outlook; and

f) The study also recommends use of ICT for instruction as it greatly improves the instruction they give, enables them have more control of their lessons, enables them accomplish more workload, and makes them more effective in instruction.

5.5 Suggested Areas for Further Research

The study focused on instructional use of ICT by lecturers in Technical Training institutions in Kenya. The benefits of instructional use of ICT were overwhelming. There

is therefore an opportunity to study instructional use of ICT in other educational institutions in Kenya such as Universities, Tertiary Colleges, Secondary Schools, Primary Schools, Informal Schools, and Village Polytechnics to enhance generalization.

The variables the study found significant to instructional use of ICT were: Ease of Use, Usefulness, ICT Trends, and Government Policy. Further empirical study is encouraged to test other variables responsible for instructional use of ICT by teachers in the context of educational institutions.

This study has offered its unique approach through its methodology in providing insight into the instructional use of ICT by lecturers in Technical Training institutions in Kenya. This study anchored on the Technology Acceptance Model. Other studies could employ different approaches, methodologies, and theories. Future studies could apply different research instruments like focus group discussions to involve respondents in discussions in order to generate detailed information which would inform policy and practice towards instructional use of ICT. Findings of this study may compare to future studies to ascertain whether there are changing trends in use of ICT in instruction.

There is need for a study evaluating the effectiveness of other strategies used for instruction, in order to maximise the potential of instructors who are competent in use of ICT. Further, research on instructional use of ICT can be determined on attributes such as achievement of learning objectives, alternative technological avenues of instructional use of ICT, instructional environments that encourage use of ICT, and design of systems that may improve use of ICT in instruction.

REFERENCES

Aceto, S., Delrio, C., & Dondi, C. (Eds.). (2006). *HELIOS Yearly Report 2005 - 2006.* Retrieved September 12, 2014, from http://www.education-observatories.net/helios/

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes. 50(2), 179-211.*

Ajzen, I., & Fishbein, M. (1980). *Understanding Attitudes and Predicting School Behaviour*. Engelwood Cliffs: Prentice Hall.

Al-Ansari, H. (2006). Internet Use by the Faculty Members of Kuwait University. *The Electronic Library, 24*(6), 791-803.

Al-Oteawi, S. (2002). *The Perceptions of Administrators and Teachers in Utilizing Information Technology in Instruction, Administrative Work, Technology Planning, and Staff Development in Saudi Arabia.* Doctoral dissertation, Ohio University.

Anderson, J., & Weert, T. (2002). *Information and Communication Technology in Education: A Curriculum for Schools and Programme of Teacher Development.* Approaches (3rd Ed.). Thousand Oaks, CA: Sage Publications.

Anderson, R., Sweeney, D., Williams, T., Camin, D., & Martin, K. (2003). *An Introduction to Management Science, Quantitative Approaches to Decision Making*. Mason: USA, South-Western, Cengage Learning.

Ang'ondi, E. (2012). National Policy for using ICT to Support Teaching and Learning in Primary and Secondary Schools in East Africa. In S. Hennessy, B. Onguko, B. Harrison, E. Ang'ondi, S. Namalefe, A. Naseem, et al. (Eds.), *Developing the Use of Information and Communication Technology to Enhance Teaching and Learning in East African Schools: Review of the Literature.* (Vol. Research Report No. 1 May 2010). Centre for Commonwealth Education & Aga- Khan University Institute for Educational Development-Eastern Africa.

Annan, K. (2001). *Launching Information and Communication Technology (ICT) Task Force, Secretary General Appeals for Support from Private Sector.* Retrieved October 12, 2014, from http://www.inicttaskforce.org/welcome.

Auerwald, M., & Magambo, J. (2006). *Fostering ICT Use in Teacher Education in Africa.* Retrieved October 12, 2014, from http://www.uni-koeln.de/phil-fak/ afrikanistik/kant/data/ AM1_kant1.pdf

Beck, C. (2003). *Nursing Research Methods: Principles and Methods (7th Ed).* Lippincott: Williams and Wilkins.

Benzie, D. (1995). IFIP Working Group 3.5: Using Computers to Support Young Learners. *World Conference on Computers in Education VI,* 35-42**.**

Blankenship, S. (1998). *Factors Related to Computer Use by Teachers in Classroom Instruction.* Doctoral Dissertation, Virginia Polytechnic Institute and State University.

Buckingham, J. (2003). *Educational Research for Policy and Practice, 71-86.*

Burns, N. and Grove, S. (2003). *The Practice of Nursing Research: Conduct, Critique and Utilization.* Philadelphia: W. Saunders

Campbell, L., & Campbell, B. (1996). *Teaching & Learning through Multiple Intelligences*. Needlam Height, Mass: Allyn and Bacon.

Carbo, T. (1997). Mediacy: Knowledge and Skills to Navigate the Information Highway. *The International Information & Library Review, 29, 393-401.*

Chai, C., Hong, H., & Teo, T. (2009). Singaporean and Taiwanese Pre-service Teachers' Beliefs and their Attitude Towards ICT Use: A Comparative Study. *The Asia-Pacific Education Researcher, 18, 117-128.*

Chen, A., Mashhadi, A., Ang, D., & Harkrider, N. (1999). Cultural Issues in the Design of Technology-Enhanced Learning Systems. *British Journal of Educational Technology, 30, 217-230.*

Chimwei, D. (2013). *Factors Influencing Teacher Educators' Level of Information and Communication Technology Integration in Teaching in Primary Teacher Training Colleges in Kenya*. PhD. Un-published Thesis, Moi University Eldoret.

Chin, W., & Todd, P. (1995). On the Use, Usefulness, and Ease of Use of Structural Equation Modeling in MIS Research: A Note of Caution. *MIS Quarterly, 19(2), 237-246.*

Cooper, D., & Schindler, P. (2006). *Research Design: Qualitative and Quantitative Approaches.* Thousand Oaks, CA: Sage Publications.

Corea, S. (2000). Cultivating Technological Innovation for Development, *Electronic Journal on Information Systems in Developing Countries, 2(2), 1-15.*

Cox, M., Preston, C. & Cox, K. (1999). What Factors Support or Prevent Teachers from Using ICT in their Classrooms?. *Paper presented at the British Educational Research Association Annual Conference, University of Sussex, Brighton, November, 1999.*

Creswell, J. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (4th Ed.).* Thousand Oaks, California: SAGE Publications.

Creswell, J., & Clark, V. (2007). *Designing and Conducting Mixed Methods Research.* Thousand Oaks, Calif.: SAGE Publications.

Cronbarch, J. (1951). *Coefficient Alpha and Internal Structure of Test Psychometrika, 16.* Retrieved August 10, 2014, from http://www.garfield.library.upenn.edu/classics1978

Daniel, W. (1999). *Biostatistics: A Foundation for Analysis in the Health Sciences (7th Ed.).* New York: John Wiley & Sons.

Davis, E., & Tearle, P. (1999). *A Core Curriculum for Telematics in Teacher Training.* Retrieved September 19, 2014, from http://www.researchgate.net/publication/220946304_A_Core_Curriculum _for_Telematics_in_Teacher_Training

Davis, F. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly, 13*, 319-339.

Davis, F., Bagozzi, R., & Warshaw, P. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science, 35(8), 982-1003.*

Davis, N., Preston, C., & Sahin, I. (2009). ICT Teacher Training: Evidence for Multi-level Evaluation from a National Initiative. *British Journal of Educational Technology, 40(1), 135-148.*

Dewachi, A. (2001). Overview of Internet in Arab States. *Paper Presented at the Arab Region Internet and Telecom Summit, Muscat, Oman, 28-30 May 2001.*

Doering, A., Hughes, J., & Huffman, D. (2003). Pre-service Teachers. *Journal of Research on Technology in Education, 35*, 342-361.

Eriksson, P., Kovalainen, A. (2008). *Qualitative Methods in Business Research (3rd Ed).* London: Sage Publications Ltd.

Ertmer, P., & Ottenbreit-Leftwich, A. (2010). Teacher Technology Change. *Journal of Research on Technology in Education, 42, 255-284.*

Etta, F. E., & Parvyn-Wamahiu, S. (Eds.). (2003). Information and Communication Technologies for Development in Africa, 2: *The Experience with Community Telecentres, Ottawa: IDRC.*

Evans-Andris, M. (1995). Barrier to Computer Integration: Micro-Interaction Among Computer Co-ordinators and Classroom Teachers in Elementary Schools. *Journal of Research on Computing in Education, 28, 29-45.*

Farell, G. (2007). *Survey of ICT and Education in Africa: Kenya Country Report-ICT in Education in Kenya*. Washington, DC: infoDev / World Bank.

Farrell, G., & Isaacs, S. (2007). *Survey of ICT and Education in Africa. A Summary Report, Based on 53 Country Surveys*. Washington, DC: infoDev/ World Bank.

Fisher, T., Higgins, C., & Loveless, A. (2006). Teachers Learning with Digital Technologies: A Review of Research and Projects. *Futurelab Report Series, 14.*

Gaimble, E., & Burns, M. (2005). *Using Technology to Train Teachers: Appropriate Uses of ICT for Teacher Development in Developing Countries.* Retrieved October 13, 2014.

Gay, L., & Airasian, P. (2000). *Educational Research: Competencies for Analysis and Application (6th Ed.).* Upper Saddle River, N.J.: Merrill.

Gefen, D. (2004). What Makes an ERP Implementation Relationship Worthwhile: Linking Trust Mechanisms and ERP Usefulness. *Journal of Management Information, 21(1), 263-288.*

Gefen, D., Straub, D., & Boudreau, C. (2000). Structural Equation Modeling and Regression. *Communications of the AIS*, 4*(7), 1-70.*

GeSCI (2004). Global e-Schools and Communities Initiative Founded by UN ICT Taskforce.

Gilbert, J., & Kelly, R. (2005). Frontiers and Frontlines: Metaphors Describing Lecturers' Attitude to ICT Adoption. *Educational Technology and Society, 8(3), 110-121.*

Goetz, J., & LeCompte, M. (1984). *Ethnographic and Qualitative Design in Educational Research.* New York: Academic Press.

Gómez, R. & Martinez, J. (2001). The Internet …… Why? and What for?. *San José: International Development Research Centre and Fundación Acceso.*

Guba, E. (1990). The alternative paradigm dialogue. In E. G. Guba (Eds). *The Paradigm Dialogue.* New Bury Park, CA: Sage.

Gupta, S., & Gupta, M. (2009). *Business Statistics*. New Delhi: Sultan Chand & Sons Educational Publishers.

Hannessy, S. Onguko, B. Harrison, D., Ang'ondi, E. K. Namalefe, S. Naseem, A. & Wamakote, L. (2010). Developing the Use of Information and Communication Technology to Enhance Teaching and Learning in East African Schools: Review of the Literature. *Centre for Commonwealth Education & Aga Khan University Institute for Educational Development-Eastern Africa, Research Report No. 1, May-2010.*

Hare, H. (2007). *Survey of ICT in Education in Tanzania. Tanzania Country Report-ICT in Education in Tanzania.* Washington, DC: infoDev/World Bank.

Harper, D. (1987). The Creation and Development of Educational Computer Technology. *Educational Technology–Its Creation, Development and Cross-Cultural Transfer, 35-63.*

Hawkridge, D. (1990). Computers in Third World schools: The Example of China. *British Journal of Educational Technology, 21(1), 4-20.*

Henning, E., Rensburg, V., & Smit, B. (2004). *Finding your Way in Qualitative Research* Pretoria: Van Schaik.

Hepp, P., Hinostraza, E., Laval, E., & Reinbein, L. (2004). *Technology in Schools: Education, ICT and the Knowledge Society*. Retrieved October 13, 2014.

Higgins, S. (2004). *Does ICT Improve Learning and Teaching in Schools?*. Retrieved October 26, 2014.

Hill, C., Loch, K., Straub, D., & El-Sheshai, K. (1998). A Qualitative Assessment of Arab Culture and Information Technology Transfer. *Journal of Global Information Management, 6(3), 29-38.*

Hofstede, G. (1997). *Cultures and Organizations: Software of the Mind*. London: McGraw-Hill.

Horton, R., Buck, T., Waterson, P., & Clegg, C. (2001). Explaining Intranet Use with the Technology Acceptance Model. *Journal of Information Technology, 16, 237-249.*

Hyndman, D. (2008). *Introduction. Analog and Hybrid Computing, 1-14.*

Igbaria, M., Zinatelli, N., Cragg, P., & Cavaye, A. (1997). Personal Computing Acceptance Factors in Small Firms: A Structural Equation Model. *Mis Quarterly,* 279-279.

Imel, S. (1998). Technology and Adult Learning: Current Perspectives. *ERIC Digest, 197.* Retrieved November 17, 2014, from: http://www.nyadulted.org/admin_b2.htm.

Jones, B., & Maloy, R. (1996). *Schools for an Information Age: Restructuring Foundations for Learning and Teaching.* Westport: Praeger.

Jones, R., & Kozma, R. (2003). Local and National ICT policies. *Technology, Innovation, and Educational Change: A Global Perspective. International Society for Technology in Education.*

Karahanna, E., Straub, D., & Chervany, N. (1999). Information Technology Adoption Across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs. *MIS Quarterly, 23, 183-213.*

Karaliotas, Y. (1997). *Project Report, Learning on and over the Internet: Dynamics and Limitations: Will the New Technology Become the Main Vehicle for a Learning Society? 12 November 1997.*

Kasworm, C. & Londoner, C. (2000). Adult Learning and Technology. In Wilson, A. & Hayse, E. (Eds.). *Handbook of Adult and Continuing Education.* San Francisco, CA: Jossey-Bass.

Kerlinger, F. (1992), *Foundations of Behavioral Research.* New Delhi: Sarjeet Publishers.

Kothari, C. (2004). *Research Methodology: Methods and Techniques, (2nd Ed).* New Delhi: New age International Publishers.

Kozma, R. (2005). National Policies that Connect ICT Based Education Reform to Economic and Social Development. *An Interdisciplinary Journal on Humans in ICT Environments, 1(2), 117-156.*

Kozma, R., McGhee, R., Quellmalz, E., & Zalles, D. (2004). Closing the Digital Divide: Evaluation of the World Links Program. *International Journal of Educational Development, 25(4), 361-381.*

Kupsh, J. & Mason, S. (1985). Designing Technical and Skills Training Programmes. In Birnbrauer, H. (Ed.), *The ASTD Handbook for Technical and Skills Training, 3, 25–35.* Alexandria, American Society for Training and Development.

Lancaster G., Dodd S. & Williamson, P. (2010). Design and Analysis of Pilot Studies: Recommendations for Good Practice. *Journal of Evaluation in Clinical Practice 10(2)307–312*

Lankshear, C., & Snyder, I. (2000). *Teachers and Technoliteracy.* St. Leonards, NSW: Allen & Unwin.

Laudon, K. & Laudon, J. (2010). *Management Information Systems, Managing the Digital Firm.* Upper Saddle River: Pearson Education Inc.

Lavrakas, P. (2008). *Encyclopedia of Survey Research Methods. 1 & 2, 146.* Los-Angeles: Sage Publications.

Leach, J. (2003). Deep Impact: teachers and Technology. *Insights Education 1.*

Leedy, P. (1993). *Practical Research Planning and Design.* New York: Macmillan.

Lemke, C., & Coughlin, E. (1998). *Technology in American schools.* Retrieved December 01, 2014, from: http://www.mff.org/pnbs/ME158.pdf

Liao, C., Palvia, P., & Chen, J. (2009). Information Technology Adoption Behavior Life Cycle: Toward a Technology Continuance Theory (TCT). *International Journal of Information Management, 29(4), 309-320.*

Loch, K, Straub, D. & Kamel, S. (2003). Diffusing the Internet in the Arab Wolrd: The Role of Social Norms and Technological Culturaltion. *IEEE Transactions on Engineering Management, 5(1)45-63.*

Lombo. S. (1998). An Evaluative Study of a Resource within a Community Learning Centre with Particular Reference to Thembalethu community Education Centre. *MIS Thesis: Department of Information Studies, Pietermaritzburg, University of Natal.*

Lundall, P. & Howell, C. (2000). *Computers in Schools: A National Survey of Information and Communication Technology in South African Schools.* University of the Western Cape, Education Policy Unit.

Makau, B. (1990). *Computers in Kenya's Secondary Schools.* Ontario : IDRC.

Martin, W. (2000). *Learning from the Colwell School: An Ethnographic Cases Study of an Educational Technology Culture.* Unpublished Doctoral Dissertation, Cornell University.

Martinez, E. (1999). Boosting Public Understanding of Science and Technology in Developing Countries. *World Conference on Science Proceedings, 1999.*

Maslowski, R. (2001). *School Culture and School Performance: An Explorative Study into the Organizational Culture of Secondary Schools and their Effects*. Enschede: Twente University Press.

Mbarikaa, A., Paytonb, F., Kvasync, L., & Atieno, A. (2009). IT Education and Workforce Participation: A New Era for Women in Kenya?. *The Information Society, 23(1), 1-18.*

McCaffey, D. (2003). *Evaluating Value Added Models for Teacher Accountability*. Santa Monica: CA, Rand.

McNamara, J. (1994). *Surveys and Experiments in Educational Research.* Lancaster, Pennyslavania, U.S.A.: Technomic Publishing Company, Inc.

Menjo, K. (2012). *Evaluation of the Effectiveness of Implementation of Information Communications Technology (ICT) in Primary Teacher Training Colleges in Kenya.* Ph.D., Un-published Thesis Moi University, Eldoret.

Modum, U. (1998). Information Technology Education and Training Initiative-The Nigerian Experience. In G. Marshall & M. Ruohonen (Eds.), *Capacity Building for IT in Education in Developing Countries, 27-38.* London: Chapman & Hall.

Moon, B. (2004a). '*Open Learning and ICTs: A Radical Solution to Preparing Teachers to Meet the Universal Basic Education (UBE).* The Open University, United Kingdom.

Moon, B. (2004b). *Open and Distance Learning for Teacher Education in Africa: Innovation and Change: A Toolkit for Education Policy Makers, Planners and Teacher Educators in Sub-Saharan Africa. Regional Human Development Working Paper Series* 5. Washington: The World Bank.

Mossom, M. (1986). *Status of Computer Education in Natal Schools.* University Lecture, University of Natal: Pietermaritzburg, October 1st 1986.

Msimang, M. (2011). *Broadband in Kenya: Build It and They Will Come*. Washington, D.C: *info*Dev / World Bank.

Mugenda, O., & Mugenda, A. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: Act Press.

Naing, L., Winn, T., & Rusli, B. (2006). Practical Issues in Calculating the Sample Size for Prevalence Studies. *Archives of Orofacial Sciences, 1, 9-14.*

Naismith, L., Lonsdale, P., Vavoula, G., & Sharples, M. (2004). *NESTA Futurelab*

Report 11: Literature Review in Mobile Technologies and Learning. Bristol, UK: NESTA Futurelab.

Ndavula, J. & Mberia, K. (2012). Social Networking Sites in Kenya: Trigger for Non-Institutionalized Democratic Participation. *International Journal of Business and Social Science, 3 (13), July 2012.*

Ndawula, S. (2009). *Internet Use for Academic Information: Attitudes of Under-Graduate Students in Kyambogo University, Uganda.* Ph.D.: Un-published Thesis, Moi University Eldoret.

Ndlovu, S. & Lawrence, D. (2012). The Quality of ICT Use in South African Classrooms. *A Paper Presented at "Towards Carnegie III" a Conference held at the University of Cape Town from 3-7 September 2012.* Retrieved September 26, 2014, from: 197_The quality of ICT use in South African Classrooms.pdf-Adobe reader.

Neuman, D. (1997). Learning in a Digital Library. *Library Trends*, *45 (4):687-707.*

Newing, H. (2011). *Conducting Research in Conservation: A Social Science Perspective.* New York: Routledge.

Nunnally, J., & Bernstein, I. (1994). *Psychometric Theory (3ʳᵈ Ed.).* New York: McGraw-Hill.

Omwenga, G. (2001). A Technology Strategy Analysis for the Deployment of Broadband Connectivity for Economic Development in Emerging Economies: Studying the Case of M-PESA in Kenya. *Journal of Eastern African Studies, 3(3), 509-525.*

Opiyo, R., & K'Akumu, O. (2006). ICT Application in the Informal Sector: A Case of Kariokor Market MSE Cluster in Nairobi. *The Urban Forum, 17(3).*

Organisation for Economic Cooperation and Development (OECD) (1999*). Education Policy Analysis, Paris.*

Orodho J. (2004). *Techniques of Writing Research Proposals and Reports in Education.* Nairobi: Masda Publishers.

Osin, L. (1998). Computers in Education in Developing Countries: Why and How?. *Education and Technology Series 3(1), 1-14.*

Palak, D., & Walls, T. (2009). Teachers' Beliefs and Technology Practices: A Mixed-Methods Approach. *Journal of Research on Technology in Education, 41, 157-181.*

Parahoo, K. (1997). *Nursing Research: Principles, Process and Issues*. New York: Pelgrave.

Patten, M. (2004). *Understanding Research Methods: An Overview of the Essentials.* Los Angels: C.A., Pyrzak Publishers.

Pedretti, E., Smith-Mayer, J. & Woodrow, J. (1999). Teaming Technology Enhanced Instruction in the Science Classroom and Teacher Professional Development. *Journal of Technology and Teacher Education, 7, 131-143.*

Pelgrum, W. & Law, N. (2009). ICT in Education Around the world: Trends, problems, and prospects. *International Institute for Educational Planning.*

Pelgrum, W. (2001). Obstacles to the Integration of ICT in Education: Results from a Worldwide Educational Assessment. *Computers and Education, 37,163-178.*

Polit, D., & Hungler, B. (2004). *Research Design and Methodology (6th Ed).* Lippincoth Williams and Wolkins ISBN 0787-15636

Punch, P. (2003). *Developing Effective Research Proposals.* London: Sage Publications.

Punie, Y. & Canberra, M. (2006). 'The Future of ICT and Learning in the Knowledge Society', Report on a Joint DG JRC/IPTS-DG EAC Workshop held in Sevilla, 20-21 October 2005. *DG JRC-IPTS, European Communities, March 2006.*

Ratemo, J. (2009). Doing Away with Books in the Classroom. *Standard: Online Edition, 10th October 2009.*

Republic of Kenya (2004a). *A Policy Framework for Education, Training and Research.* Nairobi: Government Printer.

Republic of Kenya (2005). *ICT in Education Options Paper.* Nairobi: Government Printer.

Republic of Kenya (2005). *National Information and Communications Technology (ICT) Policy.* Nairobi: Government Printer

Republic of Kenya (2006). *National Information and Communication Technology (ICT) Strategy for Education and Training.* Nairobi: Government Printer.

Republic of Kenya (2007). *Vision 2030, July-August 2007.* Nairobi: Government Printer.

Republic of Kenya (2012). *Education Sector Report 2013/14-2015/16, Medium Term Expenditure Framework,* October, 2012. Nairobi: Government Printer.

Roblyer, D., Dozier-Henry, O. & Burnette, P. (1996). Technology and Multicultural Education: The Uneasy Alliance. *Educational Technology, 36 (6), 5-12.*

Rogers, E. (2003). *Diffussion of Innovations.* New York: The Free Press.

Roza, Y. (1994*). Computer Literacy, Attitude toward Computers, and Experience with Computers of Teachers in Senior High Schools in the Provinces of West Sumatra and Riau, Indonesia.* Ph.D., Un-published Thesis: Kansas State University.

Sanford, C. (1985). *Exploring the Internet.* Chicago: U.S.A., Richard, D. Irwin, Inc.

Sang, G., Valcke, M., Braak, J. & Tondeur, J. (2010). Student Teachers' Thinking Processes and ICT Integration: Predictors of Prospective Teaching Behaviors with Educational Technology. *Computer and Education, 54, 103-112.*

Saunders, M., Thornhill, A., & Lewis P. (2009). *Research Methods for Business Students (5th Ed.).* London: Thousand Oaks, Sage.

Segars, A., & Grover, V. (1993). Re-examining PEU and Usefulness: A Confirmatory Factor Analysis. *MIS Quarterly, 17(4), 517-525.*

Sekeran, U. (1992). *Research Methods for Business: A Skill Building Approach.* New York: John Willey.

Singh, A. (2002). The Internet-Strategy for Optimum Utilization in South Africa. *South African Journal of Information Management, 1 (1), March 2002.*

SITE (2002). SITE Position Paper: Statement of Basic Principles and Suggested Actions. *Ames White Paper.*

Sproul .N. (1995). *A Guide for Practitioners and Students in Social Sciences. A Handbook of Research Methods (2nd Ed).* Metuchen: Scare Crow.

SRI (2001). *World Links for Development: Accomplishments and Challenges Monitoring and Evaluation Report Year 2: 1999-2000.*

Stodolsky, S. (1996). Should SASS Measure Instructional Processes and Teacher Effectiveness?. In Mullins and Kasprzyk, D. (Eds), *The Schools and Staffing Survey: Recommendations for the Future (1-8).* Washington, DC: US Department of Education.

Straub, D., Keil, M. & Brenner, W. (1997). Testing the Technology Acceptance Model Across Cultures, A Three Country Study. *Information and Management, 31(1), 1-11.*

Stromquist, P. (2011). The Knowledge Society and the Professoriate: Reverberations of ICTs in Teaching and Learning. *The journal of the Professioriate 4 (2): 4-22.*

Taylor, S., & Todd, P. (1995). Understanding Information Technology Usage: A Test of Competing Models. *Information Systems Research, 6(1), 144-176. 137.*

Tearle, P. (2003). ICT Implementation: What Makes the Difference?. *British Journal of Educational Technology, 34(5), 567-583.*

Tezci, E. (2011b). Turkish Primary School Teachers' Perceptions of School Culture Regarding ICT Integration. *Education Technology Research Development, 59, 429-443.*

The Knowledge Society | GESCI | ICT in Education. (2004).

The Republic of Kenya, ICT Board. (2010). *Digital Kenya: A Study to Understand the*

on-line Life of Kenyans, Key Findings.

Tinsley, J., & Weert, T. (Eds) (1995). *World Conference on Computers in Education VI: WCCE' 95, Liberating the learner (35-42).* London: Chapman and Hall.

Todd, R. (1997). IT and Learning a Never-Ending Beginning. *ACCESS, 11 (1), 11-14.*

Tully, C. (2003). Growing Up in Technological Worlds: How Modern Technologies Shape the Everyday Lives of Young People. *Bulletin of Science, Technology and Society*, *23(6), 444-456.*

UNESCO (2002). *Information and Communication Technologies in Teacher Education: A Planning Guide.* Paris: UNESCO.

UNESCO (2010). ICT Transforming Education - A Regional Guide. Bangkok: UNESCO.

UNESCO, IITE (2003). *The Use of ICTs in Technical and Vocational Education and Training. Analytical survey*. Moscow: UNESCO Institute for Information Technologies in Education.

Unwin, T. (2004). ICT & Education in Africa: Partnership, Practice and Knowledge Sharing. *In Review of African Political Economy, (99), 150-160.*

Venkatesh, V., & Bala, H. (2008). Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Sciences, 39(2), 273-315.*

Venkatesh, V., & Davis, F.(2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science, 46(2), 186-204.*

Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly, 27(3), 425-478.*

Waema, M. (2005). A Brief History of the Development of an ICT Policy in Kenya. In E. F. Etta & L. Elder (Eds.), *At the Crossroads: ICT Policy Making in East Africa, 25-43.* Nairobi: East African Educational Publishers Ltd.

Wallen, N. E., & Fraenkel, J. R. (2001). *Educational Research: A Guide to the Process.* New Jersey: Lawrence Erlbaum Associate, Inc.

Wanami, I. (2010). *Factors influencing the Integration of Computer Skills in the Secondary School Curriculum.* PhD. Un-published Thesis: Moi University, Eldoret.

Wanjala, M. S. M. (2010). *Factors Affecting the Integration of Computers in Mathematics Instruction in Secondary Schools in Bungoma District of Western Province, Kenya.* Ph.D. Un-published Thesis: Moi University, Eldoret.

Ward, L., & Parr, J. (2010). Revisiting and Reframing Use: Implications for the

Integration of ICT. *Computers and Education, 54,113-122.*

Watson, D. (1998). Blame the Techno Centric Artifact! What Research tells us about Problems Inhibiting Teacher Use of IT. In Marshall, G. & Ruohonen, M. (Eds.), *Capacity Building for IT in Education in Developing Countries 185-192.* London; Chapman & Hall.

Wellington, J. (2002). Exploring the Secret Garden: The Growing Importance of ICT in the Home. *British Journal of Educational Technology, 32(2), 233-244, March, 2001*

Were, E., Rubagiza, J., Denley, P., & Sutherland, R. (2007). *The Use of ICT to Support Basic Education in Disadvantaged Schools and Communities: A Review of Literature*: Rwanda: EdQual RPC.

Wikipedia, the Free Encyclopaedia. *Survey Methodology.*

Wimmer, D., & Dominick, J. (2006). *Mass Media Research: An Introduction (8ᵗʰ Ed.).* Boston: Wadsworth.

Wims, P., & Lawler, M. (2007). Investing in ICTs in Educational Institutions in Developing Countries: An Evaluation of their Impacts in Kenya. *International Journal of Education and Development using ICT, 3, (1) Open Journal Systems.*

World Bank (1999). *World Development Report: Knowledge for Development.* New York: Oxford University Press.

World Telecommunication/ICT Development Report (2010). Monitoring the WSIS Targets: A Mid-Term Review. *International Telecommunications Union, Geneva: Switzerland.*

World Youth Report (2003). *The Global Situation of Young People, Department of Economic and Social Affairs.* New York, USA: United Nations Publication 2004.

Yusuf, M. (2005). Information and Communication Education: Analyzing the Nigerian National Policy for Information Technology. *International Education Journal 6 (3), 316-321.*

Zigama, C. (2010). *Factors Affecting Primary School Teachers' Attitude Towards ICT in Education in Rwanda.* PhD Unpublished Thesis. Moi University, Eldoret.

Zindi, F. & Aucoin, R. (2006). *Information and Communication Technology (ICT): A Compulsory Subject for all Students in Teacher-Training Institutions.*

Zulu, S. (1994). Africa's Survival Plan for Meeting the Challenges of Information Technology in the 1990s and Beyond. *Libri 44 (1), 77-94.*

APPENDICES

Appendix I: Cover Letter

Department of Curriculum Instruction and Educational Media

Moi University

P. O. Box 3900 (30100)

Eldoret

22nd April 2013

Dear Participant,

Re: Research for Doctor of Philosophy degree studies

I am pleased to inform you that I am a Doctor of Philosophy degree student in the Department of Curriculum Instruction and Educational Media, Moi University. I am currently collecting data for my research thesis whose purpose is to explore the relationship between perceived attributes and instructional use of ICT by lecturers in technical training institutions in Kenya.

You are among those who have been identified to participate in this study. May I kindly request you to honestly and accurately respond to all items in this questionnaire being used in this study. All the information obtained as a result of your response to this questionnaire will be used only for the purpose of this study and will be treated confidentially.

Your participation in this study is voluntary and you are free to withdraw from it at any time you deem fit.

Let me take this early opportunity to thank you in advance for taking part in this study.

Sincerely

Agufana Byrne Peace

Appendix II: Questionnaire for Lecturers in Technical Training Institutions

Introduction

Topic: Perceived Attributes and Instructional use of ICT by lecturers in technical training institutions in Kenya

Purpose of Research: Partial fulfillment for the award of degree of Doctor of philosophy degree in Curriculum instruction and Educational media of Moi University, Eldoret

Instructions

Please read the following instructions carefully before you respond to items in this questionnaire:

1. This questionnaire consists of seven (7) sections which you are required to complete. There are no right and wrong answers;

2. In section one, you are requested to provide background information;

3. In section two, you are requested to respond to the items by ticking (√) appropriately;

4. In section three, you are requested to respond to the items by rating using: **O**-Often, **S**-Sometimes, **R**-Rarely, or **N**-Never;

5. In sections four to seven, you are requested to respond to the items by rating using: **A**-Agree, **TA**-Tend to Agree, **TD**-Tend to Disagree or **D**-Disagree;

6. Do not write your name or employment number on this questionnaire.

Section One: Background Information

The purpose of this section is to collect some basic information about your background.

1.1 In which Technical Training Institution do you teach? …………………..

1.2 How old are you? (Tick as appropriate)

Age in years	*20-25*	*26-30*	*31-35*	*36-40*	*41-45*	*46-50*	*51+*
(√)							

NOTE: *ICT (Information Communication Technology) in this study refers to any computer based or communication technologies, networked or standalone, hardware or software, which can be used in teaching, learning and information resources*

1.3 What are your higest professional qualification? (Tick as appropriate)

Professional Qualification	Doctorate	Masters	Degree	Higher Diploma	Diploma	Other (Specify)
(√)						

Section Two: Instructional Use of ICT

The following are statements on ICT use. Indicate by tick the choice that best represents your views.

No.	Description	Once a month	2 to 3 times a week	Once a week	Daily	Never
1.	I use ICT for computing (preparing documents in word, excel, powerpoint, playing games etc.) for instructional purposes					
2.	I use ICT for communication on couse materials through e-mail, Facebook, twitter, WhatsApp, etc.					
3.	I use ICT for video conferencing, Skype, powerpoint presentation, during instruction					
4.	I use ICT for recording of student administration, and examination records					
5.	I use ICT through wi-fi and Local Area Network to access e-resources from the internet and the library for instructional purposes					

Section Three: Perceived Ease of Use and Instructional Use of ICT

The following are statements on ease of use of ICT in instruction. Indicate by tick the choice that best represents your views. (Key: **O**-Often, **S**-Sometimes, **R**-Rarely, and **N**-Never)

No.	Description	O	S	R	N
1.	I find it cumbersome to use ICT in instruction				
2.	I find it easy to operate ICT				
3.	ICT is flexible to interact with in instruction				
4.	Interacting with ICT requires a lot of my mental effort				
5.	It takes a lot of effort to become skillful at using ICT				

Section Four: Perceived Usefulness and Instructional Use of ICT

The following are statements on usefulness of ICT in instruction. Indicate by tick the choice that best represents your views. (Key: **A**-Agree, **TA**-Tend to Agree, **TD**-Tend to Disagree and **D**-Disagree)

No.	Description	A	TA	TD	D
1.	Using ICT improves the quality of instruction i give				
2.	Using ICT gives me greater control over teaching				
3.	Using ICT enables quick accomplishment of tasks				
4.	Using ICT enables accomplishment of more workload				
5.	Using ICT enhances effectiveness during instruction				

Section Five: Perceived Cultural Relevance and Instructional Use of ICT

The following are statements on the cultural relevance of instructional use of ICT. Indicate by tick the choice that best represent your views. (Key: **A**-Agree, **TA**-Tend to Agree, **TD**-Tend to Disagree and **D**-Disagree)

No.	Description	A	TA	TD	D
1.	Use of ICT makes no difference in our lives				
2.	Knowing about ICT earns one respect from others				
3.	Use of ICT enables the youth to learn and respect their traditions				
4.	Use of ICT enhances users relationship with others				
5.	Many social ills come with use of ICT (pornography, plagiarism, bad behaviours/mannerisms)				

Section Six: ICT Trends and Instructional Use of ICT

The following are statements on ICT use trends. Indicate by tick the choice that best represent your views. (Key: **A**-Agree, **TA**-Tend to Agree, **TD**-Tend to Disagree and **D**-Disagree)

No.	Description	A	TA	TD	D
1.	Use of ICT is fashionable and should be encouraged				
2.	Knowledge about ICT makes one have an edge over others				
3.	ICT use gives one access to a lot of information resources				
4.	Using ICT is the new trend in modern communication				
5.	Using ICT makes the world a global village				

Section Seven: Government Policy Guidelines on Use of ICT

The following are statements on government policy guidelines on ICT use. Indicate by tick the choice that best represent your views. (Key: **A**-Agree, **TA**-Tend to Agree, **TD**-Tend to Disagree and **D**-Disagree)

| No.	Description	A	TA	TD	D
1.	Policy guidelines enhance instructional use of ICT				
2.	Policy guidelines make it easy to access funds for ICT development				
3.	Policy makes availability of ICT easy				
4.	Policy guidelines on ICT are not important				
5.	Staff use of ICT policy guidelines to enhance instruction				

Appendix III: Sample Frame of Lecturers in Technical Training Institutions in Kenya in 2013

Region Code	Region	County	Institution	Lecturers population	Total
1	Central	Muranga	Murang'a College of Tech	90	
		Kiambu	Thika TTI	100	
		kiambu	Kiambu Inst. of Sci. & Tech.	95	
		Muranga	Michuki TTI	34	
		Nyeri	Nyeri TTI	86	405
2	Coast	Taita Taveta	Coast Institute of Tech	55	
		Mombasa	Mombasa TTI	81	136
3	Nairobi	Nairobi	Nairobi TTI	120	
		Nairobi	Kabete TTI	146	
		Nairobi	PC Kinyanjui TTI	60	326
4	Rift Valley	Nakuru	Rift Valley IST	148	
		Nyandarua	Nyandarua Institute	30	
		Narok	Masai TTI	51	
		Uasin Gishu	Rift Valley TTI	90	
		Nandi	O'Lessos TTI	33	
		Nandi	Kaiboi TTI	45	
		Trans Nzoia	Kitale TTI	95	492
5	Western	Kakamega	Sigalagala TTI	60	
		Bungoma	Sang'alo IT	60	
		Vihiga	Friends College, Kaimosi	33	153
6	Nyanza	Siaya	Siaya IT	40	
		Nyamira	Keroka TTI	30	
		Kisumu	RIAT	90	
		Kisii	Gusii Institute of Tech	90	
		Homa Bay	Mawego TTI	50	300
7	North Eastern	Garissa	NEP TTI	32	32
8	Eastern	Meru	Meru TTI	100	
		Meru	Nkabune TTI	41	
		Machakos	Machakos	105	246
			Total		2090

Source: MoEST, 2013

Appendix IV: Research Permit

Appendix V: Research Authorization Letter

REPUBLIC OF KENYA

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telephone: 254-020-2213471, 2241349, 254-020-2673550
Mobile: 0713 788 787 , 0735 404 245
Fax: 254-020-2213215
When replying please quote
secretary@ncst.go.ke

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref: **NCST/RCD/13/013/76**

Date: **25th June 2013**

Peace Bryne Agufana
Moi University
P.O Box 3900-30100
Eldoret.

RE: RESEARCH AUTHORIZATION

Following your application dated **19th June, 2013** for authority to carry out research on *"Instructional use of ICT in Technical Training Institutions in Kenya."* I am pleased to inform you that you have been authorized to undertake research in **Selected Counties** for a period ending **31st May, 2014.**

You are advised to report to **the Principals of Selected Technical Training Institutions in Kenya** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

DR. M. K. RUGUTT, PhD, HSC.
DEPUTY COUNCIL SECRETARY

Copy to:

The Principal
Selected Technical Training Institution.