INFLUENCE OF ADOPTION FACTORS ON IMPLEMENTATION OF E-LEARNING IN KENYAN UNIVERSITIES

Njoroge Harrison,

D86/CTY/13877/2009

A Thesis Submitted to the School of Business in Fulfillment of the Requirements for the Degree of Doctor of Philosophy in Business (Management Information Systems) of Kenyatta University

November, 2018

DECLARATION

This thesis is my original work and has not been presented for a degree in any other university or any other award

Signature: _____ Date: _____

Harrison Njoroge

We confirm that the work reported in this thesis was carried out by the candidate under our supervision as university supervisors

Signature: _____ Date: _____

DR. DAVID NZUKI

Lecturer, Department of Management Science,

School of Business,

Kenyatta University

Signature: _____ Date: _____

DR. GEORGE KOSIMBEI

Lecturer, Department of Applied Economics,

School of Economics,

Kenyatta University

DEDICATION

To my family especially my wife-Jane, daughter- Gloria and son- Edwin thanks for your understanding and being a source of encouragement despite missing my attention.

ACKNOWLEDGEMENTS

I sincerely thank those many people who contributed either directly or indirectly towards the success and completion of this thesis. But special mention and appreciation go to my supervisors Dr. David Nzuki and Dr. George Kosimbei for continuously and tirelessly guiding me. I thank them for their invaluable guidance, patience and understanding in the course of this thesis, even when I appeared not to correct as they expected.

To my lecturers thank you for inculcating in me great knowledge and to all my colleagues. I will forever be grateful to you. To my classmates, thank you for the friendship and your willingness to share your great ideas with me.

All the Chief Executive Officers (CEO) of the universities who allowed me to collect data in their institutions, I sincerely thank you. Without your permission, I would not have achieved and completed this work, kudos for that. To the management of Kenyatta University, I thank you for the support both financial and time that you granted me. I will always be indebted. And to all the respondents to my questionnaire thank you for providing me with useful information in this research project

To my entire family, thank you for the encouragement and support during the entire period of my study.

Lastly to the almighty God for giving me good health and mental status to write and complete this thesis.

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OPERATIONAL DEFINITION OF TERMS

Adoption: It is an intention of making a choice to acquire and use new ideas, plans, thinking from another source

Adoption Factors: are the dynamics that drive the institutions to invest and implement the e-learning technological innovation to aid in the teaching and learning.

E-learning: Is the use of ICT to facilitate and support teaching, learning and research at anytime and anywhere.

E-Learning Implementation: Is the operationalization of the e-learning technology in the teaching and learning in universities to achieve desired goals

Influence: the capacity to have an effect on the character or development of e-learning

Individual Factor: personal factors that results in a different set of perceptions, attitudes and behavior towards certain goods and services.

Technological Factor: are variables that are being used for evaluating available alternatives with respect to technological capabilities

Organizational Factor: are factors that contribute to the success of the information system according to the users

ABBREVIATIONS AND ACRONYMS

CUE:	Commission for University Education
HEIs:	Higher Education Institutions
GoK:	Government of Kenya
ICT:	Information and Communication Technology
KCSE:	Kenya Certificate of Secondary Education
LMS:	Learning Management Systems
NACOSTI	National Commission for Science, Technology and Innovation
ODEL:	Open Distance and E-learning
PEU:	Perceived Ease of Use
P-value:	Probability Value
PU:	Perceived Usefulness
SPSS	Statistical Package for Social Sciences
TAM:	Technology Acceptance Model
TMS:	Top Management Support
TPB:	Theory of Planned Behaviour
TRA:	Theory of Reasoned Action
UIS:	UNESCO Institute of Statistics

ABSTRACT

Universities across the world continue adopting and implementing e-learning in the teaching and learning to address the continued demand for higher education from the increasing student's population transiting from lower levels of education into the universities. The demand was due to adults both in business and employment, who wanted to attain relevant degrees as well as further their education. However, studies available in regard to the universities investing in the e-learning technology to aid in the teaching, learning and research, show that there is a low level of implementation of e-learning technology in the universities. The purpose of this study was to determine if selected adoption factors; individual, technological and organizational have influence on the implementation of e-learning as perceived by the administrators and technicians in the e-learning units in Kenyan universities. This study utilized the Unified Theory of Acceptance and Use of Technology (UTAUT) as it offered an explanation of the user's intentions to use an information system and subsequent usage behaviour of the adopted technology. The study adapted the cross-sectional descriptive survey design approach, whereby data was collected at one time in the duration of the study and analyzed. The target population for the study was 350 and comprised of the administrators and technicians. The sample size for this research study was 165 persons and the primary data was collected using a structured questionnaire and an interview guide. Secondary data was obtained through a review of records and documents related to e-learning implementation in the HEIs. Both descriptive and inferential statistics was used in the analysis of data. The results of the study showed that adoption factors; Individual, Technological and Organizational factors significantly influenced implementation of e-learning in Kenyan Universities as perceived by those in-charge of the e-learning units in the universities. The study findings inform the education policy makers, academicians and educational managers in the Kenyan universities and those in other developing countries about the factors that influence the implementation of e-learning technology in their teaching and learning.

Chapter One Introduction

1.0 Introduction

This chapter presents the background to the study, statement of the problem, study objectives, hypothesis, significance of the study, scope of the study, limitations of the study, assumptions of the study and organization of the study.

1.1 Background to the Study

Universities across the world continue adopting and implementing e-learning solutions to address the rising demand for education by the citizens, without necessarily expanding the physical infrastructure and at the same time gaining some competitive advantage over their competitors (Goi & Ng, 2009). This adoption has enabled introduction of more modern, efficient, and effective pedagogical alternatives (Selim, 2007). This has enabled the universities reach many of their students who cannot attend regular classes due to job, businesses, family commitments and other constraints.

For example, in China and India the number of students seeking higher education were 34 million and 28 million students as of 2013 respectively (University World News, 2016, n. 441). The two countries were closely followed by the United States with approximately 20 million, Brazil with 7.54 million and Russia with 7.52 million seeking higher education in the same year. Closer home in the African continent, in Nigeria only 5.2% to 15.3% of all university admission applications per year got the chance to pursue higher education in Nigerian Universities (Imonikhe, 2012). In Zimbabwe, the student's population rose from a low figure of 2,280 in 1980 to 17,000 in 2017. This represented an increment of more than 700 per cent (University World News, 2017, n. 194). In Uganda, the surge in the student's number seeking university admission has been on the rise and has been caused by

introduction of free education (Kituyi & Kyeyune, 2012). For example, in the year 2015, the surge in the population of students registered in secondary schools was by 2.1%, from 1,362,739 to 1,391,250. To address the demand, Ugandan universities started distance education centers across the country to be used to cater for the rising demand for higher education. In Kenya in 2014, the enrolment in secondary school was 2,331,700 students (Basic Education Statistical Booklet, 2014). All these students were potential candidates for admission into the university. Studies have shown that this is becoming an accepted mode especially in countries with huge populations and disadvantaged groups. For example, in a study by Harris, Logan and Lundy (2001), they posted that over a quarter million Chinese students were enrolled for online courses in about 38 online universities. The reasons for this are that e-learning continues to offer low cost and conventional learning technologies to learners from socially and economically disadvantaged groups and who have limited access to the Internet.

In Kenya, e-learning implementation was intended to contribute in addressing the overcrowding and overstretching of the facilities in the public universities. According to (Nyerere, Gravenir & Mse, 2012), the demands for higher education was attributable to the general populations need to fulfill their educational thirst on realizing the positive benefits of education. The Kenya Government National ICT policy of 2006, acknowledges the importance of Information and Communication Technology (ICT) in the education sector (Republic of Kenya, 2006). The ICT policy emphasized the importance of the availability of accessible, efficient, reliable, and affordable ICT infrastructure and services for use in the teaching, learning and research. To achieve this, the policy proposed to encourage the use of ICT in educational institutions in the country for the purpose of improving the quality of teaching, learning and research. Farrell (2007) identified some of the ICT

proposed strategies as; 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; and promote distance education and virtual institutions, particularly in higher education and training, among others.

In 2005, the Kenya Education Sector Support Programme (KESSP) identified the need for an educated workforce, (GoK, 2005). The KESSP document called for maximizing the opportunities available and the making of use of the limited educational resources (both human and material). This geared towards the introduction of alternative and innovative methods of learning, which can make university education available beyond lecture halls in Kenya, and not limited to a particular time, pace, or space. There was also the need to incorporate ICT in education to improve access to quality education and respond to the challenges of globalization. These efforts notwithstanding, it concluded that there were a large number of qualified and education needy Kenyans who could not secure places in the existing higher education institutions within the existing mode of delivery and thus cannot get time to attend classes during the day.

Additionally, Kenya's Vision 2030 proposed to ensure the university education accessibility increases to about 20 per cent by 2030, from what it was in 2007 (4.6 per cent). The Vision 2030 proposed to raise the quality and relevance of education and consequently make it central to the teaching and learning, in the educational institutions (Government of Kenya (GOK), 2007). This was to be in line with e-learning advantages envisaged by universities. It further proposed to achieve this by starting a computer supply programme that aims to equip students with modern Information Technology (IT) skills.

Since attaining independence in 1963, the Kenyan government in its effort to cater for the demand increased the number of universities from one constituent college, namely the Royal College, Nairobi to the current seventy-one (71). These are broken down as follows; thirty (31) are public universities together with five (5) public constituent colleges, eighteen (18) are chattered private universities which also have five (5) private constituent colleges and thirteen (12) universities have a letter of Interim, (Commission for University Education (CUE), 2017). But this has had little effect in addressing the huge demand for higher education, as more and more students continue to miss admission in the Higher Education Institutions (HEIs) showing there is still room for growth. These Kenyan universities have not only invested in ICT technology but also have formed partnership with internet service providers such as the Kenya Education Network Trust (KENET), to acquire affordable internet services for their use (Kashorda & Waema, 2008). Clearly, these institutions acknowledge the potential that ICT has towards revolutionizing their teaching and learning. By doing this, the universities hoped to get the benefits that arise out of the use of the ICT technology. These benefits include; improved lecturer-student interaction; reducing distance between lecturers and learning materials; and increased opportunities to education, reduced cost of education to the individual student (Mapuva, 2009)

1.1.1 E-learning and its Implementation in the Universities

E-learning is a term that describes a learning approach where the faculty and learners make use of Information and Communication Technologies (ICT), to enhance the quality of teaching and learning (Oye, Iahad, Madar, & Ab. Rahim, 2012). Another definition by (Selim, 2007 & Eke, 2011), is the delivery of course content via electronic media. In this case, the electronic media include; the internet, intranet, extranet, satellite broadcast, audio or video tape, interactive television and compact disk-read only memory (CD-ROM). In

this study, e-learning is described as the learning conducted using available ICT technology in the universities.

The pioneer of e-learning was the introduction of the first form of electronic education Computer-Based Training (CBT) (Eger, 2005). The concept was to have "learning happening wherever and whatever time one wanted". This meant one did not necessarily need to have the physical buildings for teaching and learning to happen. CBT required connections of computers to some other media. The roots of origin and its technical base of the CBT were in the United States.

Consequently, e-learning has its origin from the concept of the CBT but currently has expanded into the field of mobile devices, also known as m-learning. The use of these devices has enabled the learner to engage in learning activity without having any geographical constraint, (Bezhovski, 2016). The technology, the concept and the device complements each other well, providing new learning trend. The current e-learning software application (LMS) organizes, documents, records and delivers e-learning courses and is webs based and enable hosting.

The e-learning mode has gained popularity among the Higher Education Institutions (HEIs) all over the world, due to the rising demand for education and the rapid expansion of the internet technology (Olasina, 2012). This is because of its flexibility in delivering courses to the learners who are away from the physical classrooms regardless of distance, location and time (Othman, Pislaru, Kenan, & Impes, 2013). Other benefits of e-learning include; increased efficiency and cost reduction, transparency, scalability, flexibility,

accessibility consistency and improved student performance (Ssekakubo, Suleman, & Marsden, 2011).

E-learning pedagogy is carried through two mechanisms namely; synchronous and asynchronous (Cantoni, 2004). In synchronous learning, the interaction is said to be live as all parties participate at the same time using a learning model that is technology based. Asynchronous is web-based and participants don't need to be online at the same time, that is the learners can access the learning resources at their own time. E-learning implementation has faced challenges and to overcome the challenges faced in the implementation of e-learning, most learning institutions have implemented the blended mode of learning. This mode encompasses some face-to-face classrooms, event-based activities, live e-learning (synchronous) and self-paced e-learning (asynchronous). Some of these challenges are technological, organizational and pedagogical (Tarus, Gichoya, Muumbo, 2015). Examples include; high ICT illiteracy rates among the student community; low comfort levels with technology; usability issues of learning management systems; poor marketing strategies; ineffective maintenance strategies and insufficient user/technical support (Nawaz, & Kundi, 2010). These challenges can cause e-learning implementation to fail partially or totally.

For a successful e-learning uptake the following factors are identifiable within the learning institution; institution support, faculty support, student support, teaching and learning, course structure, evaluation and assessment, (Ssekakubo, Suleman, & Marsden, 2011). A successful e-leaning uptake undergoes the following stages; planning, design, development and evaluation, delivery and maintenance. Each of these stages has challenges which must be borne into mind during the implementation stage. However, implementing institutions

are cautioned to be wary of pitfalls whereby includes; believing e-learning is a cheaper training alternative; overestimating results; overlooking the shortcomings of self-study; failing to go beyond courses; viewing content as commodity; ignoring technology; failing to involve information technology staff; over-relying on technology; assuming learning transfers; and believing that if you build it, they will come (Chan, & Robbins, 2006).

The benefits of institutions implementing e-learning include; gaining a competitive advantage and an increased student enrolment among others. As a result, efficiency in pedagogy and provision of education resources as well as in the management has been positively noted by even their competitors (Wims & Lawler, 2007, Kanuka, 2007, Ujunju, Wanyembi & Wabwoba, 2012 and Buabeng-Andoh, 2012). According to (Wasilik & Bolliger, 2009), this emergent e-learning technology has enabled the HEIs to attract and admit students who cannot be able to attend residential tuition due to different commitments like family or work. Available technologies used in the implementation of e-learning mode include; Learning Management System (LMS) such as Moodle, blackboard, WebCT, Atutor, Ilias, Sakai and Kewl (Ssekakubo, Suleman, & Marsden, 2011; Othman et al., 2013). The availability of these LMS has contributed to learners being able to make independent decisions of when and how to learn and meet their intended goals away from the precincts of the university and the faculty.

1.1.2 E-learning Technology Adoption Factors in the Higher Educational Institutions

Studies have been done to determine the factors that lead to the adoption and integration of ICT technology into the teaching, learning and research in the HEIs. For example, Afshari, Kenayathulla, Idris, Ibrahim & Ahmad, (2013) identified and categorized the factors into; Organizational factors (effective leadership, e-learning policies and goals, support),

organizational culture (shared values, beliefs and behaviour expected of members of an organization) and individual factors (attitude, traits, motivation, training, support). In yet another study, (Buabeng-Andoh Charles, 2012) identified other factors that included strategic objectives, top management support, resistance to change, faculty characteristics (support, training, attitude and beliefs) and concluded these factors were crucial for the faculty to integrate and use the e-learning technology. Balanskat, Blamire & Kefalla (2007) identified the factors as those at teacher-level, school-level and system-level. Nanayakkara, & Whiddett, (2005) identified six major factors that influence user acceptance of e-learning technology and which they grouped into; individual factors, system factors and organization factors. The study further found that each of the factors had a strong influence in the acceptance of e-learning by the individuals studied and on the academic performance of learners. The studies have revealed that levels of adoption of ICT amongst HEIs in the developing world compares unfavorably with the developed world (Nchunge, Sakwa & Mwangi, 2012) and the adoption of technology was still low, (Sargent, Hyland, & Sawang, 2005).

Studies in the developed countries on the teaching and learning show that there is a significant change in the way educational progress are being offered as a result of the use of e-learning technology. These changes are in terms of quality, cost of the education, and accessibility (Tagoe, 2012 and Buabeng-Andoh, 2012). This is because the adopted e-learning technology influence how the teaching and learning in the Higher Education Institutions is conducted (Nanayakkara, 2007).

Nanayakkara, (2007) studied and developed a model for e-learning user acceptance, which incorporated factors that were directly relevant for e-learning and also the appropriate

information systems user acceptance elements. The study found out that individual and system factors had a strong influence on users' attitudes to the adoption of a system, organizational factors were the most crucial when it came to user acceptance in e-learning technologies. Current study aims to study individual, technological and organizational factors affecting effective implementation of e-learning by the universities in Kenya and the adoption factors; Individual, technological, organizational/institutional by (Nanayakkara, & Whiddett, 2005) informs this study.

1.2 Statement of the Problem

Literature available showed that universities in developing countries had implemented e-learning for use in the teaching, learning and research with lots of challenges and that the investment in the ICT technology was limited and is still low (Buabeng-Andoh Charles, 2012). This study concluded that the limitation and low level of e-learning implementation was due to; lack of ICT skills, teacher confidence, suitable software, training, rigid traditional educational system and strict curricula. In yet another study by Nchunge, Sakwa & Mwangi, 2012), implementation of e-learning in both public and private secondary schools in Kenya was found to be low. The study attributed the low level of e-learning implementation to perception complexities by the faculty and learners. Perception complexities were characterized by the state of inadequate user training, lack of psychological and technical preparedness and lack of clear policies on e-learning. Despite universities investing in the e-learning technology, learning activities and the much needed e-learning resources are only available to students on the campus precincts and not all students can be accommodated within (Rhema, & Miliszewska, 2011). Further, the teaching and learning was still being done using the "traditional" model of education in universities in the developing countries despite the massive investment in the e-learning

technology. The “traditional model” is a model based on face-to-face interactions between students and teachers. The fact that teaching and learning was still being done using the “traditional model” and e-learning resources are unavailable outside the university precincts, it then shows that e-learning implementations was far from being successful in these universities. Studies by Selim, (2007) identified factors that would contribute towards a successful implementation of e-learning technology as follows; individual, technological and organizational factors. The current study sought to find out whether selected factors; individual, technological and organizational factors could influence the implementation of e-learning in Kenyan universities. The targeted respondents included the respondent who were in-charge of the e-learning sections in the universities.

1.3 Study Objectives

The general objective of this study was to determine the influence of the adoption factors in the implementation of e-learning in the Kenyan universities from the point of view of those manning the e-learning section or department (administrators). The specific objectives were to:

(i). Determine the extent to which individual factors influenced e-learning implementation in the Kenyan universities.

(ii). Examine whether technological factors had influence on the e-learning implementation in the Kenyan universities.

(iii). Evaluate the extent to which organizational/institutional factors influenced e-learning implementation in the Kenyan universities.

(iv). Determine the influence of demographic factors on e-learning implementation in the Kenyan university

1.4 Hypotheses

The hypotheses tested in this study were;

H_{01}: Individual factors have no significant influence on the e-learning implementation in the Kenyan universities.

H_{02}: Technological factors have no significant influence on the e-learning implementation in the Kenyan universities.

H_{03}: Organizational/Institutional factors has no significant influence on the e-learning implementation in the Kenyan universities.

H_{04}: Demographic factors has no significant influence on the e-learning implementation in the Kenyan universities.

H_{05}: Individual, technological and organizational factors have no significance influence on the e-learning implementation in the Kenyan universities

1.5 Significance of the Study

The findings of this study were meant to provide knowledge necessary to the university management wishing to implement e-learning. This was in the formulation of policies that could enable them make informed decisions regarding e-learning implementation. The outcome was recommended to government education officials and institutional managers and who could apply it in their educational institutions. Investors in the education sector and other stakeholders in learning institutions in their quest to make decisions and informed opinions regarding investing in e-learning technology implementation would also benefit from the knowledge from this study. The academicians could benefit by using the study as literature for future studies.

1.6 Scope of the Study

Though, Kenya has about 71 universities, both public and private universities, this study limited itself to 31 universities that had indicated they offer the e-learning mode of study. The respondents for the study were the Directors, Deans, Coordinators, Technicians and Administrators of the e-learning directorates or departments or centers in the selected universities as they were the people responsible for the implementation of e-learning technology in the universities.

1.7 Limitation of the Study

The study faced several challenges especially when it came to the collection of data. First several institutions did not reply on time to the request to allow the researcher to collect data in their institutions. This resulted in a delay to distribute the questionnaires to the expected respondents as prior approval was required. In some instances, some universities did not reply to my request to collect data in their institutions despite repeated visits and calls. Some public universities despite indicating they offered e-learning mode of study revealed they were yet to start offering teaching and learning in this mode.

1.8 Assumptions of the Study

The study assumed that all universities in Kenya had adopted the ICT technology regardless of whether they used it in their e- learning or not.

1.9 Organization of the Study

This thesis is structured as follows; the foregoing chapter one has the research background, the statement of the problem, the research objectives, hypothesis, and significance of the study, the scope and the limitations of the study. Chapter two presents the literature on the influence of the adoption factors on the implementation of e-learning in the universities in Kenya and on conceptual framework. Chapter three covers research methodology used in

the research study. Chapter four highlights the study findings and discussions. Chapter five reflects the summary, conclusions and the recommendations.

Chapter Two Literature Review

2.0 Introduction

This chapter presents a review of literature related to the issue being studied and covers the following subtopics; the theoretical, empirical literature, summary of literature and research gap and finally the conceptual framework. This literature review was guided by the objectives of the study. In particular, the literature was reviewed under the following sub-headings; Individual Factors Influencing Implementation of E-Learning, Technological Factors Influencing Implementation of E-Learning and Organizational Factors Influencing Implementation of E-Learning

2.1 Theoretical Literature

This study draws from the following theoretical models; Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB) and Unified Theory of Acceptance and Use of Technology (UTAUT). These models have been chosen for inclusion in the current study as they touch on the attitude and behaviour of individuals contributing to the individual/s accepting or adopting and eventually using an innovation/technology. Each of the theories is reviewed below to show how it can appropriately relate to the implementation of e-learning in the universities.

2.1.1 Theory of Reasoned Action

The Theory of Reasoned Action (TRA) was proposed by (Ajzen & Fishbein, 1980), and was first applied in the field of social psychology. The model states that attitude and normative factors of an individual can determine his or her behavioural intentions to act (Vallerand, Deshaies, Cuerrier, Pelletier, and Mongeau, 1992). The model postulated that an individual's behavioural intentions to act would be influenced by attitude and hence it

had motivation on social behaviour of the individual. Attitude was defined as favourable or disfavourable dispositions by an individual user towards a technology. Though attitude influenced an individual's behaviour, (Vallerand *et al*., 1992), argued that it did not directly predict behaviour but rather predicted the individual's intention to act in a certain manner. Conversely, Netemeyer (1991) affirmed that TRA model could be used to predict an individual's behavioural intentions that could span predictions of attitude and behaviour.

Further Chiou, (1998) posted that an individual's behavioural intention depended on the individual's attitude about the behavior and subjective norms. Another factor that influenced the individual's behaviour was subjective norm which was defined as the perceived social pressure an individual felt depending on the individual's perception of the technology. In addition, subjective norm and attitude together could determine behavioural intention and which could lead the individual to perform the behaviour. This meant that for an individual to adopt and implement technology, his or her attitude could determine what would be their next behaviour. On the other hand, the behaviour of an individual could be volitional and independent of the organizational behaviour. Ajzen & Fishbein, (1980) posited that an individual's attitude towards behaviour and other peoples viewed about how they could perform the behaviour to predict an individual's volitional behaviour. TRA theory was successfully applied to study consumer behaviour and the study concluded that the TRA model can predict individual consumer's intentions and behaviour (Sheppard, Hartwick and Warshaw, 1988). Another study by (Al-alak, Alnawas and Ibrahim, 2012) established that the theories primary concern was to identify the underlying factors of the formation and change of behavioural intent by the individual doer.

The current study applied the TRA's model constructs of attitude and subjective norms for the purpose of relating it to the implementation of e-learning by individuals. Inspiration by humans to perform an act is personality based and is about an individual's attitude and behaviour within the human and the environment in which resides the human. Attitude and behaviour are two constructs which an individual possesses and do motivate the performance of an action. Therefore, the theory was used to explain how the individual behaved based on pre-existing attitude and behavioural intent of the new technology when it was introduced into the institution.

2.1.2 Technology Acceptance Model

The Technology Acceptance Model (TAM) which was as a result of the application of Theory of Reasoned Action (TRA) theory to the field of Information Systems (IS) could be used to model how individual users got influenced to use the new technology presented to them (Davis & Bagozzi, 1989). In addition, TAM model was found to influence the acceptance and use of new technology by individual users. It had factors such as; Perceived Usefulness and Perceived Ease-of-Use (Davis *et al*., 1991). Further the model postulated that the individual user's acceptance could determine the success or failure of the adoption of IS technology (Davis, 1991).

The two constructs; perceived ease of use (PEU) and perceived usefulness (PU); could be used to determine one 's behavioral intention to use a technology. Another model by Venkatesh, (2000) had constructs on determinants of perceived ease of use and which were based on and related to individuals' general beliefs regarding computers and computer use. They consisted; computer self-efficacy, computer anxiety, and computer playfulness, and perceptions of external control (or facilitating conditions).

This could be interpreted to mean that when an individual user formed an intention to act, then he/she would be free to act without limitation. Nevertheless, when a new technology was presented to an individual user and he/she formed an opinion to use it, then the individual did so without hesitation. Perceived usefulness was defined as the degree to which an individual believes that using a particular system would enhance his or her productivity while perceived ease of use was the degree to which an individual believes that using a particular system would be free of effort (Venkatesh & Davis, 2000). TAM's other factors that were found to significantly influence user acceptance included usefulness, effectiveness, and ease-of-use, (Segars & Grover 1993).

The TAM model was about the acceptance and use of technology presented to users. In the current study, e-learning technology was presented to users in the HEI's. Individual users according to the model accepted and used the presented technology due to the factors; ease-of-use and the usefulness of the technology. This meant that if users found the presented technology easy to use and also useful to improve performance in the teaching and learning, they accept and made use of it.

2.1.3 Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) was proposed by Ajzen, (1985) and was an extension of TRA which was meant to improve its predictive power by linking attitudes and behaviour. The TPB theory included the behavioural control construct and postulated that the more positive an attitude the individual user had towards adopting a technology, the stronger the subjective norms and the greater the perceived behavioural control resulting in a more likelihood intention to perform the behaviour (Rise, Sheeran, & Hukkelberg, 2010).

The TPB theory posited that individual behaviour towards a technology was driven by individual behavioural intentions towards that technology (Shen, Laffey, Lin & Huang, 2006). However, behavioural intentions according to this theory are a function of an individual's attitude toward the behaviour, the subjective norms surrounding the performance of the behaviour, and the individual's perception of the ease with which the behaviour can be performed (behavioural control).

For individual users in a group, TPB postulates that an individual intention to adopt technology would be influenced by the behaviour of the group. Similarly, the intension to implement e-learning would be influenced by various social, economic and cultural factors. Example, the competition amongst universities could influence the uptake and use of e-learning, despite the financial constraints that may exist. Also students could be influenced by demand for education and the flexibility of the e-learning mode. The social perception of the quality of e-learning influences the uptake of the e-learning course. In a study of consumer behaviour, (Chiou 1998) established that consumers' purchase intentions were affected not only by their attitudes, but also by their group's influences and their own perceived control. This theory could be applied to show that for an individual to adopt and use the e-learning technology, a group that an individual belongs to could be influenced.

The TPB model was about how people's behaviour could be changed by being influenced by others. In the current study, technology was introduced for use in the teaching and learning in the universities and thus behaviour of the users was expected to change. The TPB model postulated that behaviour could be deliberate and planned. Also behavioural

could result in a favourable or unfavourable attitudes towards a behaviour introduced to users.

2.1.4 Design Theory of Blended Learning

This design theory of blended learning was developed by (Huang R., Ding M., and Zhang H., 2007) and tries to explain how different types of learning can be used together to better the performance of learners. For example, the theory posits how a combination of face to face and computer aided teaching and learning would better performance. The theory emphasizes that in blended learning, better performance can be achieved if there is a well-designed curriculum showing the various activities involved in the learning process. A factor which influences the success of blended learning is flexibility whereby, it involves such learning tools as discussion forum, emails and discussion boards. However, the theory posits that for a successful blended learning implementation, the process must undergo four phases, namely; - pre-analysis, design of activities and resources, instructional assessment, and instructional verification.

2.1.5 Unified Theory of Acceptance and Use of Technology

Venkatesh, Morris, Davis, and Davis, (2003) developed the Unified Theory of Acceptance and Use of Technology (UTAUT) model which presented a unified view of the TAM. The model offered an explanation of the individual user intentions to use an IS and subsequent usage behaviour of IS. The model posited that four key constructs, namely; performance expectancy, effort expectancy, social influence, and facilitating conditions were direct determinants of usage intention and behaviour by users (Venkatesh, Morris, Davis & Fred, 2003). The UTAUT theory included intervening variables such as gender, age, experience, and voluntariness of use to mediate the effects of the four key constructs on usage intention

and behaviour. Subsequent validation of UTAUT in a longitudinal study revealed that it accounted for 70 per cent of the variance in usage intention (Morris, 2003).

Implementation of e-learning depended on the expectations of learners on the usefulness of the acquired skills and the relevance to the job market. The perceived competitiveness of the knowledge skills acquired influenced the implementation of the e-learning programme. The quality of the e-learning programme was judged by facilitating conditions, in terms of hardware, human resource and software.

2.1.6 The Main Theory of the Proposed Study

The study was hinged on UTAUT theory given that e-learning is a technology which would have to be adopted and used in the universities. The theory offered a comprehensive and unified approach to the study as it is a hybrid of two theories, namely TRA and TAM. It was worth noting that TAM is an application of TRA in IS field, while UTAUT is an improvement of TAM.

The UTAUT model was developed with an aim to explain user intentions to use an IS and subsequent usage behavior. The theory had four key constructs; performance expectancy, effort expectancy, social influence, and facilitating conditions. Venkatesh *et al*., (2003) defined this constructs as "Performance expectancy";- the degree to which an individual believes that using the system will help them to attain gains in job performance; "Effort expectancy";- the degree of ease associated with the use of the system; "Social influence" **t**he degree to which an individual perceives that important others believe he or she should use the new system and "Facilitating conditions";- the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system . These constructs can determine usage intention and behaviour (Venkatesh et. al.,

2003). The first three are direct determinants of usage intention and behavior, and the fourth is a direct determinant of use behavior.

Further, this theory was applied in the adoption of IT technology in the construction management (Sargent, *et al*., 2012). These researchers affirmed top management support and resistance to change as some of the additional constructs in the UTAUT model that could influence technology adoption. In addition, top management support was also identified as a key factor in the determination of the success or failure of technology implementation while resistance to change was important as it determined if adoption succeeds or fails.

2.2 Empirical Review

Empirical review is based on previous studies on factors that influence e-learning implementation success. Selim (2007) developed a model that showed why some organizations succeed in competitions. The study identified four factors that could influences success. The original factors in Selim (2007) study were; instructors, student, Information technology and university support.

Current study applied modified version of the model by (Selim, 2007) as the conceptual framework for this study. The model was chosen as it expresses the relationship between the factors and e-learning success (implementation). The modified constructs are; individual, technological and organizational factors.

2.2.1 Individual Factors Influencing Implementation of E-Learning

Individual factors in the context of this study referred to the issues and characteristics that affect the students and instructors (faculty) thereby making them adapt and use technology

in the learning and teaching. These included; educational level, gender, educational experience, experience with the computer for educational purpose and attitude towards computers (Buabeng-Andoh Charles, 2012). The purpose of e-learning programs in any higher education institutions is to meet the objectives of learning. These touch on the environment in which the learning happened, technology used to do the teaching and learning, student's ability to learn using the e-learning systems and the faculty involved. If the implementation was to succeed, then several factors as identified by (Buabeng-Andoh Charles 2012) play a big role in determining if the individual would adopt and integrate ICT in the teaching and learning. The individual factor reflects on the individual characteristics of motivation, commitments towards the adoption and integration of the technology. Also the instructor plays a role in the effectiveness and success of e-learning based on the courses they prepare for the students (Selim, 2007). The instructor's attitude, competence in technology, teaching style and mind-set were some key characteristics of the instructor identified in a study by (Webster and Hackley, 1997). Similarly, the individual's attitude and prior interaction with a computer could contribute to the success of e-learning.

However, the many pedagogical and socio-economics issues existing in the universities were responsible for users adopting the e-learning technologies. These issues included; the need to access information, the need to communicate via electronic facilities, synchronous learning, increased cooperation and collaboration, cost-effectiveness and pedagogical improvement through simulations, virtual experiences, and graphic representations (Sife *et al*., 2007). In a study by Afshari *et al*., (2013), which reviewed literature as pertains the factors that affect effective implementation of e-learning for instructors and students in educational institutions in Malaysia. The study found out that individual factors affect e-

learning practices in schools. Further, e-learning practice needed a good ICT infrastructure and active and collaborative involvement of a number of other people. The study further established that access to the technologies and pedagogical issues and institutional (organizational) support services are important in a successful e-learning practice. The study further concurs that, both the students and faculty were normally willing to use e-learning technology as long as it facilitated their teaching and learning anywhere and anytime on their own. Also the technology was constantly available and accessible for their use.

Buabeng-Andoh Charles (2012) in yet another study identified the factors that encourage teachers to use computer technology in the teaching and learning, in Ghana and concluded that individual or what the study called personal factors played a significant role in determining the influence of the adoption of the technology by the individual. In yet another study, Hew and Brush, (2007); Keengwe and Onchwari, (2008) identified these key factors as; the faculty attitude and beliefs towards technology. Current study supports the fact that if the faculty attitude is positive towards the e-learning technology, then the faculty will support and implement the teaching and learning technology comfortably and willingly. Also, the faculty will advocate for the adoption and integration of the technology in the teaching and learning processes and for use by their students. Also the benefits of the integration of the technology will be realized in the form of improved performance comparable to the traditional mode of teaching and learning (Al-kaabi & Al-muftah, 2011).

Further, for the individual users to be motivated to use e-learning effectively, training and workshops are needed not only to improve the skills of the instructors, but also as a means of getting them involved in the process of implementing and integrating ICTs in teaching

and learning. For example, faculty staff requires training not just in the choice and use of appropriate technologies, but more fundamentally in how people learn and design instruction. A previous study by Afshari *et al*., (2013) rooted for training and agreed with the fact that teachers and students' competency in using new technologies, their attitudes towards e-learning systems and their personality traits played an important role in the successful implementation of e-learning program.

Studies done in other parts of the world acknowledged that faculty that was trained and technically competent had the skill and experience needed in the e-learning and normally encouraged their students to use e-learning (Holden, 2011). Nchunge *et al*., (2012) in their study of the user's perception on the ICT adoption supported faculty training. The authors proposed the organization of computer training sessions, workshops and conferences for the faculty.

2.2.2 Technological Factors Influencing Implementation of E-Learning

E-learning implementation in developing countries could range from the simple use of power point presentations in the classrooms to sophisticated use of Virtual Learning Environments (VLE) and Managed Learning Environments (MLE). These have had a significant impact upon teaching and learning strategies (Sife, Lwoga & Sanga, 2007; Rhema, & Miliszewska, 2011). The technology made education accessible to many learners due to the rapid spread of the internet by removing geographical barriers to education, facilitating the anytime and anywhere learning concept and increasing the accessibility to education resources by reducing cost and time (Oye *et al*., 2011). Some of the challenges the adoption and implementation of the teaching and learning technology in the HEIs faced included; lack of systemic approach to ICT implementation, awareness and

attitude towards ICTs, administrative support, technical support, transforming higher education, staff development, lack of ownership and inadequate funds (Sife *et al*., 2007).

Various studies on e-learning technology have been done around the world. For example, (Sife *et al*., 2007) studied the application of ICTs in teaching and learning by reviewing the e-learning context in the Tanzania universities. The study focused on the pedagogical, cost and technical implications of different ICTs that were used for e-learning purposes among others. The findings of the study were that most of the universities in developing countries possess just the basic ICT infrastructure such as Local Area Network (LAN), internet, computers, video, audio, CDs and DVDs, and mobile technology facilities that form the basis for the establishment of e-learning. This could be attributed to the plummeting funding by the governments in the developing countries. Sife *et al*., (2007) recommended that for any technology adopted, pedagogical, technical and cost issues would have to be taken into account for each specific technology when integrating ICTs in teaching and learning practices. For effective integration of this hardware's into the education system, it would include issues like installation, operation, maintenance, network administration and security and which would form an important part of the integration of ICT in education system. Further the faculty and students could be trained on basic trouble shooting skills to overcome technical problems when using ICT's. Availability of the technical expert was found to be a challenge to the universities in the developing countries (Sife *et al*., 2007).

The implementation of e-learning was found to have faced technological related challenges. For instance, the absence and inadequacy of infrastructure was identified as a barrier to access among students in developing countries (Ssekakubo, Suleiman and Mardson, 2011). Oye *et al*., (2012) in a study in Nigeria, pointed out that frequent power

blackouts, awareness and training of staff on the use of ICTs, motivation, bandwidth and internet connectivity impacted heavily in e-learning development. This was also noted in the study by (Tarus *et al*., 2015) which cited infrastructure like computers, network and internet connectivity, and computer labs as inadequate in most public universities to support the high numbers of students who wanted to access e-learning.

The availability of faster internet connectivity was critical to an institution using e-learning to support teaching and learning. Public universities in Kenya lack affordable and adequate internet bandwidth, meaning that implementation of e-learning in the higher education institutions in Kenya still face challenges (Tarus *et al.,* 2015). This is despite the arrival of the undersea fiber optic cable backbone (example SEACOM, East African Submarine Cable System (EASSy), East African Marine System (TEAMs) at the East African cost and the introduction of bandwidth subsidy by the government through the Kenya Education Network (KENET), the cost of the bandwidth still remains high. It made the higher education institutions unable to procure adequate internet bandwidth for use in the teaching and learning for their student population. Essentially where it exists, it's slow and inadequate for the huge population of users within the universities.

2.2.3 Organizational Factors Influencing Implementation of E-Learning

Successful integration of technology in institutions has been noted through previous research to be as a result of an effective leadership in an institution. This was supported by (Anderson & Dexter, 2005) who in their study found out that the institutional leadership should be able to assess and evaluate academic and administrative uses of technology and make decisions. Therefore, those heading institutions not only should learn and know how to operate technology, but they should also ensure that other staffs in the institution get

learning opportunities. Also they should be on the forefront in supporting training to the rest of their colleagues. This is because effective leaders are known to encourage their staff to use the technology mainly as a tool to support educational objectives (Anderson & Dexter, 2005). Also this leader will develop and articulate a clear and common vision for technology use in schools; and the ability to change and manage change. To achieve this, the leader should be knowledgeable, competent and supportive about e-learning in order to implement an e-learning program effectively. Therefore, it would seem that educational institutions should define clearly their e-learning policy and goals, and have a detailed development plan and strategy to motivate teachers and students to utilize e-learning in their teaching and learning process.

Rhema, & Miliszewska, (2011), posited that faculty was more motivated and committed when they knew that top management was supportive and encouraging. Mapuva (2009) noted that top management in an organization could break or make e-learning happen given their decision making role in their institutions. Therefore, top management support was found to be crucial in the implementation of the e-learning technology. This called for total and committed support for e-leaning implementation to take root in the institutions of higher learning. The university top management could provide the conditions that are needed, such as ICT policy, incentives and resources. Sife *et al*., (2007) noted that commitment and interest of the top management and other leaders at every level was the most critical factor for successful implementation of ICTs. Dwyer *et al*., (1997) emphasized that for the integration of ICTs to be effective and sustainable, administrators themselves needed be competent in the use of the technology, and have a broad understanding of the technical, pedagogical, administrative, financial, and social dimensions of ICTs in education.

2.2.4 Demographic Factors Influencing Implementation of E-Learning

In this study, demographic factors included gender and academic level of the respondents. These represented the characteristics of the population being studied. Gender was viewed as attitudinal factor that contributed to how e-learning can successfully be implemented especially when ethical and cultural communications of its users are considered. For example, in many Arab countries eye-to-eye contact between male and female was found to be contrary due to the Islamic teachings which encourages humility (Rhema & Mlliszewska, 2010).

In yet another study, Buabeng-Andoh Charles, (2012) found out that; gender, age, education level and experience with computers, attitudes constituted to the what he ethical and cultural factors and further postulated that, these factors can influence how individuals take up innovation. Kay, (2006); Wozney, Venkatesh, & Abrami, (2006) in their study of gender differences and the use of ICT, established that males used technology more than the females.

Education level did not contribute to a person's perception of the implementation e-learning. Agboola (2005), in a study established that perception level of e-learning did not depend on the academic level of the individual. In yet another study Abu Qudais, Al-Adhaileh, Al-Omari, (2010) also found out that education level was not significant in determining e-learning perception. Al-Sarrani (2010), found contracted findings on the perception of education level and e-learning and he concluded it was a negligible extent.

2.3 Summary of Literature and Research Gap

Available literature shows that studies on e-learning in the higher educational institutions have been in diverse areas. For example, Tarus *et al*., (2015) studied the challenges

hindering the implementation of e-learning in Kenyan public universities. Another study carried out in Kenya by (Nchunge *et al*., 2012) looked at the adoption of ICT in secondary schools. In Tanzania, (Sife *et al*., 2007) carried out a study on the application of ICTs in the teaching and learning. In Ghana, Buabeng-Andoh Charles, (2012) studied the factors that can encourage teachers to use ICT in the teaching and learning processes.

Current study set out to study if the factors (individual, technological and organizational) identified do influence implementation of e-learning in the context of the universities in Kenya and from the point of view of those manning the e-learning units. A summary of related literature on the adoption and integration of ICT in the teaching and learning is presented in table 2.1.

Table 2.1: Summary of Literature and Research Gap

Author	**Main objective**	**Findings**	**Research Gap**
Tarus *et al*., (2015)	to investigate the challenges hindering the implementation of e-learning in Kenyan public universities	challenges identified are; - inadequate ICT and e-learning infrastructure - financial constraints - lack of affordable and adequate Internet bandwidth - lack of operational e-learning policies -lack of technical skills on e-learning and e-content development by the teaching staff - lack of interest and commitment among the teaching staff - amount of time required to develop e-learning content	-implementation success -low implementation
Sargent *et al.,* (2012) (Australia)	-Examine individual and managerial factors which impact on intention to utilize a specific information technology in a	-Effort expectancy, internal facilitating conditions and top management support all influence individuals' intention to use information technology. -Resistance to change or fear of change does not always	-factors that can influence an individual to use adopted technology

	project-based organization, extending the UTAUT model	play a role in innovation adoption.	
Buabeng-Andoh Charles, (2012). (Ghana)	-To review factors (personal, institutional and technological) that encourage teachers' use of computer technology in teaching and learning processes	- teachers' attitudes towards technology influence their acceptance of the usefulness of technology and its integration into teaching - Factors such as support, funding, training and facilities influence teachers' adoption and integration of technologies into their classrooms. -Teachers must perceive new adopted technology as better than previous	-success of ICT adoption and integration in the teaching and learning limitations
Nchunge *et al*., (2012) (Kenya)	-To assess the users' perception in electronic mode of curricula delivery; complexity in use; ICT refresher courses and job security on adoption of ICT for educational support activities in secondary schools in Kenya, through a survey in Thika district	-Pace of adoption of ICT in both private and public secondary schools in Thika District is very slow and is characterized by;- • user complexity perceptions, • Inadequate ICT literacy, • Lack of psychological and technical readiness • Insufficient policy guidelines	-ICT adoption low in secondary schools in Kenya -adoption factors influencing e-learning implementation

Source: (Author 2017)

2.4 Conceptual Framework

Several frameworks have been suggested that explain the success of the adoption of technology. For example, DeLone & McLean, (1992) postulated that IS success was a multidimensional construct, consisting six interrelated dimensions of success hence the name. These were information quality, system quality, use, user satisfaction, individual effects and organizational effects. The model succinctly showed that for an organization to experience an impact of the adopted technology, the individuals would have considered

and accepted the system quality and information quality among other constructs, and thus leading to a satisfaction of the user. The model incorporated the issue of quality (both information and system) and not the technology behind the quality which was crucial in the adoption and implementation of e-learning.

Another framework by (Gichoya, 2005) revealed how implementation success could affect constructs such as ICT facilities, quality, and information system quality. Thus implementation could only be considered to have succeeded if perceived benefits were realized. The study further showed how ICT facilities and ICT systems quality affected the perceived benefits. However, this model left out the organizational effects which were crucial in the adoption and implementation of e-learning.

Bhuasiri *et al.*, (2012) proposed a framework that had seven constructs. These included; learners' characteristics, instructors' characteristics, e-learning environment, institution and service quality, infrastructure and system quality, course and information quality, and motivation. The model did not explain the organization effects which are crucial in the implementation of e-learning in the HEIs. This research study used a modified model version, which incorporated other variables like organizational and moderating factors as shown in figure 2.2;

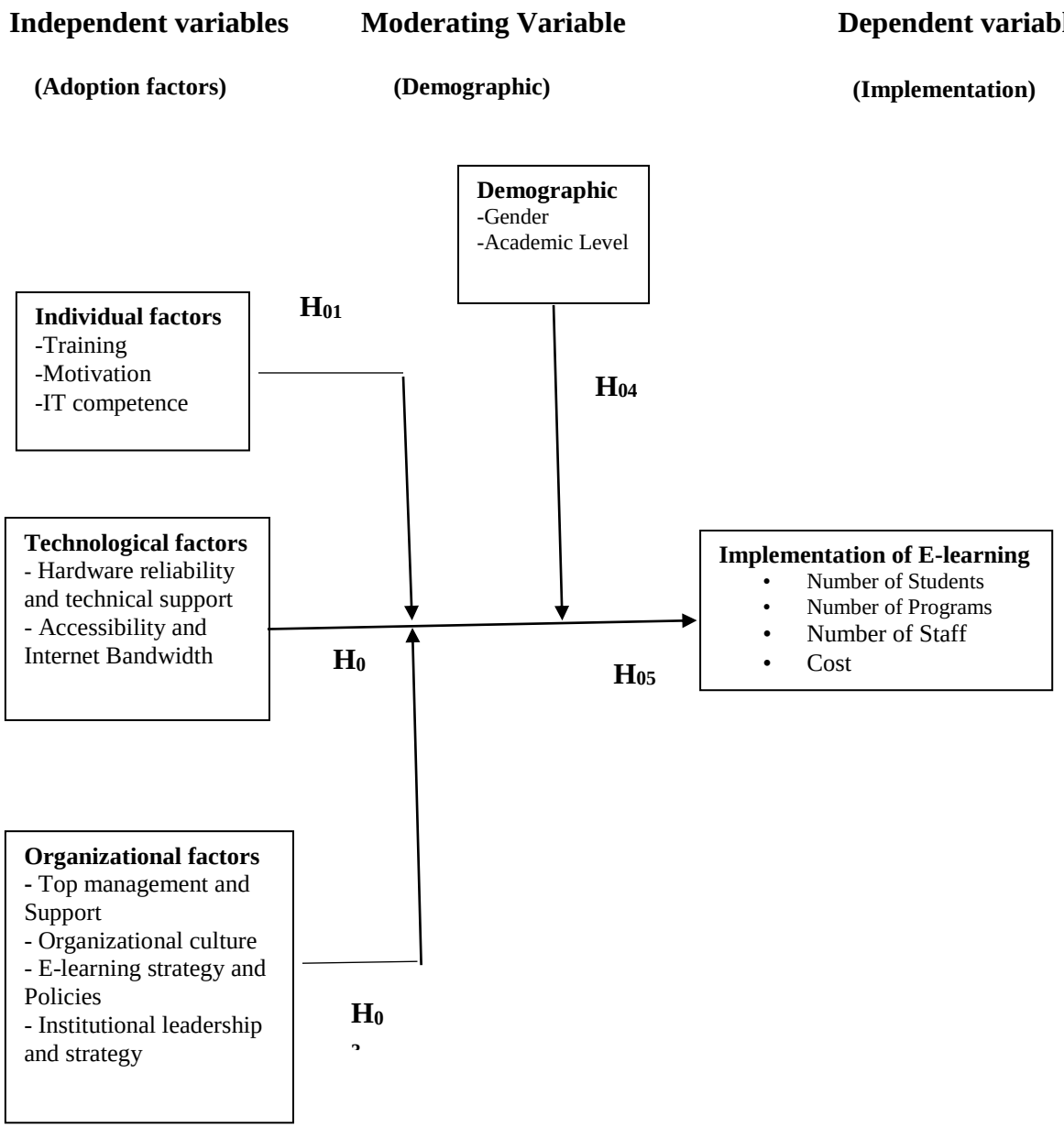

Figure 2.2: Conceptual Framework
Source: (Author 2014)

From the conceptual model, independent variables include; individual factors, technical factors and organizational factors. Based on literature reviewed, several other constructs have been added. For example, the individual characteristics included constructs such as training, motivation and IT competence towards computers. Afshari *et al*., (2013) posited

that accessibility and organizational support are needed to make e-learning implementation a success. For the technological factor, the constructs included; infrastructure availability, internet availability and accessibility at whatever place and area is needed so that learners can access resources, and it's crucial for the success of e-learning. Another crucial factor is training of the individuals including the top management to ensure confidence and competence to all

The organizational factors included top management support, organizational culture, e-learning strategy and policy and institutional leadership. This ensures that not only is the management competent with technology, but they give necessary material and financial support to users. Also the integration of technology becomes a smooth and well-coordinated affair in the HEI.

For the moderating variable, the constructs are gender, educational level and where the university is located. These personal characteristics offer explanations on the overall attitude of individuals towards e-learning implementation.

Chapter Three Research Methodology

3.0 Introduction

This chapter is divided into the following sections; research philosophy, research design, empirical model, operationalization of the variables, target population, sampling design, data collection instruments, validity and data analysis.

3.1 Research Philosophy

Research philosophies assist in guiding a researcher in how data that relates to a phenomenon should be gathered, analyzed and used. The various philosophies are the positivist, the interpretive and the critical realist. Existing studies indicated that researchers had always gambled with deciding the appropriate method to be used in Information Systems (IS) studies, (Mingers, 1979). Orlikowski & Baroundi, 1991 and Alavi & Carlson, 1992, in a study to determine the most appropriate philosophy in IS, found out that the positivist philosophy was the most popular philosophy applied in IS. The positivist philosophy was also called the scientific paradigm and sought to prove and disapprove a hypothesis (Mack, 2010). This meant that, the positivist philosophy is best applicable in a situation where hypothesis are stated and are expected to be proved or not. Also the positivist philosophy lays a strong emphasis on the use of scientific method, statistical analysis and generalizability of findings in research study (Mack, 2010).

In their study, Polit and Beck (2008) and Steen and Roberts, (2011) argued that positivist philosophy is ideal for studies based on quantitative approach. Moon and Moon, (2004) postulated that quantitative data are data in numerical form, and often derived from questionnaires or structured interviews. In the current study, the positivist philosophy was utilized. This is because the positivist philosophy seeks to answer issues whose data are

numerical and derived from questionnaires and structured interviews. In the current study, data collected was analyzed using the scientific methods and data analysis methods, which the positivist philosophy emphasizes.

3.2 Research Design

The research study adopted a cross-sectional descriptive survey design which provided the basis for examining the influence of adoption factors on the implementation of e-learning in the Kenyan universities as perceived by those manning the e-learning section or department. Interestingly, similar studies in this area and discussed in the literature review used mixed method descriptive design as is the study by Tarus, J. (2015). Sargent, K., Hyland, P., & Sawang, S. (2005) in the study of factors influencing the adoption of IT in the construction industry used the case study design.

The choice of the research design was driven by the fact that, the approach involved the collection of data through multiple sources such as verbal reports, distribution of questionnaires and personal interviews. Also, descriptive survey design incorporates the use of both qualitative and quantitative approaches to data collection, analyses and reporting. Cooper and Schindler, (2011) define a "descriptive survey study" as a study concerned with answering who, what, where, when or how much. An advantage of the descriptive survey design method is that it allows collection of quantitative data from any sizeable population in an economical way. The data collected using this approach, helped to suggest the relationship between variables. The descriptive survey design gave the researcher more control over the research process and the samplings generated findings that were representative of the whole population.

3.3 Empirical Model of this Research

In this study, the factors identified as influencing the implementation of e-learning in the HEIs were determined using the multiple regression models. This model was preferred especially where data from the variables were not expected to be dichotomous in nature. This method had the advantage of having strict statistical assumptions such as linearity, normality and continuity for ordinary least squares (OLS) regression and multivariate normality.

The utility of the strategic implications of the e-learning technology adoption in the HEIs was expressed as in equation (1) below;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \cdots + \varepsilon \quad \text{..... (1)}$$

Where;

$\beta_0, \beta_1, \beta_2, \beta_3$ were the regression parameters, and ε is the error term

X_1, X_2, X_3 were the explanatory variables, while **Y** is the dependent variable

i = 1, 2, 3

And the explanatory variables were; -

X_1 = Individual factors

X_2 = Technological factors

X_3 = Organization factors

This assumed that the effect of independent variables (X_i) on the independent variable (**Y**) is linear.

The moderator variable in next introduced into the current environment and the effect on the direction and/or strength of the relation between the independent (individual, technological and organization) or predictor variable and a dependent (e-learning implementation) or criterion variable studied. Specifically, within a correlational analysis framework, a moderator is a third variable that affects the zero-order correlation between two other variables. The moderator variable in this study consisted of gender and education level and which are categorical. That is, the data is in categories of either male or female in the case of gender. This means that the resultant effect can be considered in all instances based on the various categories. The study was to determine if introduction of this moderator variable would in any way alter the results of the relationship (influence) by the independent variables on the implementation of e-learning in the HEI's.

When the moderating variable was introduced, the model changed to

$$\mathbf{Y = \beta_0 + \beta_1 XM} \quad \text{...} \quad (2)$$

Where;

$\boldsymbol{\beta_0}$, $\boldsymbol{\beta_1}$, **were** the regression parameters

M = Moderating variable

X = the explanatory variables (individual, technological and organization)

3.4 Operationalization of the Variables

The explanatory variables were described and categorized into individual factors, technological factors, organizational factors and E-learning implementation as shown in table 3.1.

Table 3.1: Operationalizing Variables

Category	Variables to measure	Operationalization	Measure
Independent Variable			
Individual factors	Training	-Training in ICT technology & e-learning systems (LMS) on the individuals	-Nominal
	Motivation	-Availability of resources -Adequate training and support systems	-Nominal
	IT competence	-Accessibility of the system	ordinal
Technological factors	Hardware reliability and Technical support	-Efficiency of the hardware -Functional and technical support offered	-Nominal
	Internet availability and Network security	-Availability & accessibility of secure internet in the university	ordinal
	Accessibility and Internet Bandwidth	-Speeds of accessing and using e-resources	ordinal
Organizational factors	Top management Support	-Top management support i.e. providing resources, new systems and trainings	-Nominal
	Organizational culture	-Culture exhibited by all members of the organization towards implementation of e-learning	-Nominal
	E-learning strategy and Policies	-Strategies laid out towards implementation of e-learning	-Nominal
	Institutional leadership and strategy	-Institutional strategies outlined in the university policy towards the implementation of e-learning	-Nominal

Category	Variables to measure	Operationalization	Measure
Moderating variable			
Demographic factors	Gender	Gender of respondent	-Nominal
	Education level	Level of education of the individual	ordinal
Dependent Variable			
E-learning implementation	Number of students	-Increase in students population	ordinal
	Number of programmes	-New programs have been introduced	-Nominal
	Number of staff	-New staff have been recruited	-Nominal
	Cost of education	-Expenditure by students in this e-learning mode spending less	-Nominal

Source: (Author 2017)

3.5 Target Population and Study Area

The target population of the current study was chosen from both public and private universities in Kenya, provided the university that they worked for met the criteria of offering e-learning mode. Specifically, it comprised the Directors, Deans, Coordinators, Technicians and Administrators in the e-learning section or department in that particular university. As of June 2015, Kenya had 71 universities categorized as both private and public universities recognized and authorized by the CUE (appendix 5). Therefore, in the current study the targeted populations were 355 respondents working in the e-learning units in the universities. The universities chosen for this study are connected to the outside world through Kenya Data Network (KENET) fiber optical cable which runs across most institutions of higher learning in Kenya (KENET, 2009). Further, this connection enabled most of the higher learning institutions to share resources.

Permission was obtained from the National Commission for Science, Technology and Innovation (NACOSTI) who issued the researcher with a permit and authority letter to be allowed to carry out the collection of data by the respective universities. A good number of the universities gave the authority for data to be collected, and which are attached in appendix 7, while others did not respond to a request to allow collection of data.

3.6 Sampling Technique and Sample Size

The targeted respondents comprised the Directors, Deans, Coordinators, Technicians and Administrators in the identified universities. This group was identified because they play a key role in the implementation of the e-learning mode and its success in the university. They were also expected to be competent and well informed on all issues relating to e-learning in their universities.

For this study, the number of universities that advertised themselves as having/offering e-learning are 16 public and 17 private making a total of 33 (thirty-three). The reason these universities were picked is that they had indicated they offered some of their programs through e-learning or distance education. This information was obtained from their respective websites. The main consideration was a confirmation from the university that they had e-learning programs or well-established Open Distance and E-learning (ODeL) directorates or departments (centers), (Nyerere, *et al*., 2012). Since the targeted respondents expected were 5 (five) from each university, the sample size of the study obtained was then 165.

3.7 Data Collection Instruments

3.7.1 Survey Questionnaire

The research study relied on the primary data collected through the use of a semi-structured questionnaire that was administered to the selected respondents from the targeted universities as well as interviews conducted. This enabled both qualitative and quantitative data to be collected. Where secondary data was available, it was also considered. The questionnaire had been developed based on the knowledge obtained through the literature review of related studies and the operationalization of the constructs.

The questionnaire consisted of a cover letter and two sections where section A sought for general background information of the respondents and section B was on items covered in the conceptual framework, see Appendix 2. The data collection tool used to collect self-reported data from the respondents was based on the objectives of the study. The respondents were given an opportunity to add any other information they deemed not to have been captured in the questionnaire.

Borrowing from the UNESCO Institute of Statistics (UIS) ICT-level development Index, this study uses the following constructs to determine the implementation in the Kenyan universities. The constructs proposed by UIS and applied in the study by (Skryabin & Zhang, 2015) were grouped in three-level model as; Readiness which reflected the level of networked infrastructure and access to ICTs; Intensity, which reflects the level of use of ICTs in the society; Impact, which reflects the results/outcomes of more efficient and effective ICT use. In the current study, these constructs were used to confirm the readiness, intensity and influence of Kenyan universities adoption of the ICT and how it had influenced the implementation of e-learning.

3.7.2 Interview

In the current study, the interview questions were used to probe for any further information not captured by the questionnaire. Open ended (unstructured) questions were used. They were used as guides with a general plan that the interviewer followed to collect data. They were used to collect information from the employee of the university in the e-learning center/section/department and who included; the Directors, Deans, Coordinators, Technicians and Administrators. In the current study, one respondent was interviewed from each university, making a total of 33 (thirty-three) interviewee. The information so collected enriched that collected through the use of the questionnaire. The set of questions used in the interview are reflected in Appendix 3.

3.8 Data Validity and Reliability

3.8.1 Piloting of Research Instruments

A pilot test of the data collection tool was carried out before embarking on the data collection exercise. According to Orodho (2009) pilot study is a mini experiment designed to test logistics and gather information prior to a larger study, in order to improve the latter's quality and efficiency. The piloting was done on two selected individuals from each university, purposively selected and who are conversant with the e-learning program. The main purpose of the pilot test was to check the face validity and content validity of the instruments. Of interest was the completion time of completing the questionnaire by a respondent. The feedback from the pilot test established that it was easier to fill the structured questions. The questionnaire was then revised based on the feedback from the pilot test. This eliminated any ambiguities and inadequate wording that may have caused the discouragements. As for any outliers and missing data, the researcher took care of them by utilizing the valid percentage from the SPSS output.

3.8.2 Reliability of the Instruments

The researcher used reliability analysis to measure both the internal consistency and the inter item consistency for the constructs used in the survey research instrument. The reliability analysis was tested using the Cronbach Alpha. Cronbach Alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. The coefficient ranges between 0 and 1.0 where the closer the coefficient is to 1.0, the greater the internal consistency of the items in the scale.

The Cronbach's Alpha value obtained after the reliability test was performed is 0. 614.

This this indicated that there exists a high level of internal consistency among the variables (individual, technological and organizational factors).

3.9 Data Collection Procedure

Data was collected using a semi-structured self-administered questionnaire and interviews with key informants. The use of both questionnaire and interview methods complemented each other, allowing for more complete analysis (Green, Caracelli, & Graham, 1989; Tashakkori & Teddlie, 1998). It served as a mutually validating procedure, due to double measure of the same data. The quantitative data collected guaranteed the generalization of results and the statistical testing of the research model. As for the qualitative data, it offered plausible explanation of the quantitative data. The use of both methods for collecting data contributed to the mutual validation procedure in that it amounted to a double measure of the same construct. This according to Lincoln and Guba 2000), enables the researcher to get more accurate data and reducing measurement errors.

The researcher delivered questionnaires to each respondent, or emailed those who requested to fill the online format. In some instances, a research assistant was recruited and used to deliver and follow up with the respondents and send back of the hardcopies to the

researcher via the courier services. The interviews were a face-to-face encounter and the researcher explored the issues raised by the informants.

3.10 Data Analysis and Presentation

Immediately the feedback was received, it was screened for completeness. This was through checking whether the responses were legible, complete and whether all the contextual information was included (Kombo & Tromp, 2006). The data collected was next coded and keyed into the computer.

SPSS 17.0 was then used to analyze the data by use of descriptive and influential statistical methods guided the objectives of the study. This is as described below

(i). **Objective One**

This was analyzed using both qualitative and quantitative analysis methods. In relation to objective one these are some of the issues on which data was collected and analyzed; for example, (i) Basic System Training (ii) Trained E-learning support staff (iii) Motivation due to e-learning training (iv) Training Duration. Data was collected analyzed through calculation of percentages of which statistical presentation of the information used were the pie-charts, frequency tables and graphs. This was chiefly quantitative and in describing issues of the outcome the research also used qualitative method. The responses were collected and analyzed from questionnaires which were distributed to employees in the e-learning division in the targeted universities.

(ii).**Objective Two**

Similarly, this was analysed using both qualitative and quantitative analysis methods. In relation to objective two these are some of the issues on which data was collected and analysed; for example, (i) Hardware reliability (ii) technical support (iii) Accessibility and Internet Bandwidth. Data was collected analysed through calculation of percentages of which

statistical presentation of the information used were the pie-charts, frequency tables and graphs. This was chiefly quantitative and in describing issues of the outcome the research also used qualitative method. The responses were collected and analysed from questionnaires which were distributed to university employees in the e-learning section of the universities.

(iii). **Objective Three**

The data collected was analysed using both qualitative and quantitative analysis methods. In relation to objective two these are some of the issues on which data was collected and analysed; for example, (i) Top management and Support (ii) Organizational culture (iii) E-learning strategy and Policies (iv). Institutional leadership and strategy. Data was collected analysed through calculation of percentages of which statistical presentation of the information used were the pie-charts, frequency tables and graphs. This was chiefly quantitative and in describing issues of the outcome the research also used qualitative method. The responses were collected and analysed from questionnaires which were distributed to university employees in the e-learning section of the universities.

(iv). **Objective Four**

Finally, the data collected was analysed using both qualitative and quantitative analysis methods. In relation to objective two these are some of the issues on which data was collected and analysed; for example, (i) Gender (ii) Academic level. Data was collected analysed through calculation of percentages of which statistical presentation of the information used were the pie-charts, frequency tables and graphs. This was chiefly quantitative and in describing issues of the outcome the research also used qualitative method. The responses were collected and analysed from questionnaires which were distributed to university employees in the e-learning section of the universities.

Chapter Four Findings and Discussion

4.1 Introduction

This chapter presents the findings of the study which was to determine if selected adoption factors; individual, technological and organizational did influence the implementation of e-learning in the Kenyan universities. The findings were presented in two parts namely the demographic information about the respondents from the universities studied and the analysis for each of the study questions.

4.2 Sample Characteristics

4.2.1 Response Rates

The researcher distributed one hundred and sixty-five (165) questionnaires out of which ninety-five (95) were correctly filled and returned. This response represented a response rate of fifty-seven point six per cent (57.6 %). Scholars have argued that a response rate of 50 per cent is adequate, 60 per cent is said to be good, and a response rate of 70 per cent is very good, (Nulty D., 2008). Thus the 57.6 per cent was acceptable.

4.3 Influence of Demographic Factors on E-Learning Implementation

4.2.2.1 Gender

Figure 4.1 presents a summary of the demographic information of the respondents of this study based on gender. From the analysis, the male formed the majority of the respondents at sixty-one per cent (61.0 %) of the respondents while the female was thirty-nine per cent (39.0%).

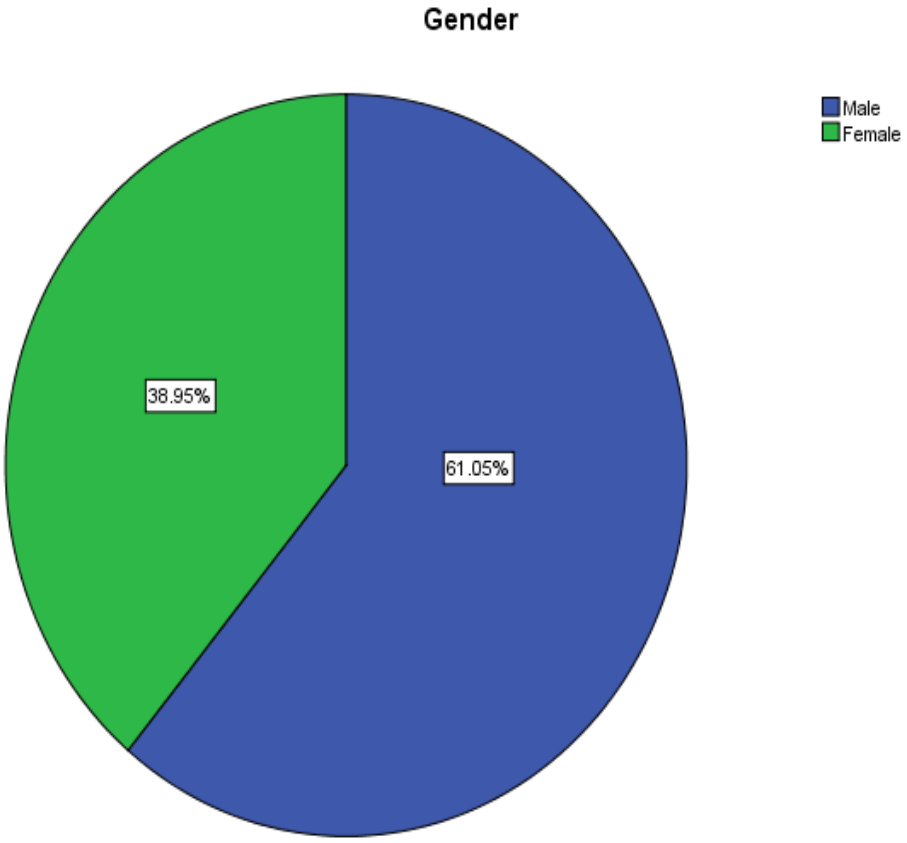

Figure 4.1: Gender
Source: (Author, 2017)

4.2.2.2 Education Level

Table 4.1 shows the category of highest education level for the respondents, three per cent (3%) of the respondents were at the level of PhD professors, sixteen per cent (16%) of the respondents had PhD Doctoral degree; sixty-three per cent (63%) of the respondents had Master's degree, thirteen per cent (13%) of the respondents had a bachelor's degree and five per cent (5%) had a diploma. From the statistics, most of the respondents across the universities were master's degree holders. This implied that, most of the unit's administrators were master's degree holders and above.

Table 4.1: Education Level

Education level						
	BASE	PhD Professor	PhD Doctor	Masters	Bachelors	Diploma
Education level	95	3	15	60	12	5
	100%	3%	16%	63%	13%	5%

Source: (Author, 2017)

4.2.2.3 Moderating Variable Fitting

The results of regressing the model after introducing the moderating variable indicated that;

Table 4.2: Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	91.218			
Final	.000	91.218	21	.000

Source: (Author, 2017)

This shows the parameters of the model for which the model fit is calculated. The 'intercept only' illustrates a model which does not control for any forecaster variable and merely fits an intercept to predict the outcome variable. The 'final' illustrates a model that involves the identified forecaster variable and has been attained by an iterative process that maximizes the outcome of the log likelihood of the results. The model fitting information gives the intercept only, and final models can be used in comparisons of nested models. The statistically significant chi-square statistic ($p<0.05$) indicates that the final model gives a significant improvement of the baseline intercept-only model. Chi-square assists the study to identify that at least one of the forecaster's regression coefficients cannot be

equated zero in the model. This implies that the model gives better predictions than if the predictions were guessed basing on the marginal probabilities for the outcome categorizes.

Table 4.3: Pseudo R-Square

Cox and Snell	.617
Nagelkerke	.982
McFadden	.971

Source: (Author, 2017)

Cox and Snell (1989) (R^2) is based on the log likelihood for the model compared to the log likelihood for a baseline model. Nagelkerke (1991) (R^2) is an adjusted version of the Cox & Snell that adjusts the scale of the statistic to cover the full range from 0 to 1. McFadden (1974) (R^2) is another version, for the intercept-only model and the full estimated model. The model with the largest statistic is "best" according to this measure.

For logistic and ordinal regression models, it is not possible to compute the same R2 statistic as in linear regression, so three approximations are computed instead. What constitutes a "good" R2 value depends upon the nature of the outcome and the explanatory variables. Here, the pseudo R2 values (e.g. Nagelkerke = 98.2%) indicates that 98.2 percent implementation of e-learning can be attributed to the factors captured as the independent variable in the model, therefore the model best fits to explained the influence of organizational factors, individual factors and technological factors on E-learning implementation.

The results in the parameter estimate table shows the coefficients, their standard errors, and associated p-values (Sig) and the 90 % confidence interval. The thresholds are shown at the top of the parameter estimates output, and they indicate where the latent variable is separated. The threshold coefficients are representing the intercepts, specifically the point

(in terms of a logit) where implementation of e-learning might be predicted into the factors highlighted.

To analysis the coefficients, it is important to consider their significance levels, for instance, the model above assumed 90% confidence level. The decision rule is that we reject the null hypothesis when the p-value is lower than the level of significance. From table Appendix 5, it can be noted that some variables are statically significant while some are not, for instance, the gender variable is statistically significant, and some of the technical factors and individual factors are statically significant while some are non-significant.

The organizational factors included in the model are both significant, that is, top management offer necessary support and the smartphone can be used to assess the LMS. The dummy variable representing the comparison between "Yes" and "No" to organizational factors shows the "No" having positive coefficients and the "Yes" having negative coefficient. This implies that according to the majority of the respondents, organizational factors have negative influence according to the perception of those who answered "Yes".

Also from the table it can be noted that gender as a moderating variable has positive influence on the implementation of e-learning in various institutions of higher learning in Kenya. The coefficient parameter *(B=2.388)* implies that gender has a 2.388 percent influence on the relationship between e-learning and the organizational, technological and the institutional factors in universities.

It can also be noted that individual factors such as training and the e-learning support staff has positive influence on the implementation of the e-learning. The coefficient parameters of training is estimated as 4.522, training lasting for a duration of two weeks and more than

two weeks coefficient parameters is estimated to be 1.378 and 0.33 respectively. This implies a positive influence of individual factors on e-learning implementation.

4.4 Influence of Individual Factors on E-Learning Implementation

This section presents the outline of the answers to the questions in the tool that show the extent to which the individual factors influenced e-learning implementation;

4.4.1 E-learning System Training

From table 4.2, fifty-nine per cent (59%) respondents agreed that basic e-learning training was offered in their institutions while forty-one per cent (41%) disagreed that there was any training offered. These findings were in line with those of (Fathema & Sutton, 2013) who reported in their findings that training faculty members was important. The respondents proposed faculty members to be offered extensive training, workshops and awareness programs on LMS features, usage and benefits to help increase the faculty use of LMSs. Also a well-trained faculty was confident and motivated to use technology in their teaching and learning and impart the same to their students.

As regards the duration of the e-learning training offered, table 4.2 shows that twenty-six per cent (26%) of the respondents indicated that basic training was offered for a period of less than a week. Fourteen per cent (14%) of the respondents indicated that training offered was for one week. About ten per cent (10%) of the respondents indicated that the training was offered for a period of two weeks. Another eight per cent (8%) of the respondents indicated that training was offered for duration of more than two weeks. Finally, about forty-two per cent (42%) of the respondents indicated that there was no basic e-learning training offered in their institution. These finding were in support of those of previous studies on e-learning technology adoption in the universities which indicated that training

of the individual learners and faculty is a requirement for the adoption of the technology to succeed (Soydal, 2012). Further, training period can vary depending on the caliber of users intended to be trained.

When the same respondents were asked about the support staff in their universities who support LMS users, sixty-eight per cent (68%) agreed that there existed support staff, while thirty-two per cent (32%) answered in the negative as shown in table 4.2. Support staffs were required since the failure of the technology could cause interruptions in the studies of the individual students (Ali, Haolader & Muhammad, 2013). Also regular repairs were necessary if ICT was to make a mark in the teaching and learning, hence qualified and trained technical staffs and faculty required (Oye *et al*., 2011) to support e-learning. The top management was also expected to give the moral, financial and material support necessary for the success of the teaching and learning technology that was much needed by the universities for purpose of addressing the high demand for higher education.

As regards motivation of users arising from being trained in the use of the e-learning LMS, sixty per cent (60 %) of the respondents agreed that the system motivated the users. About forty per cent (40%) disagreed that users got motivated. This was shown in table 4.2, in which the findings supported the findings according to Shimada, (2017) in which the study of Japanese EFL learners' attitude towards textbooks and web based materials in a blended learning context was studied. The findings indicated, that a simpler e-learning interface designs can motivate users. However, despite the interface having such characteristics the satisfaction with material and course content was paramount for overall motivation of the LMS user. Additionally, motivation of the user depends on how the e-learning content meets the needs of the particular user.

Table 4.4: Issues Pertaining to E-learning System and Training

Basic System Training						
Yes	59%					
No	41%					
Trained E-learning support staff						
Yes	68%					
No	32%					
Motivation due to e-learning training						
Yes	60%					
No	40%					
Training Duration						
	BASE	Less than a week	One Week	Two Weeks	More than two weeks	Not applicable
Training Duration	95	25	13	9	8	40
	100%	26%	14%	10%	8%	42%

Source: (Author, 2017)

4.4.2 Accessibility and Policy of the E-Learning System

When the respondents were asked about the accessibility of the system, sixty per cent (60%) indicated that the access time was less than thirty seconds. Another nine percent indicated that the access time is less than sixty seconds but greater than thirty seconds. Another sixteen per cent (16%) of the respondents indicated that it takes between sixty and ninety second to access and finally the last fifteen per cent (15%) of the respondents indicated it takes more than ninety seconds to access the e-learning systems. This indicated that the e-learning system was easily accessible and reliable for use by the students whenever needed as summarized in table 4.3.

According to Gamdi & Samarji, (2016), policies on internet accessibility were needed and should be formulated if e-learning in the HEIs is to be successful. These policies were to ensure that high speed internet access and reliable network were constantly available in the

HEIs. However, internet speeds were determined by several factors which included; amount of bandwidth available, number of users within the network, type of connectivity, equipment being used and technical support available among others. This meant that accessibility of the internet needed a well-coordinated approach.

Table 4.5: Time Taken to Access the LMS system

Time taken to access system					
	BASE	Less than 30 Seconds	Between 31 and 60 Seconds	Between 61 and 90 seconds	More than 90 seconds
Time taken to access system	95	57	9	15	14
	100%	60%	9%	16%	15%

Source: (Author, 2017)

4.4.3 Faculty's E-Learning Capacity

From the findings obtained, sixty-six per cent (66%) of the respondents agreed that there existed a well-trained faculty in the universities, while thirty-four per cent (34%) disagreed as shown in figure 4.2. These findings were in line with those of Imonikhe (2012), which pointed out that if faculty is highly proficient in ICT and embraced online teaching then the students would effectively learn conveniently online. This would ensure teaching and learning is not restricted to classroom walls hence it would lead to a greater access to higher education and admission would no longer be limited to availability of physical facilities such as lecture halls, hall of residence and laboratories within the university.

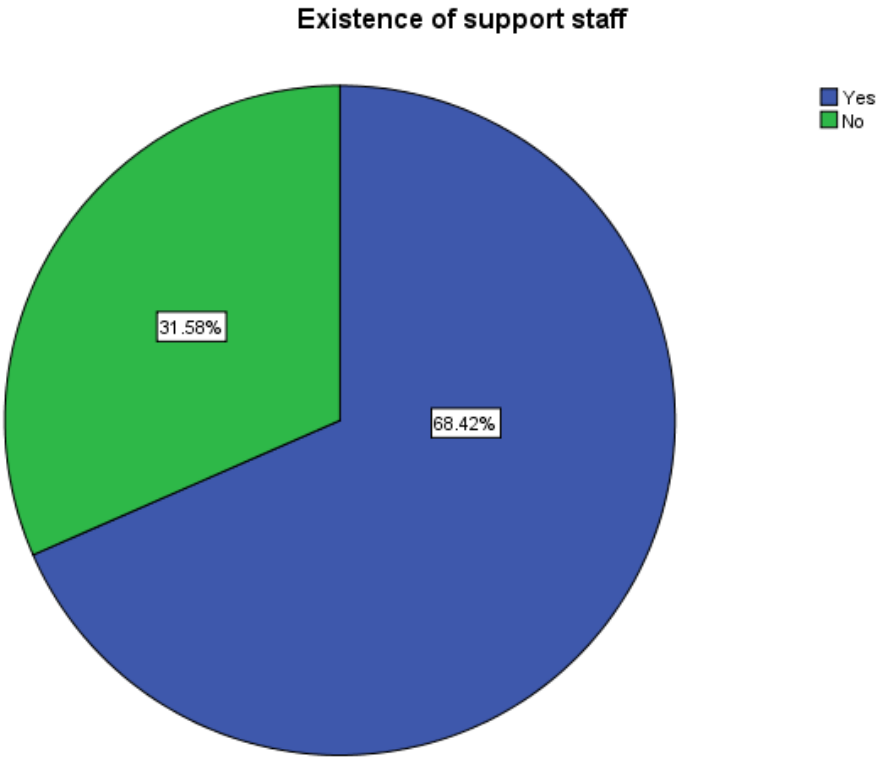

Figure 4.2: Existence of Well-trained Faculty
Source: (Author, 2017)

4.4.4 Association between E-Learning Implementation and Individual Factors

A chi square measure of association between e-learning implementation and individual factors is shown in table 4.4. The statistics showed that there was association between E-learning implementation and individual factors (P-value=0.000).

Table 4.6: Chi Square Measure of Association between Variables

	Individual Factors		Total
E-learning Implementation	4-5	6,7,8	
4-5	28	15	43
6,7,8	18	34	52

Source: (Author, 2017)

4.5 Influence of Technological Factors on the E-Learning Implementation

This section presented the synopsis of the answers to the questions in the tool that indicated the extent to which the individual factors influence e-learning implementation;

4.5.1 E-learning Implementation Based on Ratio of Computers

As regards ratio of computers to the students in the e-learning laboratory, seven per cent (7%) of the respondents indicated that a computer was shared by two students in their institutions. About five per cent (5%) of the respondents indicated that more than two students share a single computer in their institutions. About sixty-five per cent (65%) of the respondents indicated that there was no sharing of computers and that every student used a computer alone. This was the majority group which indicated that there is no sharing of computers in their institutions. About twenty-one per cent of the respondents indicated that it was not applicable to share a computer thus the respondents were not sure how the computers are shared, as shown in table 4.5. These findings indicated that a large percentage (65%) of respondents stated that there was no sharing of computers which is according to the finding that learner satisfaction was achieved when availability of technology is adequate (Sun, Tsai, Finger & Chen, 2007).

As regards how support staff responded to the queries raised, about four per cent (4%) of the respondents indicated that it took less than ten (10) minutes to be attended. Seventy-one per cent (71%) indicated that it took between ten and fifteen minutes to be attended to. Twelve per cent (12%) of the respondents indicated that it took more than fifteen minutes and fourteen per cent of the respondents indicated that it took an undefined duration to be sorted table 4.5.

As regards infrastructure efficiency, the findings indicated that forty-two per cent (42%) agreed it was efficient and users were able to make use of it while fifty-five per cent (55%) disagreed and indicated that, the infrastructure was not efficient. Three per cent (3%) of the respondents were not sure if the infrastructure was efficient or not as shown in table 4.5. The low figure of respondents supporting that ICT infrastructure was efficient and agrees with that by Owuor (2012), which found that most of the infrastructure was run down due to the large number of users. The researcher further points out the huge number of students in the Kenyan universities had put lots of strain on the existing infrastructure and that something needed to be done urgently. However, despite the challenges of run-down infrastructure, the universities needed to ensure that quality was maintained throughout the study period.

Table 4.7: Technological Factors

Computer-student Ratio					
	BASE	Two students share a computer	More than two students share a single computer	Every student gets to use a computer without sharing	Not applicable
computer-student Ratio	95	7	5	62	21
	100%	7%	5%	65%	22%
User care					
	BASE	Less than 10 minutes	Between 10 and 15 minutes	More than 15 minutes	undefined duration
User care	95	4	67	11	13
	100%	4%	71%	12%	14%
Infrastructure efficiency					
	BASE	Yes	No	Not sure	
Infrastructure efficiency	95	40	52	3	
	100%	42%	55%	3%	

Source: (Author, 2017)

4.5.2 E-learning Implementation Based on Interface Usability

According to the findings on the usability of the learning management system (LMS), sixty-eight per cent (68%) of the respondents indicated that the system was not easy to use. Thirty-two per cent (32%) of the respondents indicated that, the LMS was not easy to use. As shown in figure 4.3, the high response rate indicated that usability could be attributed to the "self-contained" LMS webpages that allow faculty to organize academic content and further engage students (Fathema, Shannon, & Ross, 2015). This meant that some experience and knowledge in IT was necessary for users. Nevertheless, the selective nature of usage of the LMS technologies to supplement lectures could lead users to term it as not being easy to use (Hustad & Arntzen 2013). Therefore, these findings were in line with those of (Fathema & Sutton, 2013) which found that important LMS features such as screen and system design, easiness of instruction management and user accessibility directly or indirectly benefited e-learning users and influenced their attitude towards LMS.

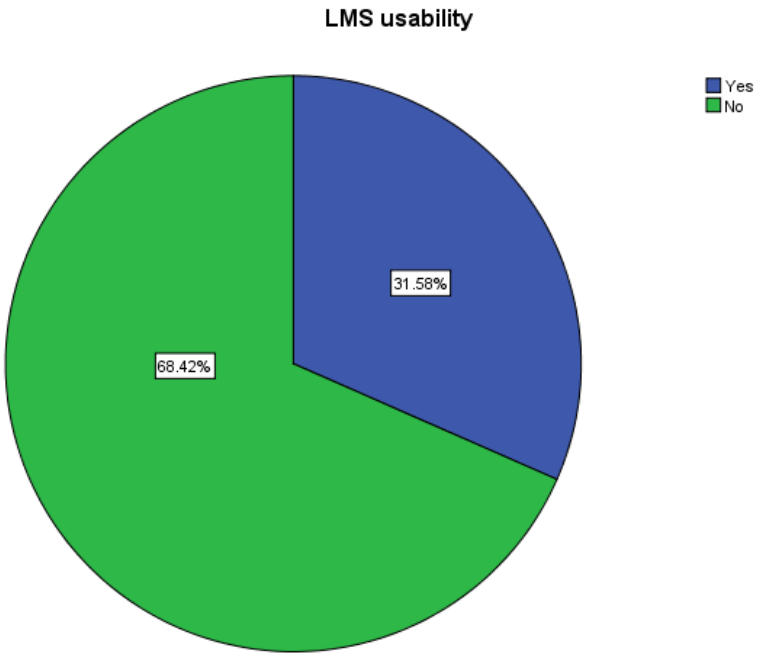

Figure 4.3: Usability of the LMS
Source: (Author, 2017)

4.5.3 E-learning Implementation Based on the Interaction between Users

On the issue of website interaction, thirty-two per cent (32%) of the respondents agreed that the university website allowed users to interact. Sixty-eight per cent (68%) disagreed that the website allowed interaction among users, as shown in figure 4.4. The findings of thirty-two per cent (32%) of the respondents being in agreement that the system had low interactivity was supported by an earlier study, which found that there was no strong evidence that interactivity within a portal influenced perceived ease of use and perceived usefulness (Cigdem & Ozturk. 2016). The findings emphasized that the faculty should be aware of the importance of interactivity and that it could lead to learner satisfaction hence encourage interactivity between them and other learners while using the LMS. However, other researchers had also indicated that there was lack of interaction among learners in Small and Medium Enterprises (SME) training.

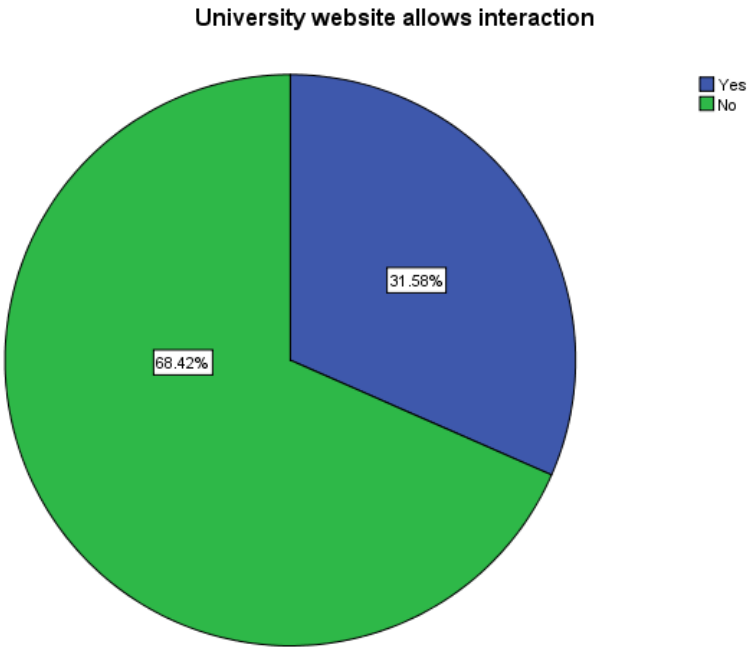

Figure 4.4: University Website Allow Interaction
Source: (Author, 2017)

4.5.4 E-learning Implementation Based on Accessibility of E-Learning Resources

Respondent were asked to indicate how accessible e-learning resources were to their users. Forty-six per cent (46%) agreed that the resources were easily accessible to the users whereas fifty-four per cent (54%) disagreed and indicated that accessing e-learning resources was not easy as presented in figure 4.5. The large percentage of respondents who disagreed was in line with the findings of the study by Masoumi (2011), which stated that accessibility implies enabling all students to access e-resources regardless of the physical, technological, or other usage limitations.

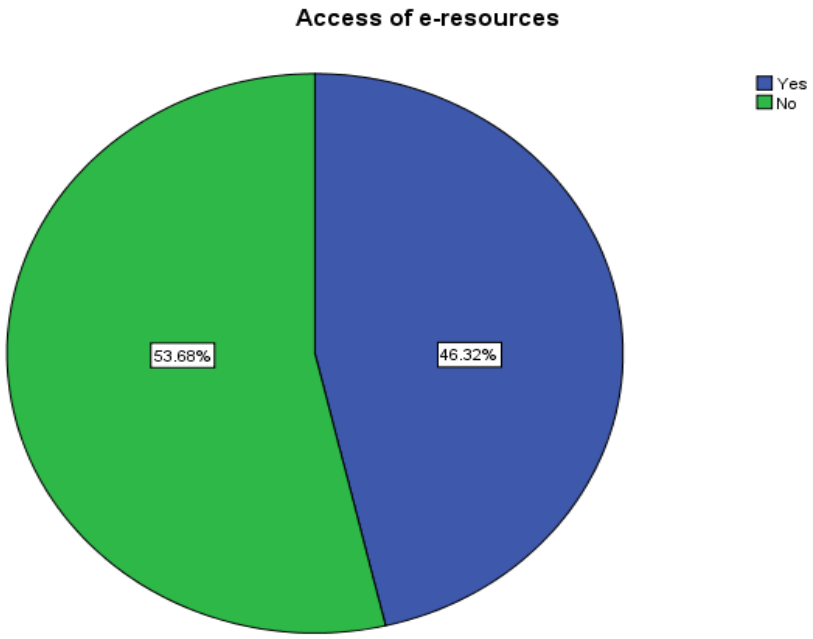

Figure 4.5: Access of E-Resources
Source: (Author, 2017)

4.5.5 Availability of University Computer Network

In regard to the availability of the network, fifty-eight per cent (58%) agreed that, the network was available for use by the learners. Forty-two per cent (42%) disagreed and indicated that the network was not always available as shown figure 4.6.

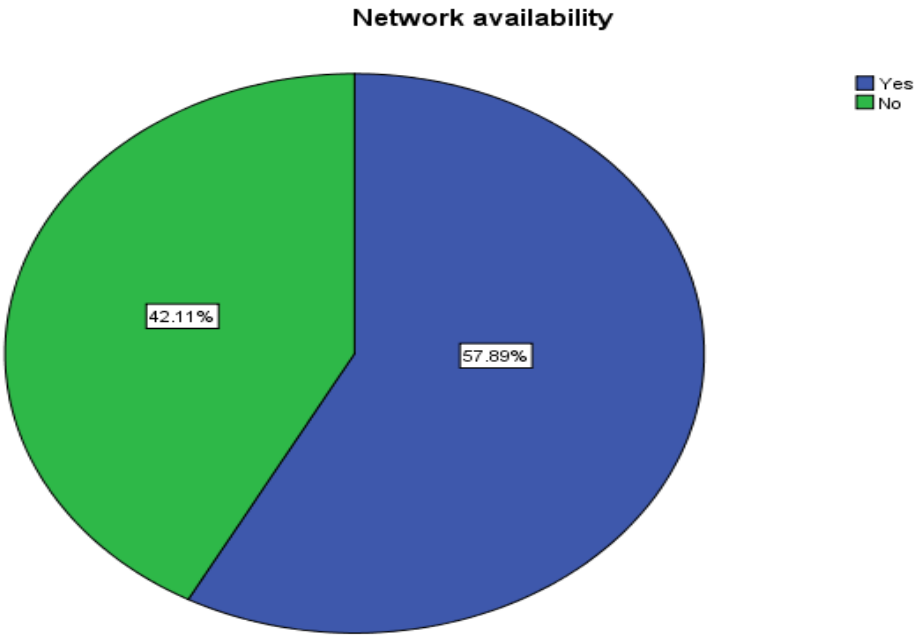

Figure 4.6: Network Availability
Source: (Author, 2017)

4.5.6 Association between E-Learning and Technological Factors

A chi square measure of association between e-learning implementation and technological factors shows that there was association between E-learning implementation and technological factors. (P-value=0.005) as shown in Table 4.6

Table 4.8: Chi Square Measure of Association (E-Learning Vs Technological Factors)

	Technological Factors		Total
E-learning Implementation	4,5	6,7,8	
4,5	13	27	40
6,7.8	9	46	55

Source: (Author, 2017)

4.6 Organizational/Institutional Factors Influence and E-Learning Implementation

This section presents the outline of the responses to the questions about the extent to which the organizational factors influenced the e-learning implementation;

4.6.1 Top Management's Support

According to the findings fifty-four per cent (54%) of the respondents agreed that the top management offered the much needed support while thirty-one per cent (31%) disagreed. Further this fourteen per cent (14%) were not sure whereas one per cent (1%) thought it was not applicable, as shown in figure 4.7. The findings that top management offered the much needed support were in line with those of Afshari, *et al*., (2013 and Neufeld (2009). Another study by (Neufeld, 2009) established that Top Management support (TMS) had three major roles in regard to supporting e-learning implementation. The roles identified included the provision of funds, technologies, staff, and user training programs. Additionally, the study posited that the behaviour of managers had a direct influence on the implementation of technology. Therefore, for e-learning implementation to succeed, the TMS played its rightful role and offered support services necessary for the success of e-learning practice. It meant that it was mandatory for the managers to obtain feedback, address user concerns and questions regarding the system.

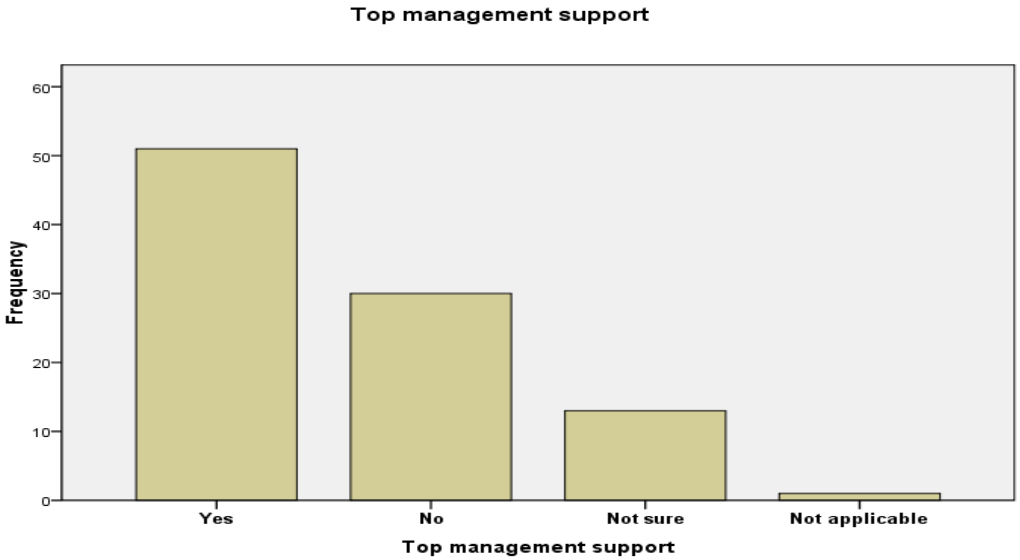

Figure 4.7: Top Management Support
Source: (Author, 2017)

4.6.2 Ratio of Technical Staff to Students

From the findings, seventeen per cent (17%) of the respondents indicated that the ratio was one technical staff to ten students while fifty-five per cent (55%) indicated the ratio was one technical staff that was assigned to thirty students. Further to that, nine per cent (9%) indicated the ratio was one technical staff to fifty students. Nineteen per cent (19%) of the respondents indicated that they were not sure. This was shown in figure 4.8 in which the findings supported the fact that students needed assistance to compensate for the lack of experience and confidence in using technology. Additionally, not all students enrolled in the e-learning program had the required skills to optimally use the e-learning resources offered at the beginning of their programs. Therefore, the technical staffs were required to assist and guide the students at all times.

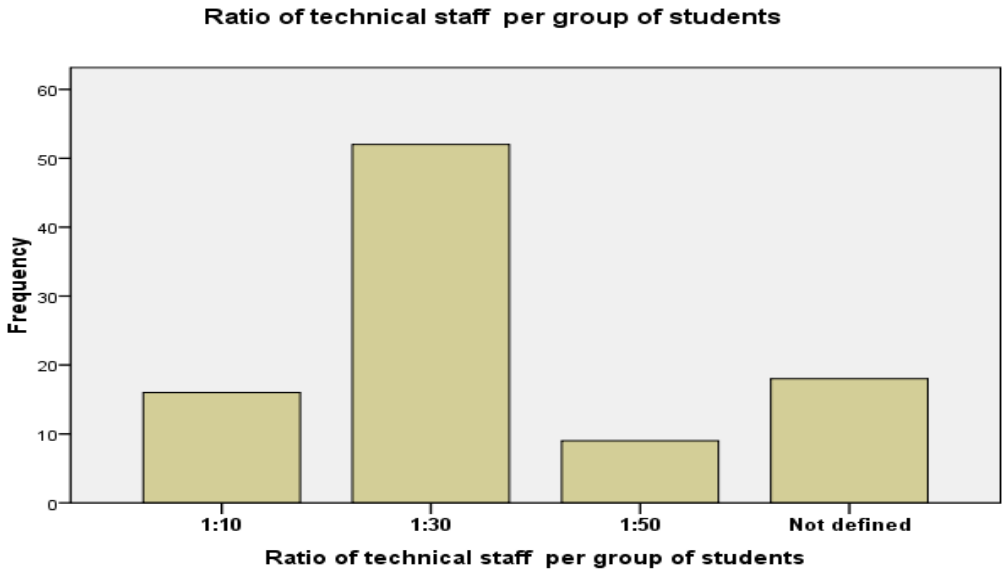

Figure 4.8: Ratio of Technical Staff to Students
Source: (Author, 2017)

4.6.3 Extent Based on Number of Computers for Use by a Group of 10 Students

According to the findings, five per cent (5%) of the respondents indicated that there were no computers available for use by the students while forty-seven per cent (47%) indicated

there were computers available for use by the students, whereas another forty-seven per cent (47%) indicated that they were not sure as shown in table 4.7. The findings were in line with the fact that most students had personal computers which they used in their e-learning mode. The learners were expected to learn anywhere and anytime time hence they required unlimited access to computer.

Table 4.9: Number of Computers Available for Use by a Group of 10 Students

Number of computers				
	Base	None at all	Available	Not sure
Number of computers	95	5	45	45
	100%	5%	47%	47%

Source: (Author, 2017)

4.6.4 Use of a Smart Phone to Access the LMS and Online Registration

The findings showed that sixty-one per cent (61%) of the respondents agreed that smart phones could be used to access the LMS while eighteen per cent (18%) disagreed and twenty-one per cent (21%) indicated they were not sure, as shown in table 4.8. These findings were in-line with those of (Ezeugbo & Asiegbu, 2011), who observed that introduction of the electronic gadgets enhanced the usage of technology in learning, teaching and research.

As regards online registration fifty-three per cent (53%) agreed that registration was done online while forty-two per cent (42%) disagreed, as shown in table 4.8. The findings echoed responses from the interview that students filled physical forms and actual online registration was not done by the students but other people in the admission section.

Table 4.10: Use of Smart phone and Online Registration

Use of Smart phone and Online Registration				
	BASE	Yes	No	Not sure
Use of smart phone to access LMS	95	58	17	20
	100%	61%	18%	21%
Is registration done online	95	55	40	
	100%	58%	42%	

Source: (Author, 2017)

4.6.5 Policy Guidelines on the Revision of E-Learning Content

From the findings, sixty-one per cent (61%) of the respondents indicated that policy on the guideline on how to revise e-learning content existed while thirty-nine per cent (39%) indicated of the respondents indicated that there was no policy, as shown in figure 4.9. This was in-line with the findings by Ezeugbo & Asiegbu (2011), who concluded that when policies were in place they guided the implementation hence minimizing the challenges that could be encountered. Further to that, policies on the acquisition and use of e-learning infrastructure, hiring of trained technical support staff and faculty should be put in place and in order to enhance the teaching and learning. The admission of students at the appropriate time should also be stated proactively.

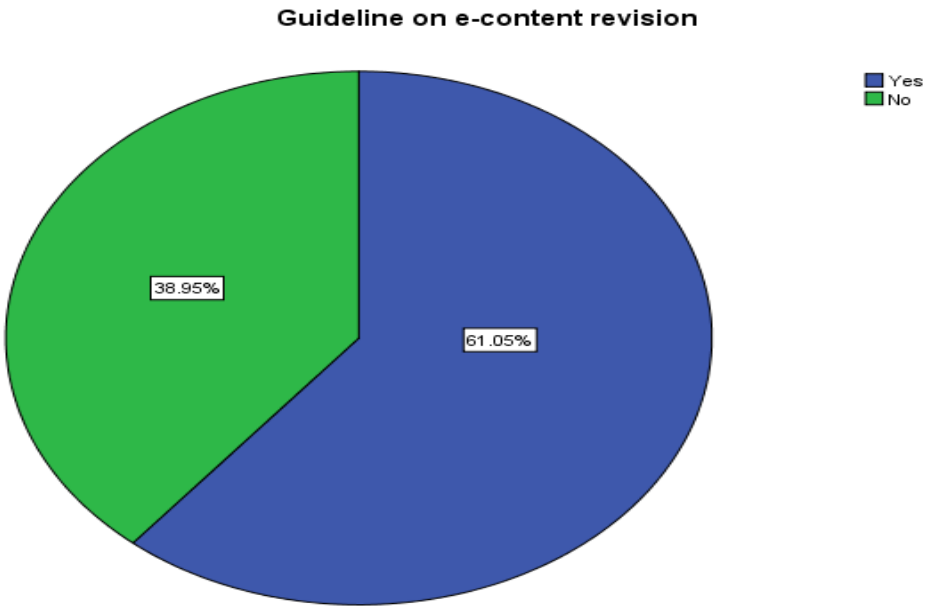

Figure 4.9: Availability of Policy Guidelines
Source: (Author, 2017)

4.6.6 Association between E-Learning and Organizational Factors

A chi square measure of association between e-learning implementation and technological factors show that there was association between E-learning implementation and organizational factors. (Chi value = 3.08; P-value=0.000), as shown in table 4.9.

Table 4.11: Chi Square Measure of Association (E-learning vs Organization Factors)

	Organizational Factors		Total
E-learning Implementation	4,5	6,7,8	
4,5	25	18	43
6,7.8	14	38	52

Source: (Author, 2017)

4.7 E-learning Implementation in the Kenyan Universities

This section presents the outline of the responses that expands e-learning implementation;

4.7.1 Enrollment and E-Learning

As regards increment in e-learning enrolment, sixty-seven per cent (67%) of the respondents indicated that the number of students increased by 1,000. Further to that twelve per cent (12%) of the respondents indicated that the increment was between 1,001 and 3,000. Eleven per cent (11%) of the respondents indicated that the increment was between 3,001 and 6,000 while another eleven per cent (11%) of the respondents also indicated an increase of between 6,001 and 10,000 as shown in figure 4.10. These findings indicated that the universities were capable of increasing students' enrollment in their respective programs

which would be successfully be done by increasing access by using ICT technology. Such a situation would ensure that the potential students are facilitated regardless of their geographical location.

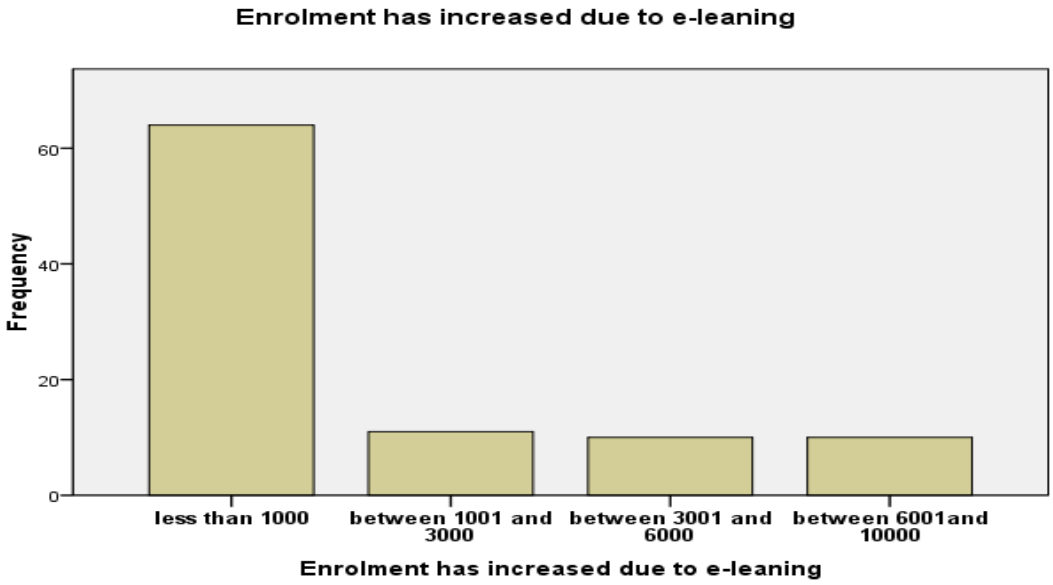

Figure 4.10: E-learning Enrollment
Source: (Author, 2017)

4.7.2 E-Learning Costs

In regard to reduction of costs fifty-four per cent (54%) agreed that e-learning had reduced transport and living costs by as much as between Kshs. 1,000.00 and Kshs. 5,000.00. This was followed by twenty-eight per cent (28%) of the respondents who indicated that the cost reduction was by between Kshs. 5,001.00 and Kshs. 10,000.00, then twelve per cent (12%) with between Kshs. 10001 and Kshs. 15,000.00, further to that four per cent (4%) of the respondents indicated the savings was Kshs. 15,000.00 while two per cent (2%) indicated there was no savings at all, as shown in table 4.10.

As regards reduction in fees, sixty-six per cent (66%) of the respondents indicated that the savings in fees were more than Kshs. 15,000.00 compared to other learning modes. Another twelve per cent (12%) indicated that the fees reduced by between Kshs, 1,000.00 to 5,000.00 and between Kshs. 5,001.00 to 10,000.00. Finally, eleven per cent (11%) of the respondents indicated that the fees reduced by between Kshs. 10,001.00 and 15,000.00 as shown in table 4.10. These findings concur with those by Walliker (2005) which stated that when similar programs are compared, e-learning was much less expensive to deliver regardless of the population.

Table 4.12: Cutting Down of Fees and Living Cost Due to E-Learning

Living cost reduction (Kshs.)	**Number**	**Percentage**
between 1,000.00 and 5,000.00	51	54%
between 5,001.00 and 10,000.00	27	28%
between 10,001.00 and 15,000.00	11	12%
more than 15,000.00	4	4%
Not at all	2	2%
Fee reductions (Kshs.)		
between 1,000.00 and 5,000.00	11	12%
between 5,001.00 and 10,000.00	11	12%
between 10,001.00 and 15,000.00	10	11%
more than 15,000.00	63	66%

Source: (Author, 2017)

4.7.3 Measurements of Implementation of E-Learning in Individual Universities

When the respondents were asked about the rolling out of new programme in the university, sixty-three per cent (63%) of the respondents stated that new programs have been introduced, while thirty-seven per cent (37%) disagreed. Regarding the particular universities implementing e-learning, forty-eight per cent (48%) of the respondents agreed that e-learning had been implemented in their university while fifty-two per cent (52%) of the respondents disagreed as shown in table 4.11. Similarly, recruitment of new staff to support the new programme rolled out, fifty-six per cent (56%) of the respondents agreed that new staff had been recruited to take care of the increased enrolment, while forty-four per cent (44%) disagreed, as shown in table 4.11. This response rate was in-line with the assertion by (Owuor, 2012) who argued that additional academic staffs are required in the HEIs to ensure acceptable staff-student ratios. The ratio of the teaching staff hired to the student's enrolment where possible should be commensurate with the increase in the student's population. Conversely this ensured quality and productivity occur in the HEIs. Also this would ensure the large number churned out of the universities was productive and the future of the country was not in jeopardy and that it was in tandem with the vision.

Table 4.13: Measurements of Implementation of E-learning

Item	Yes	No
New Programme have been rolled out	63%	37%
Recruitment of new staff due to increased programme	56%	44%
Implementation of e-learning in your university	52%	48%

Source: (Author, 2017)

4.7.4 E-Learning and Off-Campus Interaction

As regards off-campus interaction, sixty one per cent (61%) of the respondents agreed that e-learning system allows off-campus interaction between students, while thirty nine per cent (39%) disagreed, as shown in figure 4.11. These findings were in line with those of

(Damon, 1984 & Webb, 1989) who found that interaction does take place among learners outside the university precincts. Further, interaction could be of learners in small groups or those who had a common goal. These interactions among learners had the advantage of encouraging learners to exchange ideas and learning experience and help leaners who were shy to talk in class or voice concern to their peers and lecturers. Abrami, Bernard, Bures, Borokhovski & Tamim, (2011) identified three types of interactions that happen among learners; student–student, student-content and student-instructor interaction.

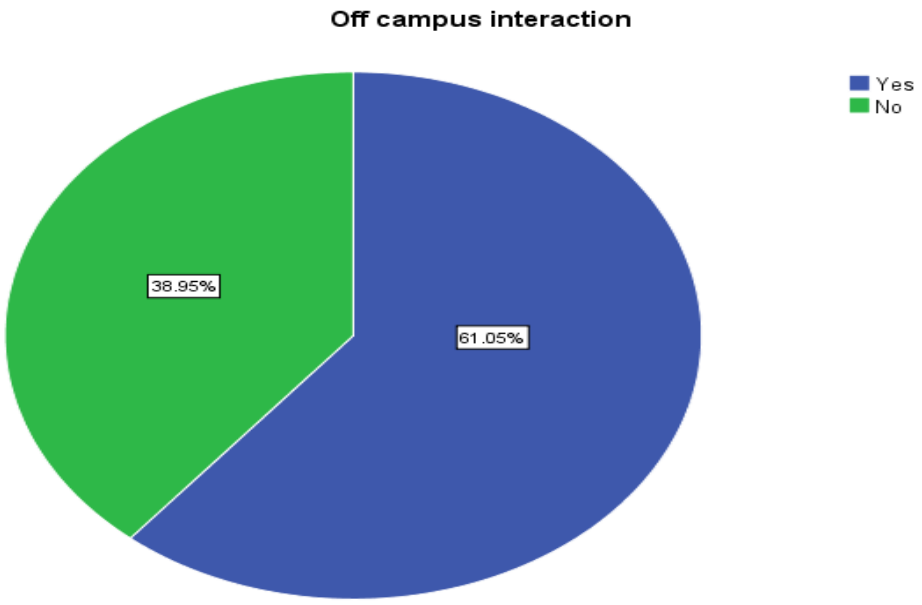

Figure 4.11: Off-campus Interaction
Source: (Author, 2017)

4.8 Test of Multicollinearity

Multicollinearity was performed to check if there was any predictor variable that was highly correlated to the other predictor variables. The results of the analysis were shown in table 4.12. The prediction from the results of a correlation matrix indicates that where a correlation value (VIF) was 10 then it means that there is perfect correlation between the two variables while a correlation coefficient of 1 means that there was no relationship between the two variables. This was interpreted to mean that if the value was close to 10,

then the relationship was strong while if the value was close to 1 then the relationship was weak.

Table 4.14: The Multicollinearity Analysis Results

Variable	Variance Inflation Factor (VIF)
Individual factors	1.009**
Technological factors	1.150**
Organizational factors	1.156**

** Significant at 0.01

Source: (Author, 2017)

From table 4.12, the results showed that there was no significant relationship between the independent variables (individual factors, technological factors and organizational factors) hence little or no multicollinearity ($p<10\%$) since all the values lie between 1-10 and were all closer to 1.

4.9 Diagnostic Test

4.9.1 Test for Normality

The test of normality was performed to check whether the data set modeled the normal distribution of data. In the current study, Shapiro-wilk test was performed. This test states that if the sig value was greater than 0.05, the data is normal and if it's below 0.05, then the data significantly deviate from normal. From table 4.13, the sig values obtained after the test of normality was performed show that they were 0.05 or more and therefore the data obtained for the variables individual, technological and organizational factors was normally distributed.

Table 4.15: Test of Normality Results

Variable	sig values
Individual factors	0.05**
Technological factors	0.08**
Organizational factors	0.07**
** Significant at 0.01	

Source: (Author, 2017)

4.9.2 Correlation Coefficients

The purpose of this test was to try and measure the degree to which any two variables were related, that is, what was the linear relationship between the variables. The exact value of 1.0 would indicate a perfect positive relationship while an exact -1.0 means a perfect negative relationship. Further a correlation coefficient of 0.0 would mean there was no relationship between the variables. Table 4.14 shows the results of the analysis indicating that the correlation coefficients were significant at 0.05 level of significance indicating validity 0.012, 0.014 and 0.000 were less than 0.05. Since the values were positive and closer to 0, this indicated that the variables (individual vs technological and individual vs organizational) had a positive relationship though weak; which meant that individual factors, technological factors were significant at a level of 10%. For the variables technological and organizational factors, there was no relationship; which meant that technological factors and organizational factors were not significant at 10% level.

Table 4.16: Correlation Coefficients

Correlations				
		Individual Factors	Technological Factors	Organizational Factors
		total	total	total
Individual Factors	Pearson Correlation	1	0.341	0.302
	Sig. (2-tailed)		0.012**	0.014**
	N	95	95	95
Technological Factors	Pearson Correlation	0.341	1	.361**
	Sig. (2-tailed)	0. 012**		0.00
	N	95	95	95
Organizational Factors	Pearson Correlation	0.302	.361**	1
	Sig. (2-tailed)	0.014**	0.00	
	N	95	95	95

**Correlation Significant at 0.01

Source: (Author, 2017)

4.9.3 Heteroscedasticity Testing

This testing was carried out to test if the variance of the error was constant across the observations in the current study. If the errors are constant, then the errors are called heteroscedasticity. Decision rule for heteroscedasticity testing states that if the sig>0.05, then there is no heteroscedasticity problem. From the analysis of the result findings, the sig. figures 0.574, 0.067 and 0.248 obtained for each of the variables are greater than 0.05 indicating there was no heteroscedasticity problem

4.9.4 Omitted Variable Bias Test

This test was carried to find out the bias effect of omitting any variable to the hypothesis being tested. Ramsey Reset Test obtained was as shown below;

F (3, 76) = 2.23

Prob > F = 0.0911

The decision rule for omitted variable bias test states that if Prob > 0.05 then we fail to reject the null hypothesis and conclude that the model has no omitted variables. From the Ramsey Rest Test results obtained, the analysis gave a value of Prob > F = 0.0911 which is greater than 0.05. It indicated that there was no problem of omitted variable bias.

4.10 Regression Results and Interpretation

This section discusses the results of the multiple regression models. For this analysis, a 10% level of significance in testing for significances of the regression coefficients was adopted. This was because the field data collected was presumed to have a higher level of errors. Also the coefficients of the multiple regression estimates indicated that a unit change in the dependent variable caused a unit change in each of the independent variables.

4.10.1 Multiple Regression Estimates Associated With Individual Factors

Table 4.14 shows the results of the multiple regression estimates of the coefficients associated with the first objective and which was to determine the extent to which individual factors influenced e-learning implementation in the Kenyan universities.

Table 4.17: Multiple Regression Estimates Associated with the Individual Factors

	B	Std. Error	Beta	t	Sig.
(Constant)	4.296**	0.578		7.43	0.00
Basic E-learning training	0.556**	0.211	0.267	2.635	0.01
Motivation due to training	0.271	0.223	0.13	1.216	0.227
Existence of well-trained faculty	0.191	0.234	0.088	0.817	0.416
N = 95	Durbin Watson statistic = 2.437	F= 3.050; 0.032		R^2 = 0.62	

** Significant at 0.01

Source: (Author, 2017)

The results from the multiple regression model associated with individual factors show that motivation due to training and existence of well-trained faculty were not significant at 10% level (p=0.227 & 0.416 respectively). This implied that E-learning implementation did not depend on these variables when all were simultaneously included together with others. Hence they ceased to be important in presence of other significant variables like basic E-learning training. This suggested that E-learning implementation depended on this significant variable. The overall multiple regression (Fisher test) was statistically significant (P=0.032) and the model explained up to 62% (R-squared) of the variability in the response. This characteristic implied that when users had been offered relevant basic training on e-learning, they were able to use e-learning in their teaching and learning. This was in agreement with the findings by Chokri (2012) that students' positive opinion on use of e-learning technology could be influenced by the expertise of the learners in ICT and the ease of use of the e-learning platform. Both of which could be as a result of training on e-learning. The Durbin-Watson statistic (2.437) showed no autocorrelation in the residuals.

4.10.2 Multiple Regression Estimates Associated with Technological Factors

Table 4.15 shows the results of the multiple regression estimates of the coefficients associated with the second objective which was to examine whether technological factors had influenced on the e-learning implementation in the Kenyan universities.

Table 4.18: Multiple regression estimates associated with the Technological factors

	B	Std. Error	Beta	t	Sig.
(Constant)	4.23**	0.406		10.449	0.00
Access of e-resources	0.419**	0.221	0.204	1.896	0.061
Infrastructure efficiency	0.467**	0.196	0.251	2.389	0.019
Network availability	0.054	0.219	0.026	0.247	0.805
N = 95	Durbin Watson statistic = 2.38		F= 5.467; 0.02		R^2 = 0.53

** Significant at 0.01

Source: (Author, 2017)

The results from the multiple regression model associated with the technological factors show that network availability was not significant at 10% level (p=0.805). This implied that E-learning implementation did not depend on this variable when all were simultaneously included together with others in this category (technological factors). Hence it ceased to be important in presence of other significant variables, that is, access of e-resources and infrastructure efficiency. This suggested that e-learning implementation depended on these significant variables (access of e-resources and infrastructure efficiency). The overall multiple regression was statistically significant (P=0.02) and the model explained up to 53% (R-squared) of the variability in the response. These findings agreed with those of (Tarus et al., 2015; Kamarulzaman, & Ghani, 2011) that providing adequate ICT and e-learning infrastructure was a challenge.

The Durbin-Watson statistic (2.380) showed no autocorrelation in the residuals.

4.10.3 Multiple Regression Estimates Associated with Organizational Factors

Table 4.16 shows the results of the multiple regression estimates of the coefficients associated with the third objective which was to evaluate the extent to which organizational/institutional factors influenced e-learning implementation in the Kenyan universities.

Table 4.19: Multiple Regression Estimates Associated with the Organizational Factors

	B	Std. Error	Beta	t	Sig.
(Constant)	3.875**	0.416		9.316	0.00
Top management support	0.269**	0.128	0.199	2.11	0.038
Is registration done online	0.271	0.199	0.131	1.36	0.177
Guideline on e-content revision	0.734**	0.201	0.35	3.654	0.00
N = 95	Durbin Watson statistic = 2.356		F= 7.477; 0.0		R^2 = 0.56

** Significant at 0.01

Source: (Author, 2017)

The results from the multiple regression model associated with the organizational factors showed that online registration was not significant at 10% level (p=0.177). This implied that E-learning implementation did not depend on this variable when all were simultaneously included together with others. Hence it ceased to be important in presence of other significant variables like top management support and guideline on e-content (p=0.00). This suggested that e-learning implementation depended on these significant variables. The overall multiple regression was statistically significant (P=0.00) and the

model explained up to 56% (Nagelkerke R-squared) of the variability in the response. These findings agreed with those of (Ali, G., Magalhães, R., Ali, E., & Magalhaes, R., 2014) that e-learning require supporting structure derived by the top management support in the institutions and which included e-content development as well. The Durbin-Watson statistic (2.356) showed that there was no autocorrelation in the residuals.

4.10.4 Multiple Regression Analysis Associated with all the Variables

The design requirement included one dependent variable also known as criterion variable and two or more independent variables also known as predictor variables. In the current study, the response (criterion) variable (Y) was E-Learning Implementation while the independent (predictor) variables were Individual Factors (X_1), technological Factors (X_2), and Organizational Factors. The model which was used in this study is as shown in (i):

$$Y = \beta_0 + \beta_1(\text{Individual Factors}) + \beta_2(\text{Technological Factors}) + \beta_3(\text{Organizational Factors}) + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (i)$$

Substituting the constants from table 4.15, the model becomes

$$Y = 2.204 + 0.247X_1 + 0.103X_2 + 0.223X_3 + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (ii)$$

From model (ii), it showed that one-unit increase in X_1 increases Y by 0.24 units; this implied that when individuals users in the university were well trained, motivated and IT competent, then they were likely to influence positively the implementation of e-learning. Also a unit increase in X_2 caused an increase in Y of 0.10 units; this implied that universities that invest in the required technology were more likely to implement e-learning. This was in agreement with the findings by Bhuasiri *et al.*, (2012) that increasing technology awareness and providing training to all types of technology users as well as increase users 'motivation both learners and faculty contributed greatly to e-learning success.

Finally, a unit increase in X_3 caused an increase in Y of 0.22 units and this implied that organizational factors in the university did positively influence e-learning implementation. Organizational factors included; top management support, organizational culture, strategies, policies and leadership. This was in agreement with the findings by Ndubisi & Labuan, (2008) that top management support did influence positively the association with subjective norm, which also mediated in the relationship between influence and adoption intention of the users in the study.

From table 4.15, the p-value for the multiple regression factors were; individual factor 0.014, technological factors 0.064 and finally the p-value for the organizational factors was 0.001. These p-values indicated that all the factors under study were all significant at an error rate of ten per cent (10%). This meant that individual factors, technological factors and organizational factors were important in the implementation of e-learning in Kenyan universities. The overall multiple regressions were statistically significant and the model explained up to 44% (Nagelkerke R-squared) of the variability in the responses. These findings agreed with those of (Afshari, *et al*., 2013; Neufeld, 2009) that individual, organizational factors affected e-learning implementation in schools. Also implementation of technology in schools showed that these three factors (individual, organizational and technology) were interrelated.

Table 4.20: Multiple Regression Estimates Associated with all Variables

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	Std. Error	Beta		
(Constant)	2.204	0.686		3.214	0.002
Individual Factors	0.247	0.098	0.227	2.513	0.014**
Technological Factors	0.103	0.055	0.181	1.872	0.064**
Organizational Factors	0.223	0.063	0.341	3.524	0.001**
N = 95	Durbin Watson statistic = 1.657		F= 4.086; 0.0	R^2 = 0.44	

** Significant at 0.01

Source: (Author, 2017)

For the purpose of analysis in this study, a 10% level of significance in testing was used because the field data collected was presumed to have a high level of errors.

Chapter Five Summary, Conclusion and Recommendation

5.1 Introduction

This chapter presents a summary of the study, conclusions, contribution of the study to knowledge, recommendations, and areas for further research.

5.2 Summary of the Study

The summary of the findings stated below was done as guided by the objectives and the research hypothesis that guided the study

5.2.1 Influence of Individual factors on E-Learning Implementation

In terms of the significance of the individual factors influencing the implementation of e-learning in Kenyan universities, the study revealed that basic training, duration of the training, availability of trained e-learning support staff, accessibility of the e-learning system and the faculty's e-learning system did significantly influence the implementation of e-learning. These factors were noted to have a significantly high response rate of approximately sixty per cent (60%) or above except for the training duration. The response rate for the training duration was based on a range. About fifty-eight per cent (58%) of the respondents on training duration indicated that it was necessary to be offered, though duration of the training varied. These factors revealed that individual factors significantly influenced e-learning implementation.

5.2.2 Influence of Technological Factors on E-Learning Implementation

With regard to technological factors, it was noted that only availability of university computer network was not significant at 10% error rate while the rest of the factors were shown to be all significant. Other factors revealed as follows; 65% of the respondents indicated that there was no sharing of computers among the students registered for e-

learning. About 71% indicated that there was e-learning support responsiveness. However the respondents indicated it normally took between 10-15 minutes to get required assistance. On LMS interface usability, 68% of the respondents indicated they had issues of concern on the Learning Management Systems (LMS). Also 68% of the respondents indicated that there was notable interaction between users of the LMS. Accessibility of e-resources was also noted by about 54% of the respondents to be non-existent. Concerning ICT infrastructure efficiency, 55% of the respondents indicated that it was not efficient.

5.2.3 Influence of Institutional Support on E-Learning Implementation

With regard to the organizational factors, online registration of the program was found not to be significant at an error rate of 10%. The rest of the factors were found to be significant. They included; top management support where about 54% respondents indicated that they do receive the much needed support. Fifty-five per cent (55%) of the respondents indicated that the ratio of support staff to the students was 1:30. About 47% indicated that computers were there for use by students. In the case of use of smart phones to access the LMS, 61% agreed that it could be used to access the system. Finally, 61% of the respondents agreed that policy on when and how to revise the e-learning content does exist in their respective universities.

5.2.4 Influence of Demographic factors on E-Learning Implementation

The demographic results as earlier indicated in figure 4.1 and table 4.1 varied depending on the construct under consideration. Thus analysis of gender data showed that the male formed the majority of the respondents at sixty-one per cent (61.0 %) of the respondents while the female was thirty-nine per cent (39.0%). This shows that a higher number of one gender are manning the e-learning division. Regarding the educational level, the highest education level for the respondents, three per cent (3%) of the respondents were at the level

of PhD professors, sixteen per cent (16%) of the respondents had PhD Doctoral degree; sixty-three per cent (63%) of the respondents had Master's degree, thirteen per cent (13%) of the respondents had a bachelor's degree and five per cent (5%) had a diploma. These statistics, reflects the fact that most of the respondents across the universities were master's degree holders. Meaning that the e-learning division/section was manned by master's degree hold. This indicated that, the division was manned by staff with a high level of education and gender was not a determinant.

In the other category of factors, both gender expressed their opinion by either support or not. It was observed that academic levels among the respondents did not influence the implementation. This is because, across the different education levels are gender, a good number was found to either support or not.

5.3 Conclusion

In view of the stated findings, the researcher concludes as follows and based in the order of the objectives of the study.

As regards the first objective which sought to determine the extent to which individual factors influence e-learning implementation, the researcher concluded that, basic computer training (P=0.01), Motivation due to training (p=0.227), availability of trained support staff (p=0.416), accessibility of the e-learning system (p=0.061) and the faculty's capacity on e-learning were necessary as they significantly influenced implementation of e-learning. However, motivation arising from e-learning training and availability of well-trained faculty (p=0.416) were not a must for students enrolled in the e-learning programs. This

was because learning was not teacher centered but learner centered, whereby the learner was expected to do most of the learning away from the institution and independently.

Concerning the second objective which sought to examine whether technological factors did influence e-learning implementation, the researchers concluded that only availability of university computer network (p=0.805) was not a requirement. This was because online courses were not centered at the university and were available anywhere and anytime. However, the following should be improved upon; sharing of computers among the students registered for e-learning, e-learning support responsiveness to the students, interaction between users of the LMS, ICT infrastructure efficiency and accessibility of e-resources. The time taken to get required assistance should also be improved. On LMS interface usability, issues of concern on the LMS should be addressed by the relevant individuals.

With regard to the third objective which sought to evaluate the extent to which organizational factors influence e-learning implementation, the researcher concluded that online registration (p=0.177) of the program was not a major requirement for the organization. However, top management support (p=0.038), ratio of support staff to the students, availability of computers, use of smart phones to access the LMS system and policy on when and how to revise the e-learning content were a key requirement.

As for the fourth objective, which sought to determine if demographic data had influence in the implementation of e-learning, gender and educational level was found to have some significant influence. This was through an observation of the fact that all e-learning units seemed to perform as expected irrespective of the gender of the head of the section. Also

the fact that most leaders of the section had master's degree and above, it was clear that education level was important and a requirement.

5.4 Contribution of the Study to Knowledge

Existing literature on e-learning showed a strong adoption and prolific use of e-learning with improved academic performance in higher institutions especially in the developed countries, the same cannot be said for the Kenyan universities. However, little or no substantive literature exists with respect to the Kenyan higher learning institutions on the influence of the implementation of e-learning in the Kenyan universities. This study was significant in the following ways; first it brings out new insight into what and how the mentioned factors can influence the e-learning implementation in the universities. This literature will contribute to the empirical literature on the influences of the factors on the implementation of e-learning in the universities. Other researchers, scholars and stakeholders interested in the implementation e-learning can refer to it. Secondly, the findings in this study can be used to guide university managers and other stakeholders on what and where to lay the necessary emphasis to make e-learning a success in their institutions.

5.5 Recommendation

Having provided summaries of the findings and thereafter conclusions to the study, this section provides recommendations from the findings and the conclusions.

On the first objective, this study recommends that basic computer and LMS training should be offered to all new students who register for the e-learning program. The duration for the training can then be varied depending on the basic knowledge these students possess on ICT. Also the training outline can include basic computer literacy and LMS training for all

faculty and students and should be made compulsory. This will lead to an improved computer literacy and enhance computer self-efficacy hence reducing computer anxiety among the new students at the beginning. It will also enhance ease of use. In return, this will all lead to increased eLearning adoption by both the learners and faculty.

On the second objective, the study recommends that technology in use should be current and must be constantly updated. This ensures needed ICT infrastructure, fast and reliable network are available at all times to the learners and the faculty. Another recommendation is that the hiring of qualified technical staff, their training and retention policy should be formulated and implemented. Finally, the university management should ensure that the infrastructure in place is upgraded periodically in order to match the ever changing technology. One way of achieving infrastructural requirements is through exploration of the various funding alternatives such as forming partnerships with governments and private sector players. This can help them to fundraise for necessary ICT infrastructure that is much needed.

On the final objective of the study, the study recommends that the top management in these institutions should offer their undivided support to the e-learning programs and facilitations. This support could be in terms of extensive training, workshops, policy development and awareness programs on LMS features, their usage and benefits to help increase the faculty use of LMSs. Another recommendation is that the faculty should be motivated so that they can embrace the technology. This will in return motivate the faculty to support the implementation of e-learning in terms of time and guidance of uploading of their material online for the students to access them.

5.6 Suggestion for Further Research

The following recommendations for further study were made; the first is that a study should be carried out to look at the issue of dissemination of information regarding e-learning in the universities. This was because in the preliminaries of this study, the researcher obtained information from their websites that they offered e-learning mode of study, but in reality they didn't. Secondly a similar study can be done to establish why some universities were not willing to allow collection of data related to e-learning despite being assured the information was to be used strictly for academic purposes only. Thirdly, the study can be extended to include the Kenyan Technical and Vocational Education and Training (TVET) institutions, Secondary schools and primary schools. This was because their composition in terms of students, management and funding is different from that of the universities and finally, a similar study should be carried out in other countries for comparison purposes.

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Appendix 1: Cover Letter

Harrison Njoroge,

Department of Management Science, School of Business, Kenyatta University

P.O. Box 43844, Nairobi – Kenya.

Dear Respondents,

I'm a PhD student in the Department of Management science, School of Business of Kenyatta University. My research topic is "**Influence of Adoption Factors on Implementation of E-Learning in Kenyan Universities"**. This research study aims at finding out the influence that adoption factors have on e-learning implementation in the HEIs in Kenya.

Your participation in this research is voluntary and the individual information you shall provide will be confidential, and thus cannot and will not be published without your express permission. The information will be useful to enable me come up with a proposal that will see e-learning utilization in the HEIs improve, and subsequently increase their student's population.

The filling of the questionnaire will take about 20 minutes of your time to complete. Additional notes can be made on the instrument where necessary.

I thank you in advance for taking time to fill this questionnaire and if you would want to have a copy of the final report, please feel free to contact me using the email address included.

Yours faithfully,

HARRISON NJOROGE

(REG. NO: D86/CTY/13877/2009) Email: glowry.hn@gmail.com

Appendix 2: Questionnaire

General Instructions:

The purpose of this questionnaire is to collect data on *"**Influence of Adoption factors on the implementation of e-learning in the Kenyan universities"***.

The questionnaire consists of two sections. Make sure to respond to every statement.

SECTION A: DEMOGRAPHIC SECTION

This section requires demographic details and general information

1. Respondents name (optional): _____
2. Gender: (male/female) _____
3. Name of Institution: _____
4. Location (City/ Town): _____
5. Select the highest Education level: _____

   (a). PhD (professor) (b). PhD (Doctor) (c). Master (d). Bachelors

   (e). Diploma (f). Certificate

SECTION B:
Please give your honest answer on the following as concerns your university

	INDIVIDUAL FACTORS
1	Does the university offer basic computer training to its e-learning students (Yes/No)_____
2	How long is the training offered? _____ (a). Less than a week (b). One week (b). Two weeks (d). More than 2 weeks
3	Are there trained E-learning support staffs who offer assistance to the students whenever they need help? (Yes/No) _____
4	Does the training motivate the students to use e-learning? (Yes/No) _____
5	How long do users take to access the e-learning system in terms of seconds? _____ (a). less than 30 (b) between 31- 60 (c). 61-90 (d). More than 90
6	The faculty is well trained to handle the e-learning in the university (Yes/No) _____
	TECHNOLOGICAL FACTORS
1	What is the ratio of computers to the students in the e-learning lab? _____ (a). students share a computer (b). More than two students share a single computer (c). Every student gets to use a computer without sharing
2	How long does it take to respond to a problem once a user reports it? _____ (a). less than 10 minutes (b) 10-15 minutes (c). More than 20 minutes
3	The Learning Management System (LMS) interface is easy to use. (Yes/No / there is none) _____
4	The website allows interaction among uses. (Yes/No) _____
5	Accessing e-learning resources is easy. (Yes/No) _____
6	The university computer network is always available. (Yes/No) _____
7	The ICT infrastructure is efficient. (Yes/No) _____

	ORGANIZATIONAL FACTORS
1	Does the top management offer necessary support? (Yes/No) _____
2	What's the ratio of technical support staffs per 50 students? _____
3	How many computers are there for use by a class of 10 students? _____
4	Can a smart phone be used to access the LMS? (Yes/No) _____
5	Registration of e-learning courses is done online. (Yes/No) _____
6	Is there policy guideline concerning the revision of e-learning content? (Yes/No) _____
	E-LEARNING IMPLEMENTATION
1	Enrollment has gone up due to the introduction of e-learning in my university by as much as (tick appropriate answer) _____ [a]. less than 1000 [b]. 1,000 -3,000 [c]. 3,100-6,000 [d]. 6,100-9,000 [e]. More than 10, 0000 [f]. Not at all
2	By how much has e-learning education cut transport and living costs of a student? _____ [a]. 1,000 -5,000 [b]. 5,100-10,000 [c]. 10,100-15,000 [d]. More than 15, 0000 [e]. Not at all
3	E-learning module students pay less fee compared to other students in other learning modules by as much as (tick appropriate answer) _____ [a]. 1,000 -5,000 [b]. 5,100-10,000 [c]. 11,000-15,000 [d]. More than 15, 0000 [e]. Not at all
4	New programs have been rolled out due e-learning demand in my university (Yes/No). ____
5	New staff have been recruited to take care of the increased enrolment (Yes/No) _____
6	E-learning allows for off-campus interaction between students, their peers and faculty. (Yes/No) _____

Appendix 3: Interview Schedule

General Instructions:

The purpose of this questionnaire is to collect data on *"**Influence of Adoption factors on the implementation of e-learning in the Kenya Universities"**.*

Background Information

Your Name: (optional): _____

Your title: (Mr. /Mrs. /Dr. /Prof.) _____

Name of the University: _____

1. What can you say are the benefits of implementing the e-learning technology? ___
2. Are e-learning courses evaluated online? _____
3. Is there online monitoring of e-learning courses? _____
4. Is everything you need in terms of resources available to support e-learning? ___
5. Is e-learning system flexible and responsive to the expectations of the learners and faculty? _____
6. Is the university able to keep up with the e-learning technological changes occurring in terms of hardware and software? _____
7. Does the university have an e-learning system and which one? _____
8. Is the technology able to offer timely and reliable communication between students and faculty and between peers at any time? _____
9. Do you think the available infrastructure is adequate for e-learning? _____
10. When was e-learning first implemented in the university? _____
11. Do you think the number of students has influenced the institution decision to implement e-learning? _____

Appendix 4: National Trends in KCSE Candidates Mean Grade by Sex, 2011- 2015

	2011		2012		2013		2014		2015	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
A	1,315	615	1,277	698	1,855	867	2,133	940	1,976	660
A-	6,322	274	15,947	3,288	6,276	3,492	7,644	4,124	7,615	4,003
B+	11,150	5,240	11,753	5,977	10,776	6,237	12,606	7,208	12,912	8,254
B	14,793	8,151	15,962	9,221	15,315	9,341	17,941	11,378	19,238	13,468
B-	18,344	11,771	18,936	12,174	18,216	12,648	21,997	16,318	24,768	19,020
C+	22,474	16,742	22,180	16,292	21,836	16,515	25,978	21,450	29,024	24,828
Sub-total	74,398	42,793	86,055	47,650	74,274	49,100	88,299	61,418	95,533	70,233
TOTAL	117,191		133,705		123,374		149,717		165,766	

Source: Economic Survey, 2016

Appendix 5: Parameter Estimates of Ordinal Logistic Regressions

Parameter Estimates

E-learning implementation 9[a]		B	Std. Error	Sig.	90% Confidence Interval for Exp(B)	
					Lower Bound	Upper Bound
	Intercept	28.991	5.882	.000		
	gender	2.388	2.526	.045	.171	694.512
	[IF1_trainng=1.00]	4.552	11.625	.095	4.704E-007	19124972581.499
	[IF1_trainng=2.00]	0[b]	.	.	.	.
	[IF2_Trai_Dur=1]	-3.580	11.570	.757	1.514E-010	5135309.535
	[IF2_Trai_Dur=2]	-3.768	11.834	.750	8.125E-011	6567223.695
	[IF2_Trai_Dur=3]	1.378	11.773	.907	9.807E-010	64836461.680
	[IF2_Trai_Dur=4]	.333	12.126	.978	3.036E-009	640508667.607
	[IF2_Trai_Dur=5]	0[b]	.	.	.	.
	[IF3_SupStaff=1.00]	.902	2.116	.670	.076	80.067
	[IF3_SupStaff=2.00]	0[b]	.	.	.	.
	[IF5_Access=1.00]	.935	3.060	.760	.017	390.842
	[IF5_Access=2.00]	-2.013	5.494	.714	1.590E-005	1123.605
	[IF5_Access=3.00]	2.736	4.003	.494	.021	11154.695
	[IF5_Access=4.00]	0[b]	.	.	.	.
Male	[TF2_Custcare=1.00]	-3.628	5.874	.537	1.690E-006	417.465
	[TF2_Custcare=2.00]	-.546	4.404	.901	.000	809.947
	[TF2_Custcare=3.00]	-5.379	5.359	.316	6.850E-007	31.087
	[TF2_Custcare=4.00]	0[b]	.	.	.	.
	[TF3_LMS_use=1.00]	1.750	2.489	.482	.096	345.321
	[TF3_LMS_use=2.00]	0[b]	.	.	.	.
	[TF5_Resources=1.00]	-2.366	2.734	.387	.001	8.430
	[TF5_Resources=2.00]	0[b]	.	.	.	.
	[TF6_Network=1.00]	-.910	2.737	.740	.004	36.319
	[TF6_Network=2.00]	0[b]	.	.	.	.
	[OF1_TM_support=1.00]	-35.094	3.374	.000	2.232E-018	1.476E-013
	[OF1_TM_support=2.00]	-34.466	3.913	.000	1.723E-018	6.711E-013
	[OF1_TM_support=3.00]	-36.667	.000	.	1.191E-016	1.191E-016
	[OF1_TM_support=4.00]	0[b]	.	.	.	.
	[OF4_Fon_use=1.00]	2.302	2.119	.077	.306	326.124
	[OF4_Fon_use=2.00]	-.177	2.495	.044	.014	50.788
	[OF4_Fon_use=3.00]	0[b]	.	.	.	.
	Intercept	2.444	3.195	.444		
	gender	-.028	1.579	.086	.072	13.063
	[IF1_trainng=1.00]	5.401	5.501	.326	.026	1884055.676
	[IF1_trainng=2.00]	0[b]	.	.	.	.
	[IF2_Trai_Dur=1]	-4.337	5.386	.021	1.859E-006	91.964
	[IF2_Trai_Dur=2]	-4.736	5.483	.388	1.063E-006	72.384
	[IF2_Trai_Dur=3]	-4.987	5.680	.080	5.980E-007	77.934
Female	[IF2_Trai_Dur=4]	-5.978	5.879	.309	1.600E-007	40.118
	[IF2_Trai_Dur=5]	0[b]	.	.	.	.
	[IF3_SupStaff=1.00]	-.424	1.345	.752	.072	5.974
	[IF3_SupStaff=2.00]	0[b]	.	.	.	.
	[IF5_Access=1.00]	-.058	2.090	.978	.030	29.372
	[IF5_Access=2.00]	-2.736	2.413	.257	.001	3.430
	[IF5_Access=3.00]	1.338	2.468	.588	.066	220.733
	[IF5_Access=4.00]	0[b]	.	.	.	.

	[TF2_Custcare=1.00]	-1.796	3.332	.590	.001	39.802
	[TF2_Custcare=2.00]	-1.510	2.124	.077	.007	7.269
	[TF2_Custcare=3.00]	-6.023	2.554	.018	3.629E-005	.162
	[TF2_Custcare=4.00]	0[b]	.	.	.	.
	[TF3_LMS_use=1.00]	-1.418	1.637	.386	.016	3.579
	[TF3_LMS_use=2.00]	0[b]	.	.	.	.
	[TF5_Resources=1.00]	1.107	1.480	.055	.265	34.495
	[TF5_Resources=2.00]	0[b]	.	.	.	.
	[TF6_Network=1.00]	-.597	1.626	.013	.038	7.982
	[TF6_Network=2.00]	0[b]	.	.	.	.
	[OF1_TM_support=1.00]	.540	1.642	.742	.015	25.568
	[OF1_TM_support=2.00]	.994	1.939	.008	.011	65.550
	[OF1_TM_support=3.00]	.049	.000	.	.050	1.050
	[OF1_TM_support=4.00]	0[b]	.	.	.	.
	[OF4_Fon_use=1.00]	1.774	1.438	.217	.054	62.737
	[OF4_Fon_use=2.00]	-.195	1.294	.880	.098	6.912
	[OF4_Fon_use=3.00]	0[b]	.	.	.	.

a. The reference category is: Male or Female.

b. This parameter is set to zero because it is redundant.

Appendix 6: List of the Universities in Kenya Offering E-learning

The following universities were identified as the ones offering e-learning or distance education

Public Universities

1. University of Nairobi
2. Kenyatta University
3. Jomo Kenyatta University of Agriculture and Technology
4. Technical University of Kenya
5. Multimedia University of Kenya
6. Egerton University
7. Moi University
8. University of Eldoret
9. Maseno University
10. Masinde Muliro University of Science and Technology
11. Jaramogi Oginga Odinga University of Science and Technology
12. Dedan Kimathi University of Technology
13. Chuka University
14. Embu University College
15. Kirinyaga University College
16. Technical University of Mombasa
17. Murang'a University

Private Universities

1. Catholic University of Eastern Africa
2. Scott Theological College
3. Daystar University
4. Africa Nazarene University
5. Kenya Methodist University
6. St. Paul's University
7. Pan Africa Christian University
8. Strathmore University
9. Africa International University

10. Great Lakes University of Kisumu
11. KCA University
12. International Leadership University
13. Hekima University College
14. Presbyterian University of East Africa
15. Inoorero University
16. Management University of Africa
17. Nairobi International School of Theology

Appendix 7: Research Authorization

(a). NACOSTI Authorization Letter

NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email:dg@nacosti.go.ke
Website: www.nacosti.go.ke
when replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No.

Date:

NACOSTI/P/16/3926/14669

7th December, 2016

Harrison Njoroge
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Influence of adoption factors on implementation of e-learning in Kenyan universities,"*** I am pleased to inform you that you have been authorized to undertake research in **all Counties** for the period ending **6th December, 2017.**

You are advised to report to **the Vice Chancellors of the selected Universities, the County Commissioners and the County Directors of Education, all Counties** 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.

GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The Vice Chancellors
Selected Universities.

The County Commissioners
All Counties.

National Commission for Science, Technology and Innovation is ISO 9001:2008 Certified

(b). NACOSTI Authorization Certificate

THIS IS TO CERTIFY THAT:
MR. HARRISON NJOROGE
of KENYATTA UNIVERSITY, 29721-202
NAIROBI,has been permitted to conduct
research in*All Counties County*

on the topic: *INFLUENCE OF ADOPTION FACTORS ON IMPLEMENTATION OF E-LEARNING IN KENYAN UNIVERSITIES*

for the period ending:
6th December,2017

Permit No : NACOSTI/P/16/3926/14669
Date Of Issue : 6th December,2016
Fee Recieved :Ksh 1000

Applicant's Signature

Director General
National Commission for Science, Technology & Innovation

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officer will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one (1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEACH CLEARANCE PERMIT

Serial No.A 12142

CONDITIONS: see back page

Appendix 8: Data Collection Authorization

(i). Chuka University

CHUKA UNIVERSITY

Telephones: 020 2310512/18
Fax line: 020 2310302

P. O. Box 109-60400
Chuka, Kenya

OFFICE OF THE REGISTRAR
(Administration and Planning)

REF: CU/RADP/GCOR/163 **21st February, 2017**

Harrison Njoroge
Kenyatta University
NAIROBI

0722 821726

Dear Mr. Njoroge,

RE: PERMISSION TO COLLECT RESEARCH DATA

I refer to your letter dated 16th February, 2017 to the Vice – Chancellor on the above subject.

I am glad to inform you that permission has been granted for you to collect research data in Chuka University.

Thank you.

John K. Nkanatha
Ag. REGISTRAR (ADMINISTRATION AND PLANNING)

Vice Chancellor
Deputy Vice-Chancellor (A, F, P & D)
Deputy Vice-Chancellor (A, R & SA)
} to see in file

Chuka University is ISO 9001:2008 Certified

(ii). Catholic University of Eastern Africa

Approved to collect data from affected/targeted respondent(s).
Speasie.
17/02/2017

THE CATHOLIC UNIVERSITY OF EASTERN AFRICA
P. O. Box 62157 - 00200, NAIROBI.
17 FEB 2017
DEPARTMENT OF RESEARCH, INNOVATION & GRADUATE TRAINING.

HARRISON NJOROGE,
KENYATTA UNIVERSITY,
P.O Box 43844,
NAIROBI.

13th Feb ~~JANUARY~~ 2017

The
Directorate of Research Innovation & Graduate Training.
Catholic University of Eastern Africa
P.O. Box
Nairobi.

Dear Sir/Madam,

REF: REQUEST FOR PERMISSION TO COLLECT RESEARCH DATA

I refer to above and apply for permission to collect data within your University. The respondent is/are from the department/directorate/section dealing with e-learning/distance learning in your university.

Attached is a letter from NACOSTI on the same and the data collection tool to be used

Thanking you in advance as I wait for a positive reply.

Yours

Harrison Njoroge

Email: Njoroge.harrison@ku.ac.ke

Tel. No: 0722821726

(iii). Egerton University

EGERTON UNIVERSITY

P.O. Box 536 -20115
Egerton, Kenya

Tel: +254-51-2217801/808
+254-51-2217891/2
Cell: 0708489256
0775015388
Fax: +254-51-2217942
E-mail: dvcre@egerton.ac.ke

OFFICE OF THE DEPUTY VICE - CHANCELLOR
RESEARCH AND EXTENSION

EU/DVCRE/108 **20th December, 2016**

Harrison Njoroge
D86/13877/2009
Kenyatta University
P. O. Box 43844-00100
Nairobi

RE: AUTHORITY TO COLLECT DATA

Reference is made to your letter dated 20th December, 2016 requesting for authority to collect data at Egerton University for a PhD study titled: '***Influence of Adoption Factors on Implementation of E-Learning in Kenyan Universities***'.

Authority is hereby granted for you to collect data from the College of Distance Learning (CODL) and the Department of Instructional Materials Development/E-Learning.

It is noted that this research is purely for academic purposes and will not be used otherwise. Upon completion of the study please ensure that you provide a copy of the report for our retention.

Prof. Alfred C. Kibor, PhD
Ag. Deputy Vice-Chancellor [Research & Extension]

cc. Director, CODL
Coordinator, IMD

ACK/po

(iv). Dedan Kimathi University of Technology

DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

NYERI – MWEIGA ROAD, P.O. BOX 657, 10100 – NYERI, KENYA
Mobile: 0719311223, Email: dvcrtmcl@dkut.ac.ke

Office of the Deputy Vice Chancellor, RTMCL

Ref: DEKUT/DVC-RTMCL/RE/03/119 **Date:** 17th February, 2017

Mr. Harrison Njoroge
Kenyatta University
P.O Box 43844-00100
NAIROBI

Dear Mr. Njoroge,

RE: AUTHORIZATION TO COLLECT RESEARCH DATA AT DeKUT

Your letter dated 16th February, 2017 refers.

Approval has been granted to you to collect data for your research on ***'Influence of adoption factors on implementation of e-learning in Kenyan universities'*** at Dedan Kimathi University of Technology.

You are expected to submit a hard copy and a soft copy of your research report to the Office of the Registrar, RTMCL once your research is completed.

Prof. (Eng.) P.M Wambua, FIEK
Deputy Vice Chancellor – Research, Technology Management and Community Linkages

Copy to: Registrar, RTMCL

(v). Jomo Kenyatta University of Agriculture and Technology

JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY

P.O. Box 62000-00200, City Square. Nairobi, Tel: +254-67-5870001-4, Email: dvc@rpe.jkuat.ac.ke

OFFICE OF THE DEPUTY VICE CHANCELLOR
(Research, Production and Extension)

REF: JKU/2/4/033A (59)

DATE: 8th February 2017

Harrison Njoroge,
Kenyatta University,
P. O. Box 43844,
Nairobi.
Tel: 0722821726
njoroge.harrison@ku.ac.ke

SUBJECT: REQUEST TO CONDUCT RESEARCH STUDY AT JKUAT

This is a reply to your letter dated 5th January 2017, requesting permission to conduct research on "Influence of adoption factors on implementation of e-learning in Kenyan Universities".

The University has approved your request to conduct the research study at JKUAT for the period ending 6th December 2017. You will be required to share the results of your findings with the University by sending to her a copy of your publications. Also you will be expected to abide with any requirement imposed to you at points of data collection.

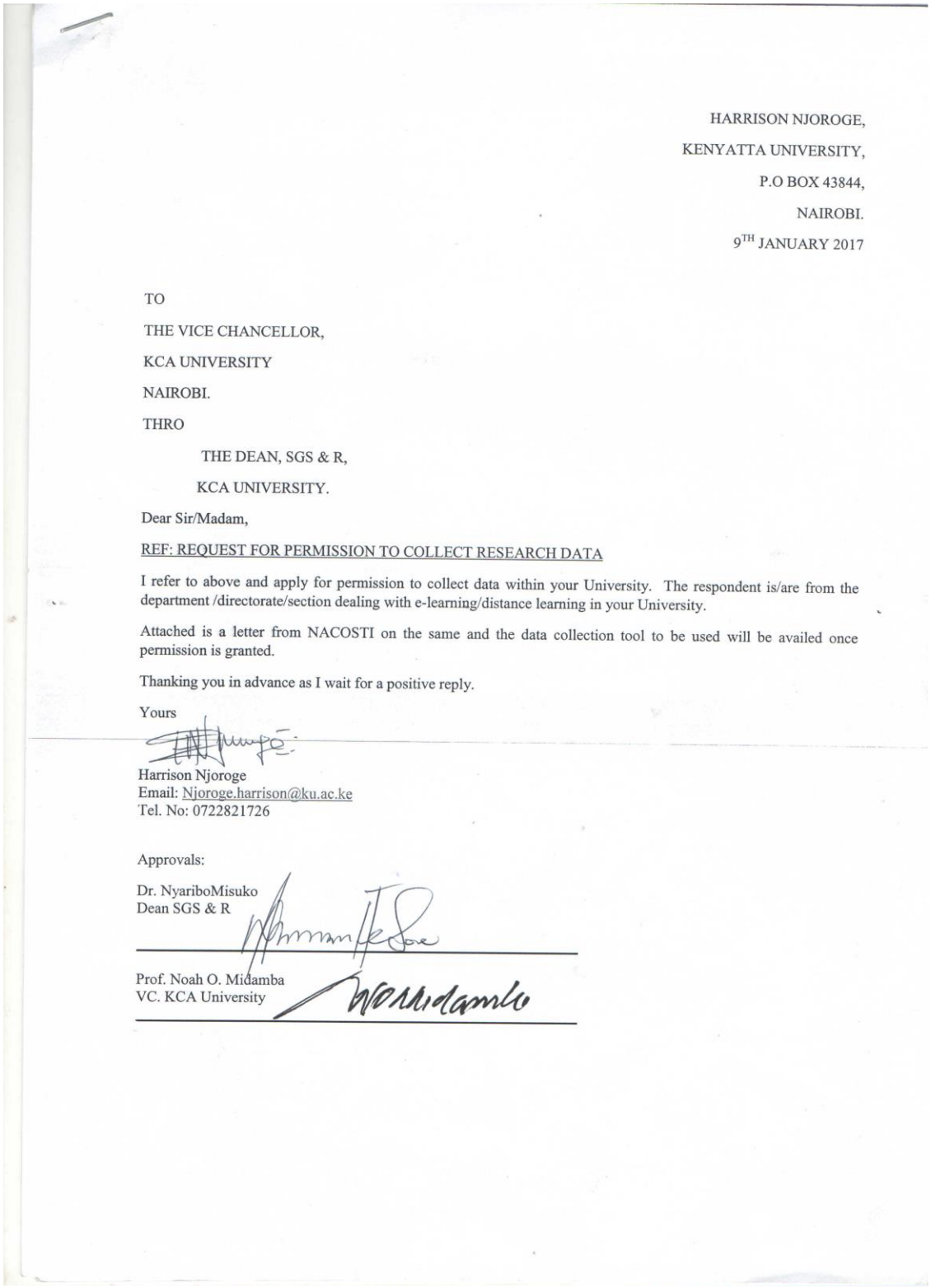
Kahangi

PROF. ESTHER KAHANGI, PhD, EBS
DEPUTY VICE CHANCELLOR (RPE)

CCK/skm

Copy to:
Director, SODel

(vi) KCA university



HARRISON NJOROGE,
KENYATTA UNIVERSITY,
P.O BOX 43844,
NAIROBI.
9TH JANUARY 2017

TO
THE VICE CHANCELLOR,
KCA UNIVERSITY
NAIROBI.
THRO
THE DEAN, SGS & R,
KCA UNIVERSITY.

Dear Sir/Madam,

REF: REQUEST FOR PERMISSION TO COLLECT RESEARCH DATA

I refer to above and apply for permission to collect data within your University. The respondent is/are from the department /directorate/section dealing with e-learning/distance learning in your University.

Attached is a letter from NACOSTI on the same and the data collection tool to be used will be availed once permission is granted.

Thanking you in advance as I wait for a positive reply.

Yours

Harrison Njoroge
Email: Njoroge.harrison@ku.ac.ke
Tel. No: 0722821726

Approvals:

Dr. NyaribоMisuko
Dean SGS & R

Prof. Noah O. Midamba
VC. KCA University

(vii). Kenyatta University

KENYATTA UNIVERSITY

OFFICE OF DEPUTY VICE-CHANCELLOR, RESEARCH, INNOVATION AND OUTREACH

P. O. Box 43844 - 00100
Nairobi. Kenya
Tel. 254-20-810901 Ext. 026
E-mail: dvc-rio@ku.ac.ke

Ref: KU/DVCR/RCR/VOL.3/13

Mr. Harrison Njoroge,
Kenyatta University
Nairobi

21st December, 2016

Dear Mr. Njoroge,

RE: **REQUEST TO COLLECT RESEARCH DATA AT KENYATTA UNIVERSITY**

This is in reference to your letter dated 13th December, 2016 requesting for authorization to collect research data at Kenyatta University on the topic: ***Influence of Adoption Factors on Implementation of E-Learning in Kenyan Universities*** towards a PhD degree of Kenyatta University.

I am happy to inform you that the Vice-Chancellor has approved your request to collect data. It has been noted that your data will be collected mainly from the Directorate of E-Learning.

Yours Sincerely,

Prof. F. Q. Gravenir
Deputy Vice-Chancellor
Research, Innovation & Outreach
cc. Vice-Chancellor
Director, E-Learning

(viii). Maseno University

MASENO UNIVERSITY

OFFICE OF THE DEPUTY VICE CHANCELLOR
PARTNERSHIPS, RESEARCH &INNOVATIONS
(PRI)

Tel: 254-057-351622, 351620, 351008, 3511011
Fax: 254-057-351221, 351153
Direct Line: 254-057-351464
e-mail: dvcpri@maseno.ac.ke

Private Bag
MASENO
Kenya

Our Ref: MSU/DVCPRES/RPC/R3/VOL2

Date: 18th January 2017

Harrison Njoroge
Kenyatta University
P.O. Box 43844
NAIROBI

Dear Mr. Njoroge

RE: AUTHORITY TO CARRY OUT RESEARCH

Reference is made to your letter dated 18th January 2017, on the above subject matter.

I am pleased to inform you that your request to carry out Research on ***"Influence of adoption factors on implementation of e-learning in Kenyan Universities"*** has been approved.

For further arrangements please get in touch with the undersigned. Please note that upon completion of your research, you are expected to submit a copy of your Research report to my office.

Yours Faithfully,

Prof. Joseph S. Chacha
DEPUTY VICE-CHANCELLOR, (PRI)

Copy to: *Vice Chancellor*
University Security Officer

ISO 9001:2008 CERTIFIED

(ix). Masinde Muliro University of Science and technology

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

Tel: 020 241 88 54
Fax: 056-31444
Email: directorrel@mmust.ac.ke
Website: www.mmust.ac.ke

P. O. Box 190
Kakamega - 50100
Kenya

Directorate of Research & Extension

REF: MMU/COR: 403037 (1)

19th January, 2017

Harrison Njoroge
Kenyatta University
P. O. Box 43844
NAIROBI

Dear Njoroge,

RE: RESEARCH AUTHORISATION

You have been authorized to collect data on your research on ***Influence of Adoption Factors on implementation of e-learning in Kenyan Universities,*** The researcher is asked to observe ethical issues in the process of data collection. The respondents are therefore requested to cooperate so as to facilitate the research process to proceed smoothly.

Masinde Muliro University of Science and Technology requests you (researcher) for a copy of the findings of the research once it is completed.

Thank you.

Prof. Achoka, JSK
DIRECTOR, RESEARCH AND EXTENSION

Copy to:

- Deputy Vice Chancellor, Planning, Research & Innovation, MMUST

(x). Moi University

MOI UNIVERSITY

OFFICE OF THE DEPUTY VICE CHANCELLOR
ACADEMICS, RESEARCH AND EXTENSION

Tel: (053) 43355
(053) 43620
Fax: (053) 43412
Email: dvc_are@mu.ac.ke *or* dvcresearchmu@gmail.com

P.O. Box 3900
Eldoret - 30100
Kenya

REF: MU/DVC/REP/27B

19th December, 2016

TO WHOM IT MAY CONCERN

RE: PERMISSION TO COLLECT DATA –HARRISON NJOROGE

Mr. Harrison Njoroge who is a Student at Kenyatta University, Nairobi has applied for authority to collect data.

We would be grateful if he is permitted to collect his data on ***"Influence of adoption on factors on implementation of e-learning in Kenyan universities."***

By a copy of this letter authority is hereby granted to him to collect the data.

After the completion of the research, a complete report both on hard and soft copy will be handed over to the office of Deputy Vice-Chancellor, Academics, Research & Extension.

Any assistance accorded to him will be highly appreciated.

Thank you.

Yours faithfully,

PROF. I. N. KIMENGI, Ph.D.
DEPUTY VICE-CHANCELLOR
(ACADEMICS, RESEARCH & EXTENSION)

SS/ISO

(xi). Multimedia University

MULTIMEDIA UNIVERSITY OF KENYA
P .O. BOX 15653 - 00503, NAIROBI, KENYA.
(MMU is ISO 9001:2008 Certified)

OFFICE OF THE DEPUTY VICE CHANCELLOR (AA, R&I)

REF: MMU/DVC AA RI/RESEARCH/VOL.1

20th February, 2017

Mr. Harrison Njoroge
P O Box 43844
NAIROBI

Dear Njoroge

RE: REQUEST TO UNDERTAKE RESEARCH AT MULTIMEDIA UNIVERSITY OF KENYA

Reference is made to the above subject matter pursuant to your letter dated 15th January, 2017 vide which you sought permission to undertake research work from the University.

We are pleased to inform you that your request has been granted and permission approved for you to undertake your research within Multimedia University of Kenya, Main Campus.

You are required to report to the Registrar Administration before you commence your research. You will be required to observe the University Rules and Regulations.

We hope that our support will contribute to the success of your career development.

Yours faithfully,

PROF. PAUL N. MBATIA PhD.
Deputy Vice-Chancellor (AA, R&I)

c.c. Vice Chancellor
Deputy Vice Chancellor – AF&P
Reg. Administration
Chief Security Officer

Magadi Road, off Bomas of Kenya
P.O. Box 15653-00503, Nairobi, Kenya
Tel: +254 20 207 1391
Leader in Innovative Technology
Email: vc@mmu.ac.ke
website: www.mmu.ac.ke
Fax: +254 20 2071247

(xii). Strathmore University

Strathmore
UNIVERSITY

10th February, 2017

Harrison Njoroge,
PhD Student,
Kenyatta University,
P.O Box 43844-00100,
NAIROBI.

Email: harrison.njoroge@ku.ac.ke

Dear Harrison,

RE: AUTHORIZATION TO COLLECT DATA AT STRATHMORE UNIVERSITY

The Research Office at Strathmore University has granted you the authorization to collect data from students within the University. The authorization is effective from February 13th, 2017 to March 13th, 2017. The data collection is for your PhD Research study entitled ***"Influence of adoption factors on implementation of e-learning in Kenyan Universities".***

Please note that this is an administrative authorization and does not constitute an ethical approval of your research.

Please sign the declaration form binding you to the ethical use of the data you will access from Strathmore University (meant strictly for the purposes of your study).

Yours sincerely,

STRATHMORE UNIVERSITY
DEPUTY VICE CHANCELLOR (RESEARCH & INNOVATION)
10 FEB 2017

Prof. Izael Da Silva
Deputy Vice Chancellor - Research & Innovation

Ole Sangale Rd, Madaraka Estate. PO Box 59857-00200, Nairobi, Kenya. Tel +254 (0)703 034000

(xiii). The Technical University of Kenya

THE TECHNICAL UNIVERSITY OF KENYA

Haile Selassie Avenue, P. O. Box 52428, Nairobi, 00200, Tel: +254 (020) 343672, 2249974, 2251300, 341639,
Fax: 2219689, E-mail: vc@kenpoly.ac.ke, Website: www.tukenya.ac.ke

Office of the Deputy Vice-Chancellor

Academics, Research and Students

TUK/DVCARS/ReKE/010/Vol.II **10th February, 2017**

Harrison Njoroge
Kenyatta University
P.O. Box 43844
NAIROBI

Dear Mr. Njoroge

RE: REQUEST FOR AUTHORITY TO COLLECT RESEARCH DATA

Reference is made to the above subject and your letter dated 2nd February, 2017 addressed to the Vice-Chancellor of the Technical University of Kenya.

Your request for authority to collect data from the Technical University of Kenya, has been carefully considered and reviewed on the basis of your promise to treat all information given to you by the Institution with confidentiality and anonymity. However, due to the sensitivity of the data you seek to collect and our experience with similar requests in the past, I regret to inform you that the institution is not in a position to grant you the sought authority.

Nevertheless, we wish you all the best in your endeavors and particularly, your academic pursuit.

Yours sincerely

Prof. Paul M. Shiundu
DEPUTY VICE CHANCELLOR- ACADEMICS, RESEARCH & STUDENTS AND PROFESSOR OF CHEMISTRY

Copy: **Vice-Chancellor**

PMS/mns

Education and training for the real world

(xiv). Technical University of Mombasa

TECHNICAL UNIVERSITY OF MOMBASA
Office of the Deputy Vice Chancellor (ARE)

When replying please quote Ref: TUM/VC/Acad.47/Vol.4 (28) Date: 1st March 2017

Mr. Harrison Njoroge
Kenyatta University
NAIROBI

E-mail:

Dear Sir

RE: REQUEST FOR PERMISSION TO COLLECT RESEARCH DATA

Reference is made to your letter dated 20th February 2017 requesting for permission to collect data within our university.

We wish to inform you that currently we do not have e-learning programmes. We are therefore not in a position to grant your request.

We take this opportunity to thank you for the interest you have shown in our institution and wish you the best in your endeavors.

Sincerely

Eng. Prof. Raphael Mutuku
Ag. Deputy Vice Chancellor (ARE)
For: Vice Chancellor

SGS ISO 9001:2008 Certified

Technical University of Mombasa,
Tom Mboya Avenue P. O. Box 90420 - 80100, MOMBASA - KENYA.
TEL: (254) 41-2492222/3, FAX: (254) 41- 2495632, Mobile: (254) 0724-955377 | 0733 -95
E-mail : info@tum.ac.ke, vc@tum.ac.ke, Website: www.tum.ac.ke

(xv). University of Embu

UNIVERSITY OF EMBU
OFFICE OF THE DEPUTY VICE-CHANCELLOR
(ACADEMICS, RESEARCH & EXTENSION)

P.O. Box 6 – 60100
EMBU - KENYA
Email: dvc.are@embuni.ac.ke
Website: www.embuni.ac.ke

Tel: +254 020 2444136
+254 0727933950
+254 0706528876

Ref: UoEm/DVC(ARE)/CORR/VOL.2/002 **Date:** 28th February, 2017

Harrison Njoroge
Kenyatta University
P.O. Box 43844 - 00100
NAIROBI

Dear Mr. Njoroge

RE: REQUEST FOR PERMISSION TO COLLECT RESEARCH DATA FROM THE UNIVERSITY

Reference is made to your letter dated 22nd February 2017 on the above subject.

Permission is hereby granted to you to collect data for your research project at the University of Embu on the following conditions;

1. The information gathered should be used strictly for academic purposes.
2. Confidential information that may come your way during the study should not be revealed to a third party.
3. You shall not mention any interviewee by name without a written approval from the University.
4. You will deposit a copy of your research proposal with the Directorate of Research, University of Embu, before the commencement of your data collection.
5. You will deposit the final copy of your project with the Librarian, University of Embu.
6. You must obtain a personal accident insurance policy while working at the University.
7. You will indemnify the University incase anything happens to you while in the University compound.
8. At all times adhere to the code of conduct as shall be brought to your attention by the Human Resource Manager, University of Embu.

Before starting your research, you are advised to visit the Human Resource Manager for guidance on the University expectations and assistance on how to make your way around.

If you agree to these conditions, please sign in the space provided below, and return a copy of this letter to the undersigned.

UNIVERSITY OF EMBU
DEPUTY VICE-CHANCELLOR
28 FEB 2017
P. O. Box 6-60100, EMBU
ACADEMICS, RESEARCH AND EXTENSION

Thank you,

PROF. KIPLAGAT KOTUT
Ag. DEPUTY VICE-CHANCELLOR (ARE)
KK/in

I..... agree to abide by the above conditions while collecting data for my research project at the University of Embu.

Signature ..... Date .....

Copies to:
- Vice-Chancellor
- Human Resource Manager
- Director Research
- Librarian

Knowledge Transforms *ISO 9001:2008 Certified*

(xvi) University of Eldoret

University of Eldoret
flame of knowledge and innovation

P. O. Box 1125 - 30100, Eldoret, Kenya
Tel: +254 53 2063257 / 2033712/13 Ext. 2358
Mob: 0735925989; Fax: +254 53 206 3257
E-mail: bpgs@uoeld.ac.ke
Website: www.uoeld.ac.ke

OFFICE OF THE DEPUTY VICE-CHANCELLOR (ASA)
BOARD OF POSTGRADUATE STUDIES
OFFICE OF THE DIRECTOR

Ref. No.: UoE/B/BPGS/ACA/023 11th January, 2017

Harrison Njoroge
Kenyatta University
P.O. Box 43844-00100
NAIROBI

Dear Sir,

RE: REQUEST FOR PERMISSION TO COLLECT RESEARCH DATA

The above subject refers.

This is to inform you that we are at preliminary stages of implementing e-learning at the University hence might not be suitable for your research.

We wish you all the best as you embark on the research.

Thank you.

DIRECTOR
Board of Postgraduate Studies
University of Eldoret

PROF. ELIZABETH W. NJENGA
DIRECTOR, BOARD OF POSTGRADUATE STUDIES

(xvii) University of Nairobi

UNIVERSITY OF NAIROBI
OFFICE OF THE DEPUTY VICE - CHANCELLOR
(Research, Production & Extension)
Prof. Lucy W. Irungu B.Sc., M.Sc., Ph.D.

P.O. Box 30197-GPO.
00100,Nairobi-Kenya
Telephone: +254-20-2315416 (DI), 318262

Fax:0202317251
Email:dvcrpe@uonbi.ac.ke

UON/RPE/3/5

March 20, 2017

Harrison Njoroge
Kenyatta University
P.O. Box 43844-00100
NAIROBI

Dear Njoroge,

AUTHORITY TO COLLECT DATA AT THE UNIVERSITY OF NAIROBI

I refer to your request dated March 13, 2017 to collect data at the University of Nairobi for your PhD Degree at the College of Education and External Studies entitled: "***Influence of adoption factors on implementation of e-learning in Kenyan universities.***"

I write to inform you that your request has been approved.

You are however required to share the findings of your study with the University of Nairobi by depositing a copy of your research findings with the Director, Library and Information Services on completion of your study.

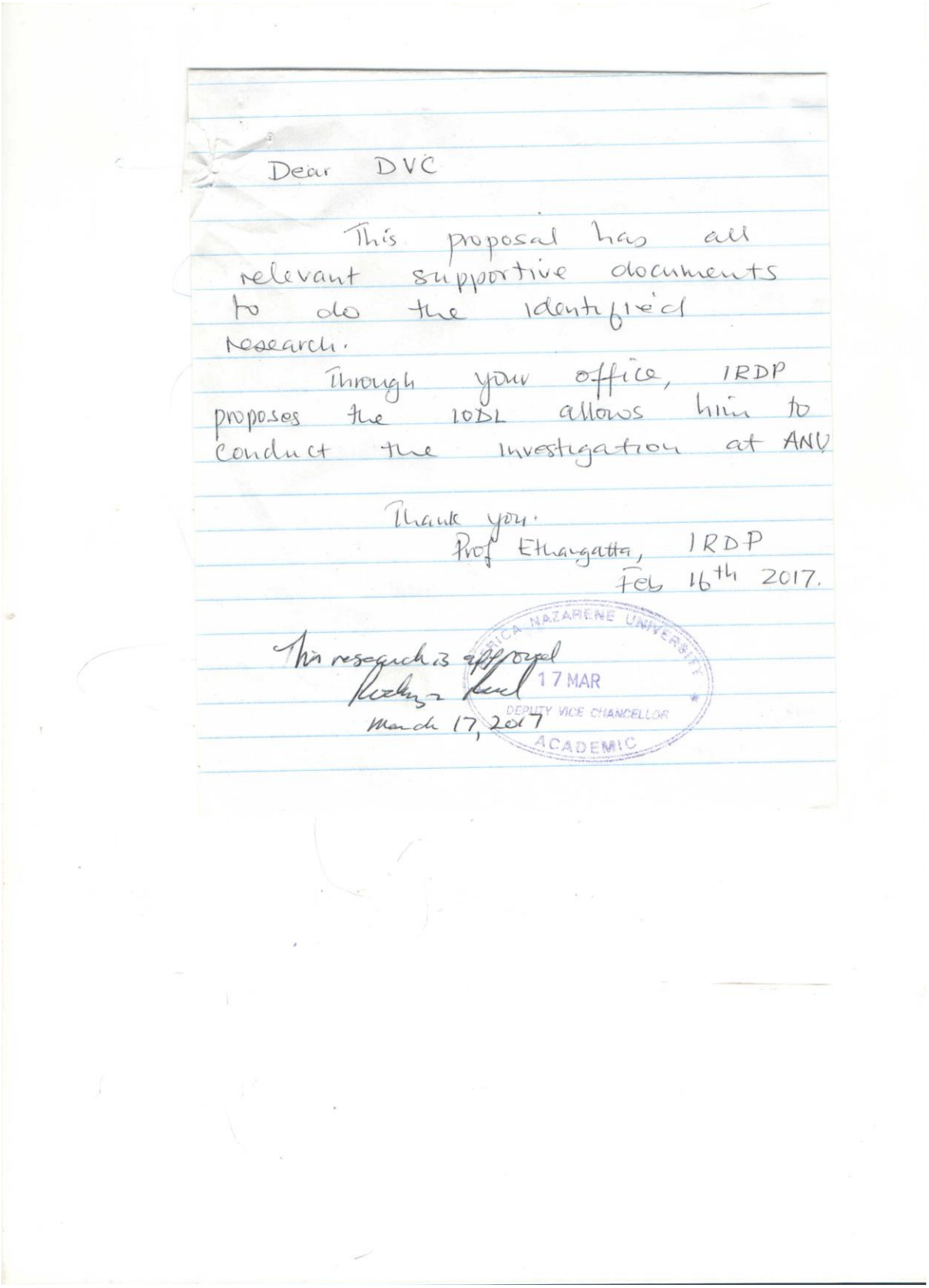
LUCY W. IRUNGU
DEPUTY VICE-CHANCELLOR
(RESEARCH, PRODUCTION AND EXTENSION)
&
PROFESSOR OF ENTOMOLOGY

Copy to: Vice-Chancellor
DVC, A&F
DVC, AA
DVC, SA
Principal, CEES
Director, Library & Information Services
Registrar Administration

ISO 9001:2008 CERTIFIED

The Fountain of Knowledge Providing leadership in academics excellence

(xviii) African Nazarene University



Dear DVC

This proposal has all relevant supportive documents to do the identified research.

Through your office, IRDP proposes the IODL allows him to conduct the investigation at ANU

Thank you.
Prof Ethangatta, IRDP
Feb 16th 2017.

This research is approved
17 MAR
March 17, 2017
AFRICA NAZARENE UNIVERSITY
DEPUTY VICE CHANCELLOR
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