E-LEARNING ADOPTION AND UTILISATION: A COMPARATIVE STUDY OF KENYATTA UNIVERSITY, KENYA AND UNIVERSITY OF CAPE COAST, GHANA

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A RESEARCH THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN THE SCHOOL OF EDUCATION (EDUCATIONAL COMMUNICATION AND TECHNOLOGY) KENYATTA UNIVERSITY

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DECLARATION

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

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

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DEDICATION

Mom (late) and Dad

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ABBREVIATIONS AND ACRONYMS

ASTD	American Society for Training and Development
CCE	Centre for Continuing Education
CSI	Crime and Security International
DoI	Diffusion of Innovation Theory
ICMP	Internet Control Message Protocol
ICT	Information Communication Technology
IT	Information Technology
KU	Kenyatta University
ITSS	Information Technology Support Staff
LAN	Local Area Network
ODeL	Open and Distance eLearning
Ph.D	Doctor of Philosophy
SPSS	Statistical Package for Social Sciences
TAM	Technology Acceptance Model
TBC	Theory of Behavioural Control
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UCC	University of Cape Coast
UNISA	University of South Africa
UPS	Uninterrupted Power Supply
WAN	Wide Area Network

Abstract

Although e-learning provides enormous opportunities, its implementation in Universities in the developing world is low. Many people are sceptical about its effectiveness to serve as an alternative means to attaining higher education. There are limited studies within developing countries centred on e-learning adoption and utilisation. This study sought to find out the major challenges facing e-learning adoption at the Centre for Continuing Education (CCE), University of Cape Coast, (UCC), Ghana and Open and Distance e-Learning (ODeL) Directorate of Kenyatta University, Kenya (KU). To achieve this, variable factors considered were grouped under four major thematic areas (1) managerial factors, (2) perceived e-learning attributes, (3) institutional factors, and (4) the end-user factors. These factors were conceptualized to have influenced the rate of e-learning adoption and utilisation and were operationalized within Rogers' (1962) Diffusion of Innovation (DOI) theory and the Theory of Reasoned Action (TRA) propounded by Fishbein and Ajzen (1980). The study employed descriptive survey method. This study targeted top management, ITSS, lecturers and distance learners of ODeL and CCE. Quota sampling technique was applied to get a proportional 10% of the distance learners and 20% of the lecturers. Purposive sampling technique was used to select the Directors and Information Technology Support Staff. Questionnaire and focus group discussion guide were used to collect data. The results of the study revealed that the level of e-learning adoption and utilisation in University of Cape Coast, Ghana and Kenyatta University, Kenya is generally low. This was attributed to negative attitudes of lecturers at KU, lack of commitment of top management of UCC, low internet connectivity, relatively low self-efficacy on the part of distance learners, and lack of a specific fund allocation for e-learning projects and general mismatch of the adopter categories of board members of both universities. In view of these results, key recommendations were made: reconstituting of board members at both universities, government installing fibre optic cables, organisation of regular workshops on key aspects of e-learning in order to enhance e-learning adoption and utilisation

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Education has been recognized from time immemorial to be the bedrock for national development. UNESCO (2000) pointed out that conventional education is the key to freedom from subjugation, fear and want. According Assié-Lumumba (2008) the conventional education is regarded by many nations as the priority of all priorities. Many developed countries, including United States of America, the United Kingdom, Canada, France, Japan and Germany among others, have over the years, used education to transform their economies.

However, as the world is in the first part of the 21st century, many of the fundamental assumptions that have shaped and guided past thinking about the educational systems seem increasingly inappropriate. The educational system worldwide is experiencing rapid fundamental changes. Alvin Toffler (cited in Rosenberg, 2001 p.3) stated: "the illiterates of the 21st century will not be those, who cannot read and write but those who cannot learn, unlearn, and relearn." Societies have now recognized the need for learners to act swiftly, think independently, critically and collaborate with others to make sense of their changing environment.

In Africa, the colonial masters left a model of education that predominantly focused on building a culture of schooling and teaching rather than enabling a culture of learning. Seymour, (1993 p.2) pointed out that:

> The institution of school, with its daily lesson plans, fixed curriculum, standardized tests and other such paraphernalia, tends constantly to reduce learning to a series of technical acts and the teacher to the role of a technician. Discussions, in educational decision-making circles, have unfortunately tended to remain focused on building or maintaining school buildings and trying to get children into them. Education is, all too often, seen as an activity for the early part of one's life, a stage to prepare for life ahead…mainstream schools are often isolated from their surroundings, cut off from the communities to which they belong

Against the milieu of unprecedented demand for formal education in contemporary Africa, it has become evident that the present educational model is inappropriate to meet the challenges confronting the populace. The tripartite problem of access, equity and equality in education remain a challenge (Abisai 2011).

1.1.1 Overview of Students' Enrolment Situation in Public Universities in Ghana and in Kenya

In Ghana, many qualified applicants seeking admission into mainstream institutions are being denied access to university education due to limited physical infrastructure and other logistics existing at the universities (Koomson, 2009). A case in point was the admission trend at University of Cape Coast, Ghana. Between 2001 to 2008 academic years, the total number of qualified students who applied to the University was 77,596 out of which only 28,167 were offered admission. This implied that about 64 per cent were

not offered admission to the University *(ibid)*. Generally, the story is the same for other public universities in Ghana. According to Gyamera (2004, p.148), 'the five universities in Ghana can only admit 40% of qualified applicants due to infrastructure problems'. This situation has posed serious capacity development problems in terms of producing skilled manpower to meet Ghana's current and future development needs.

In Kenya, on the other hand, students' enrolment situation is captured in Table 1.1.

Table 1.1
Data on Students' Enrolment in Kenya Public Universities

Year	Total number of candidates	Number of candidates with C+ and above	Number admitted to regular degree programs	% of students (male and female) admitted to public universities
2001	194,798	42,158	11,147	27.5%
2002	198,076	42,721	11,046	26.2%
2003	205,730	49,870	10,791	25.3%
2004	219,405	54,230	10,200	17.5%
2005	260,665	68,030	10,000	14.7%
2006	243,453	63,104	10,000	15.8%
2007	260,550	82,134	17,000	20.7%

Source: Republic of Kenya (2008, 21–96).

Table 1.1 shows that in Kenya, from 2001 to 2007 academic years, only 21.1% of the qualified applicants got admissions to the public universities. Mutula, (2003) pointed out that the Government of Kenya, realising the critical nature of the situation, introduced pragmatic measures to lessen pressure on the existing academic infrastructure by sending 12,000 students to

foreign universities. Even though this initiative was commendable, the tripartite problem of access, equity and equality still remains a major challenge. According to Abisai (2011), out of 90,000 students who qualified for university admission in 2009 and 2010, only 31,611 found placement in Kenyan public universities. This figure represented over 64 per cent of qualified students who did not have access to higher education in Kenya over the period.

The enrolment situations in these two countries (and many other developing countries) demand an urgent need to look for alternative solutions to increase access to university enrolment and the means for doing things differently rather than doing more of the same. This called for seizing the opportunities that surround us. One such a catalyst for change, as heralded by educational experts, lies in the strategic application of Information Communication Technology (ICT).

1.1.2 The Role of Information Communication and Technology in Education

Information Communication and Technologies (ICTs) like computers and the Internet continue to spread to all parts of the world. The field of education has tried to exploit ICTs to connect distance learners with instructors. Kennedy and McNaught (1997) indicated that ICT is a force that has changed many aspects of the way we live. The recent advent of electronic learning (e-learning) technology has also made training, teaching and learning on the Internet more feasible.

A snapshot, involving 13 African countries, of the state of use of technology in education in Africa is shown in Figure 1.1.

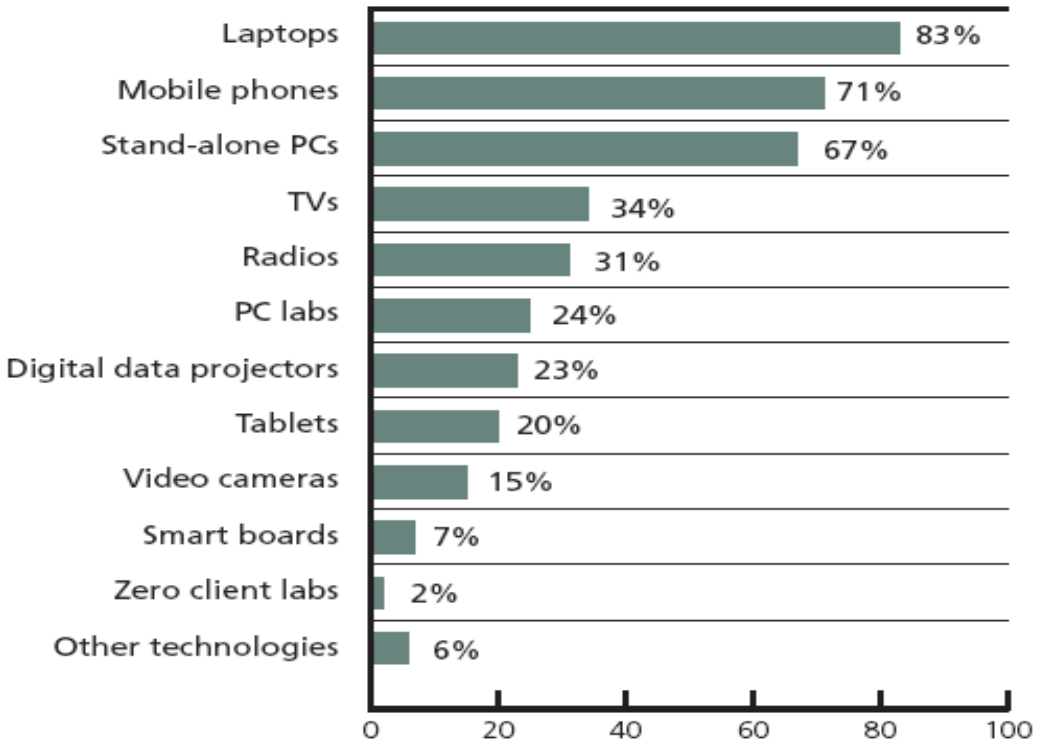

Figure1.1: Technology in education in Africa.

(Source: e-learning Africa 2013 report)

Data in Figure 1.1 reveals laptops, mobile phones and stand-alone personal computers as major technologies use in education.

In Sub-Saharan Africa, Moore and Kearsley (2005) noted that students are starting to appreciate the capability to undertake education anywhere and anytime. The 2013 e-learning Africa reported on social software applications influencing the educational delivery methodology in Africa. This is captured in Figure 1.2.

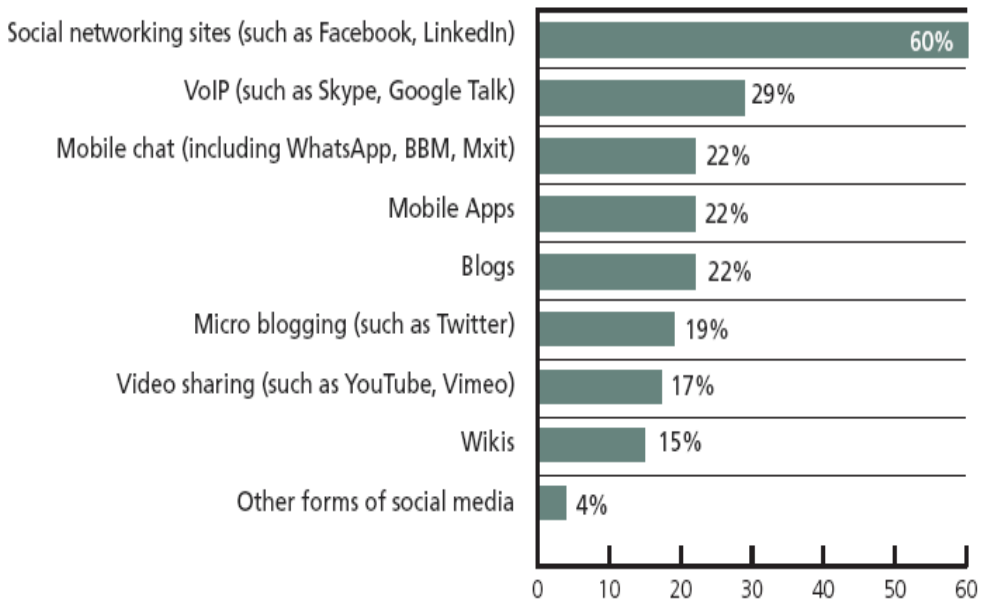

Figure 1.2: Social applications influencing teaching and learning.
(Source: e-learning Africa Report 2013)

Data in Figure 1.2 shows social networking sites are frequently used applications in disseminating information. Noteworthy, in Figure 1.2, is the data on Wikis, meant for information seeking on the web, is less patronised.

In recent years, many educationists have claimed that e-learning is the right answer to training and learning needs in Africa. E-learning is arguably one of the most important ICT applications for facilitating teaching and learning to geographically dispersed learners. According to Rosenberg (2001) "the biggest growth in the Internet and the area that will prove to be one of the biggest agents of change, will be in e-learning" (P. xv). E-learning has been described as the "new frontier", "a paradigm shift in the way education is viewed and delivered", a "new vision of learning", and the most efficient and effective method for rapidly

distributing knowledge (American Society for Training and Development, ASTD, 2001 p. 2). "If education and capacity-building are critical steps for entering into the new global economy, e-learning should be considered a critical facet of basic development, an alternative medium of capacity-building and a means to people's empowerment" (Sehrt, 2003, p. XL). Young (2002) also submitted that through e-learning, learning has become an activity that is no longer set within programmed schedules and slots. Learners are free to participate in learning activities when time permits and this freedom have greatly increased opportunities for many students to participate in formal education programmes on distance bases.

Many universities adopted e-learning in the delivery of their education and have achieved some degrees of success. For example, the Open University in the United Kingdom was the world's first successful distance teaching university, founded on the belief that communication technology could bring high quality degree-level learning to people who had no opportunity to attend traditional campus universities (Open University, UK, 2012).

In Africa, South Africa is noted to have made remarkable efforts in providing distance education courses. The University of South Africa (UNISA) is serving every country on the continent and transcending language and cultural barriers. According to Wanjira (2006), UNISA has several missions, one of which is to address the needs of a diverse learner needs by offering relevant learner support services. Facilitated by

appropriate use of information and communications technology, UNISA has grown to become a comprehensive, open learning, and Distance Education University. Goolam (2008) noted that distance education programmes in South Africa cater for more than a third of all university enrolments in that country. This implies that the burden on higher education institutions to provide access to on-campus education has been generally eased. The success story of Open University, UK and UNISA, clearly revealed that e-learning, when applied appropriately, has the tendency of becoming a driving force in expanding the frontiers of education delivery especially in Africa.

1.1.3 Models for Measuring the Rate of E-learning Adoption and Utilisation

There are many international best practices for measuring the rate of technology adoption. This study identified two of such models and explored their relevance in assessing the rate of e-learning adoption and utilisation in the universities. These models are: The Framework for ICT Technical Support Operations Management (FITSOM) and E-learning Maturity Model.

1.1.3.1 FITSOM Model

The Framework for ICT Technical Support Operations Management (FITSOM) as developed by BECTA (2006) was based on a collection of best practice, principles and models used successfully in education and industry.

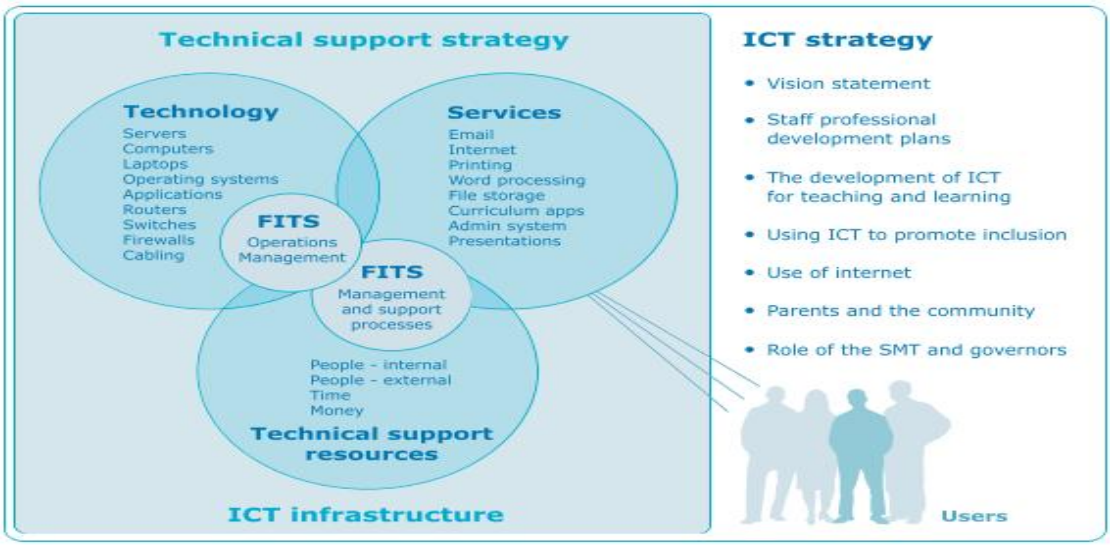

Figure 1.3: FITSOM model.
(Source: BECTA 2006)

The FITSOM model is a three interrelated sets –Technology, Services and Technical support resources. This model was designed to help schools to achieve operational excellence in the management and administration of their ICT infrastructure.

i. Technology: The technology aspect comprises the network components that support the ICT infrastructure such as computers, peripherals, routers, operating systems, switches, servers, firewalls and cabling.

ii. Services: The services are the ICT systems used both in the learning environment and also to support the school's administration.

iii. Technical support resources: Resources are the people, time and money involved in supporting the technology and services.

The assumption underpinning this model is that availability and optimum combination of technology, services and technical support resources enhance the rate of technology adoption and utilisation in any given organisation. The

FITSOM model, therefore, provided a standardised benchmark to evaluate the needed resources for effective e-learning adoption in the universities.

1.1.3.2 E-learning Maturity Model

The e-learning maturity model as conceptualized by Bersin and Associates (2005) categorized e-learning adoption and utilisation in terms of the number of trainees enrolled on the e-platform and the rate of increment over a period of four years. The exhibit is shown in Table 1.2.

Table 1.2

E-learning Maturity Model

	< 1 Year	1-3 Years	4+ Years
Small < 5,000 Employees	21%	36%	43%
Medium 5-20,000 Employees	11%	35%	54%
Large >20,000 Employees	2%	37%	61%

(Source: Bersin and Associates, 2005. p. 24)

The exhibits in Table 1.2 suggest that an e-learning adoption and utilisation can be seen in three phases. Phase one is described as small with enrolment figure below 5,000 trainees. The major feature of this phase is that at the end of fourth years, the growth rate of the trainees should be 43 per cent. With

phase two, Bersin and Associates postulated that for an organisation to be described as a medium in terms of e-learning, at the end of the four years of its existence, the total enrolment of trainees should range between 5,000 and 20,000 with a growth rate of 54 per cent at the end of the fourth year. The last benchmark for an e-platform to be regarded as large is that the enrolment figure should be above 20,000 with 61% growth rate at the end of the fourth year. The E-learning Maturity Model provided a general standard to measure the rate of e-learning adoption and utilisation in the universities.

1.1.4 An Overview of the E-learning Situation in Kenyatta University, Kenya

Kenyatta University, started as a teacher training institution, became a fully-fledged university in 1985 (Kenyatta University, 2005). With a blended mode philosophy of e-learning, the University opened its doors to e-learning students in June 2005 (Mutabari 2009). The University adopted blackboard (Learning Management System) software at the time very little was known about e-learning software. However, in 2009, the management brought experts from United Kingdom to the university to install the Moodle platform. The experts trained a few IT personnel of the IT session of ODeL-KU and 250 lecturers to upload their course unit materials on the platform (Daily Nations 2011). As at 2012, about 50% of the trained lecturers were conveniently using the Moodle platform to deliver on-line teaching.

The enrolment of distance learners on the e-platform from 2009 to 2013 stands on the average 4,500 students (ODeL, 2011). Over the years, all the fresh

students enrolled by the ODeL-KU are given enough training in computer literacy, internet technology and the Moodle platform usage. Majority (80%) of the ODeL students are able to use the e-platform appropriately (Daily Nation, 2011). Kenyatta University had organised more than 15 seminars, workshops as well as regional conferences to raise awareness of e-learning among lecturers and students *(ibid)*.

The university has also a sufficient ICT infrastructure including servers and video-conferencing facilities to link its main campus to Mombasa campus. Kenyatta University has established Information Technology Support Unit. The Technical Staff in this unit, most often, meet with administrators, lecturers and students (both on campus and off-campus); give them customized, one-on-one assistance based on their peculiar needs *(ibid)*. Even though many of the expected increases in e-learning usage had not materialized, the management is putting in relentless efforts to increase usage *(ibid)*.

1.1.5 An Overview of the E-learning Situation in University of Cape Coast, Ghana

The University of Cape Coast (UCC) was established in 1962 to train highly qualified graduate and skilled personnel to provide leadership and enlightenment in education (University of Cape Coast, 2012). University of Cape Coast has started experimenting with e-learning since 2006 when the university collaborated with University of Massachusetts Amherst (UMass) in USA to enrol students on the e-platform (Obuobi, Adrion & Watts 2006).

The overall strategy for ICT integration into CCE programme was captured in the five years Strategic Plan Document for CCE (SP 2010-2014) which has been adopted and is being implemented by CCE management (Office of the CCE-UCC, 2012). With e-learning adoption, the Department of Computer Science has developed Moodle e-platform in 2009 and since being enrolling students. This arrangement has been on a limited scale because the Centre relies heavily on print mode for delivering distance education *(ibid).*

The average student enrolment on the e-platform from 2010 to 2013 stood at 2,520. Currently, the Centre and its development partners are in the process of installing Wi-Fi and WiMAX open broadband wireless standards to deploy broadband internet services to Centres not currently having internet connectivity. Standards compliant WLANs and proprietary Wi-Fi mesh infrastructure are being installed throughout the regional Centres of CCE-UCC. The standard compliant WiMAX products will be used to provide non-line-of-sight (NLoS) backhaul solutions for these local networks. The WiMAX subscriber stations will then provide internet access to CCE students all over the country. The ten (10) regional distance learning Centres and the new resource Centre built at Cape Coast are being equipped with the video-conferencing facilities which will be networked and interconnected with each other (Point-to-Multipoint) to produce a real time connection among the Centres (CCE-UCC, 2012). In spite of these efforts, the University has not adequately exploited ICT to achieve its objectives in teaching, learning and research (Office of CCE-UCC, 2012).

1.2 Statement of the Problem

Despite the numerous advantages inherent in e-learning adoption and utilisation, its implementation by many universities especially in developing countries is generally characterised by few enrolment of students. Furthermore, in Sub-Saharan Africa, there are general reservations about the effectiveness of e-learning as compared to traditional approaches to teaching and learning. Many of the university Administrators, Information Technology Support Staff, Lecturers as well as Learners are sceptical and hardly show any commitments towards e-learning adoption and utilisation.

In his study on dropouts and persistence in e-learning courses, Levy (2007) found that drop-out rates from e-learning educations even in the developed world are still much higher than in traditional classroom based teaching. Garrett (2004) reported that many e-learning projects such as the UK eUniversity, NYU Online, Scottish Knowledge, Global University Alliance, which were all developed around e-learning applications, have failed to realise their goals. These occurrences may lead the public to ask questions about the quality and capabilities of e-learning as a viable alternative to classroom based education.

Relatedly, the report of UNESCO (2007) on a survey of e-learning summarized the information about the status of e-learning in Africa. In Senegal, the report revealed that many institutions do not use any form of e-learning. In Cameroon, the report indicated that there is lack of awareness among most of the teachers and heads of the universities that the use of e-

learning could be of benefit for teaching or training. In Botswana, the study found that e-learning developments are still at an infancy stage. The institutions are still trying to identify a suitable e-learning platform to adopt for the content development and learner management. In Ghana, Awidi (2008) noted:

> While technology has enabled online education in many countries, the same cannot be said for African public universities. Universities in Ghana have made some progress in building networking infrastructure and acquiring computers, but integrating technology into the teaching and learning process has been a challenge. Instructional delivery remains largely instructor-led with limited or no electronic collaboration between students and lecturers (p. 24-32).

Furthermore, Kariuki (2006) also indicated that if website analysis is anything to go by, it is justifiable to conclude that, in Kenya, institutions are a distance away from reaping the benefits of e-learning.

These statements give credence to the observation that many universities have been experiencing poor e-learning implementation for far too long. The question that agitates the mind of many advocates of technology usage in education is: What might have accounted for the general scepticism and low rate of adoption and utilisation of e-learning among the stakeholders of formal education? These concerns have been debated over at length without any consistent conclusions or a clear understanding of the contributing factors. Unfortunately, in Africa, it appears that no direct empirical studies that address the issues of human diversities, from the perspective of distance education have been conducted that can be used for any major policy decision in the area of e-learning adoption and utilisation in high institutions of learning.

For those concerned with implementing e-learning in Ghana and Kenya, it is important that empirical studies are conducted so as to understand the interplay of the factors influencing e-learning adoption and utilisation in the institutions of higher learning. It is in this context that this study has been undertaken within two universities (University of Cape Coast, Ghana and Kenyatta University, Kenya).

1.2.1 Purpose of the Study

The purpose of this study was to assess the key factors influencing e-learning adoption and utilisation and recommend strategies that could be adopted to overcome any identified barriers to smooth implementation of e-learning at UCC and KU.

1.3 Research Objectives

The study was guided by the following objectives:

a) Find out the major challenges facing e-learning adoption at UCC and KU;
b) Find out the major attributes affecting e-learning adoption and utilisation at UCC and KU;
c) Evaluate the ICT skill level of Information Technology Support Staff at UCC and KU;
d) Establish lecturers' perceived preparedness to use e-learning at UCC and KU,
e) Establish students' perceived preparedness to use e-learning at UCC and KU.

1.4 Research Hypotheses

The following null hypotheses guided the study:

H_{01}: There is no statistically significant difference between UCC and KU in terms of perceived e-learning attributes;

H_{02}: There is no statistically significant difference between UCC and KU in terms of e- learning managerial attributes;

H_{03}: There is no statistically significant difference between UCC and KU in terms of institutional e-learning attributes;

H_{04}: There is no statistically significant difference between UCC and KU in terms of ICT skills acquired by ITSS;

H_{05}: There is no statistically significant difference between UCC and KU in terms of lecturers' preparedness to use e-learning,

H_{06}: There is no statistically significant difference between UCC and KU in terms of distance learners' preparedness to use e-learning.

1.5 Significance of the Study

This study serves as a valuable baseline study on the status of adoption and utilisation of e-learning at UCC and KU so that growth or decline of e-learning can be tracked in the two universities.

Governments would benefit from the findings of this research by being aware of factors that affect e-learning adoption. This information would guide them to make informed decisions about providing the necessary support to facilitate e-learning adoption and utilisation in order to widen access to higher education.

Further, the findings of this study would significantly benefit e-learning system developers to understand the perceptions and attitude of the e-learning users and adopters. With this understanding, the e-learning system developers can customise the e-learning platforms to suit the needs of the individual users and their target organizations as the findings would unveil ways to increase users and adopters' involvement in e-learning.

The findings of this study would also help curriculum and textbook developers to determine the entry behaviour and e-learning self-efficacy of students. This would help them to draw up a curriculum that will meet the needs of the diverse students pursuing distance learning.

The findings obtained from this study would not only help the lecturers establish their current ICT skills needed to effectively utilise e-learning but would also help them to develop the right mix of perceptions and attitudes needed for e-learning utilisation.

The findings of this study would help distance learners develop a positive attitude and ICT skills needed to successfully enrol and complete their higher education through an e-learning mode.

Finally, the findings and recommendations of this study would benefit researchers interested in other aspects of e-learning adoption and utilisation that have not been covered under this study.

1.6 Scope and Limitation of the Study

1.6.1 Scope

While the inclusion of all aspects of e-learning would have been very interesting, a study of every aspect of e-learning is practically impossible within the available time. This meant that the study narrows down to perceived attributes of e-learning, institutional, and attitudinal and perceptual factors influencing adoption and utilisation of e-learning. These perceived factors relate to managers, IT support staff, distance education lecturers and students of UCC and KU.

1.6.2 Limitations

The parameters of e-learning in the context of higher institutions of learning are broad and complex. This implies that time, adequate funding and other logistics are needed to conduct an effective comprehensive study aimed at covering all the public and private universities in Ghana and Kenya. However, these resources are highly inadequate. The survey was, therefore, conducted in only two public universities running distance education programme (one in Kenya and the other in Ghana). In view of the selected sample size and the regional distribution of the target population, there was a question concerning whether the findings can be generalized to other universities. This study captured the diversity of the variables from the target sample which helped to identify commonalities of experiences of e-learning adoption and utilisation at KU, Kenya and UCC, Ghana. Indeed, inductive generalization requires further in-depth studies with larger sample size. Furthermore, e-learning operates in technologically dynamic environment

which may render some of the findings ineffectual in the course of time. Therefore, generalizations of the findings to other universities should be done with caution.

1.7 Assumptions

In this study, the researcher assumed that all the respondents answered the questions objectively and to the best of their abilities. The researcher further assumed that no respondent was at a disadvantage due to gender or physical disability or geographical locations. The researcher and the research assistants were able to access the respondents in the Centres allocated to them without difficulty.

1.8 Theoretical Framework

The key theories that guided this study were two. On one hand, the researcher explored factors influencing adoption of e-learning and found that Diffusion of Innovations (DoI) theory by Rogers (1962) was relevant to theoretically underpin this aspect of the study. On the other hand, regarding factors affecting e-learning utilisation by lecturers and distance learners, the Theory of Reasoned Action (TRA) as propounded by Fishbein and Ajzen (1975) was considered appropriate.

1.8.1 Diffusion of Innovation Theory

According to Rogers (1962), DoI is a theory that seeks to explain how, why and at what rate new ideas and technology spread through social systems. Rogers' earlier work was in the field of rural sociology, inspired by farmers

who were slow to adopt various biological-chemical farming innovations (Riesenberg & Gor 1989). However in recent years, the DoI theory has permeated into higher education circles and may be overused (Morgan 2008). In this study, DoI covered the rate of diffusion and innovation attributes.

1.8.1.1 The Rate of Diffusion

According to Rogers (1995), the rate of diffusion is a "numerical indicator of the steepness of the adoption curve of an innovation" (p. 221). Rogers indicated that the rate of innovation adoption occurs over a timeframe. In this theory, the adoption rate of an innovation is viewed as a standard distribution curve. The theory holds that at the beginning, the adoption of an innovation will be slow and gradual. After a set time period, it will grow rapidly and become stable and eventually decline. According to Rogers (1962), there are five categories of adopters that operate along the curve. They are 'innovators, early adopters, early majority, late majority and the laggards' (p. 150). These are shown in Figure 1.4.

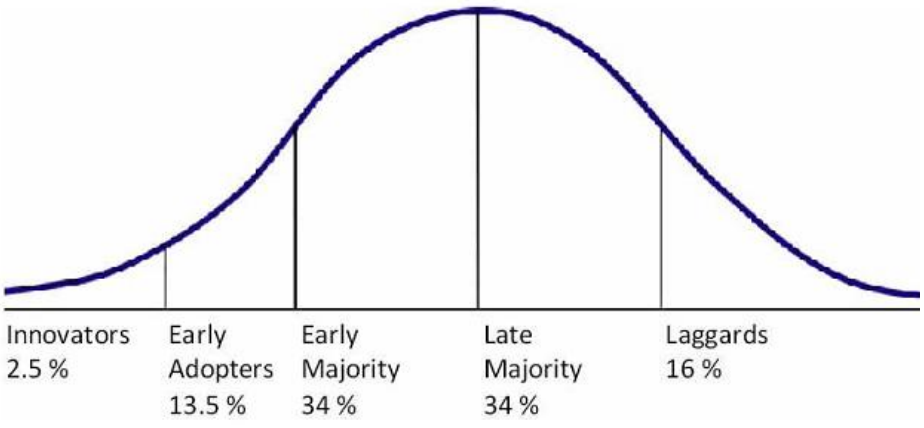

Figure 1.4: Innovation adoption life cycle.

(Source: adopted from Rogers (1962), Wikipedia.org/wiki/Everett/Rogers).

Rogers (1962) identified the first category of adopters as innovators (2.5%). These individuals are pioneers and lead the way in adopting an innovation. Rogers and Scott (1997) analysed innovators and identified characteristics that distinguish them from the rest of the population. They posited that innovators are venturesome and tend to engage in more cosmopolite social relationships. The second category, according to Rogers, is the early adopters who make up 13.5% of the individuals in a social system. The early adopters join the innovators early enough to help spread information about the innovation to others (Rogers, 2003). While innovators may not be respected members of their society, early adopters have the highest level of opinion leadership in most systems. They are sought as role models for many members of the social system.

Rogers and Scott (1997) stated that the early majority category comprises 34% of the adopting population. While respect and opinion leadership dwindle for this category of adopters, the time they take to adopt an innovation increases substantially. Unlike the early adopters who serve as role models to their near-peers, the early majority often serve to apply peer pressure. This category of adopters is more deliberate than early adopters before adopting an innovation. Being between early adopters and late majority makes the early majority particularly important link in the diffusion process.

The late majority category waits longer before deciding that the innovation will help meet their needs. They adopt new ideas just after the early majority category. They are one of the two largest adopter categories with 34% of the

members of a social system. The late majority act upon peer pressure applied by the early majority in adopting an innovation. Their financial resource base is generally low. This implies that any decision to be adopted can only be made after carefully analysing the involved costs and risks (Rogers, 1995).

Laggards, who comprise about 16% of the population are highly sceptical and will most likely resist and never adopt the innovation (Rogers & Scott, 1997). Rarely holding any opinion leadership, laggards are near isolates whose point of reference is the past and who if they must interact, do so with others who also hold traditional values (Rogers & Scott, 1997). They base their decisions on what was done previously and hence are suspicious of any new innovations and change agents. Due to their limited financial resource base, they are exceedingly careful and hence must be assured of an innovation working before plunging themselves into it. Besides the five adopter categories, Rogers and Scott reported that 49-87% of the variance in the rate of adoption of innovations is explained by attributes of innovation which he termed as the innovation diffusion process.

The adopter categories provided by DoI theory were used as independent variables to group the e-learning stakeholders at UCC and KU. Based on the available adopter category interplay identified at UCC and KU, the appropriate recommendations were made to reflect the right mix of decision-makers that would enhance a viable e-learning implementation at the two universities.

1.8.1.2 Innovation Attributes

According to Rogers (2003), the perceived attributes of an innovation are significant predictors of the rate of adoption. Rogers described the innovation-diffusion process as “an uncertainty reduction process” (p. 232), and indicated that there are five attributes of innovation that help to decrease uncertainty about the innovation. These include relative advantage, compatibility, complexity, trialability and observability.

i. Relative Advantage: Rogers (2003) defined relative advantage as “the degree to which an innovation is perceived as being better than the idea it supersedes” (p. 229). The cost and social status motivation aspects of innovations are elements of relative advantage. For instance, Rogers maintained that while innovators, early adopters and early majority are more status-motivated for adopting innovations, the late majority and laggards perceive status as less significant.

ii. Compatibility: Rogers (2003) stated that “compatibility” is the degree to which an innovation is perceived as consistent with the existing values, past experiences and needs of potential adopters” (p. 15). Rogers posited that if an innovation is compatible with an individual’s needs, uncertainty will decrease, and the rate of adoption of the innovation will increase. Thus, even naming the innovation is an important part of compatibility. The name of the innovation should be meaningful to the potential adopter.

iii. Complexity: Rogers (2003) defined complexity as “the degree to which an innovation is perceived as relatively difficult to understand and use” (p. 15). As Rogers stated, opposite to the other attributes, complexity is negatively correlated with the rate of adoption. Thus, excessive complexity of an innovation is an important obstacle to its adoption.

iv. Trialability: According to Rogers (2003), “trialability is the degree to which an innovation may be experimented with on a limited basis” (p. 16). Also, trialability is positively correlated with the rate of adoption. The more an innovation is tried, the faster its adoption is. Increased reinvention may create faster adoption of the innovation. Vicarious trial is very helpful for later adopters. However, Rogers stated that earlier adopters see the trialability attribute of innovations as more important than later adopters.

v. Observability: Rogers (2003) defined observability as “the degree to which the results of an innovation are visible to others” (p. 16). Role modeling (or peer observation) is the key motivational factor in the adoption and diffusion of technology. Similar to relative advantage, compatibility and trialability, observability is also positively correlated with the rate of adoption of an innovation.

In conclusion, Rogers (2003) cautioned, “getting a new idea adopted, even when it has obvious advantages, is difficult” (p. 1), however, the availability of all of these variables of innovations speed up the innovation-diffusion process. The Diffusion of Innovation Theory provides a road map theory for

institutions to adapt. There are important strategic decisions that the stakeholders should consider. These include the identification and acquisition of an e-learning platform suitable for the teaching and learning within the respective universities. The e-learning attributes aspect of the DoI theory presented comprehensive variables. These variables are important to this study as they helped the researcher to assess how best they could be used in the adoption of e-learning at UCC and KU.

1.8.2 Theory of Reasoned Action

Ajzen and Fishbein (1980) propounded the Theory of Reasoned Action (TRA). This theory postulated that an individual's behaviour is a function of both the individual's attitude toward a specific behaviour, and the social influences and norms surrounding that behaviour.

This theory is based on the assumption that "human beings usually behave in a sensible manner. This means that they tend to take into account available information and implicitly or explicitly consider the implications of their actions. The theory also postulates that a person's intention to perform (or not to perform) a behaviour is the immediate determinant of that action; barring unforeseen events, people are expected to act in accordance with their intentions" (Ajzen, 1988, p.117). In sum, the core theme of TRA is that a person will adopt, maintain or change behaviour if the person believes the behaviour will benefit him/her, if it is socially desirable and there is social pressure to conform to the behaviour and the opinion of others matters to the person.

The Theory of Reasoned Action was "born largely out of the frustrations with traditional attitude–behaviour research, much of which found weak correlations between attitude measures and performance of volitional behaviours" (Hale, Householder & Greene 2003, p. 259). According to Ajzen and Fishbein (1980), separation of behavioural intention from behaviour allows for explanation of limiting factors on attitudinal influence. Since its introduction to behavioural research, TRA has been applied to study a variety of situations and is now regarded as one of the most influential theories about volitional human behaviour (Trafimow, Sheeran, Conner & Finlay, 2002). The key issue of the TRA is a prediction of behaviour. Fishbein and Ajzen (1980) posited that the components of TRA are three general constructs: behavioural intention, attitude and subjective norm.

The immediate antecedent of any behaviour is the intent to perform it. Fishbein and Manfredo (1992) asserted that a person's 'intention' to behave in a certain way is based on: his/her 'attitude' toward the behaviour in question and the perception of the social pressures on him/her to behave in this way. This is referred to as 'subjective norms' (P.2). The relative contribution of attitudes and subjective norms varies according to the behavioural context and the individual involved. Attitudes are determined by the beliefs about the outcomes of performing the behaviour and evaluation of these expected outcomes. The subjective norm is dependent on beliefs about how others feel the individual should behave and their motivation to comply with these 'others'. These relationships are summarised in Figure 1.5.

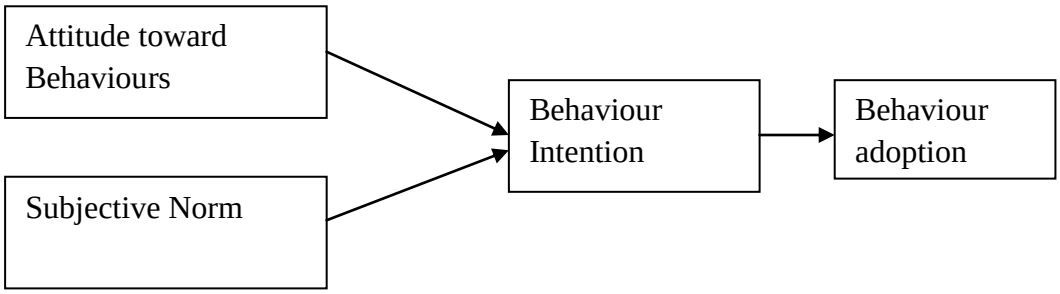

*Figure 1.5***:** TRA flow model (Adopted from Ajzen and Fishbein 1980)

Figure 1.5 suggests that a person's behavioural intention depends on the person's attitude about the behaviour, and subjective norms and behaviour is predicted by the bahaviour intention. Thus, if a person intends to behave in a certain way, then it is likely that the person will do so. According to Fishbein and Ajzen (1980) the stronger the intention, the more the person is expected to try. This will in effect lead to greater possibilities of a behaviour being performed. Fishbein and Manfredo (1992) posited that the primary concern is with identifying the factors underlying the formation and change of behavioural intent.

1.8.2.1 The Relevance of TRA to the Study

The core theme of the TRA is consistent with this study. The Theory of Reasoned Action established the need for careful examination of the users' perceptions and attitudes. These variables informed the study in that the learners and the lecturers' development of positive or negative attitude and perception determine their eventual usage of e-learning. Further, perceptions of the learners and lecturers about their own efficacy play an essential role in their eventual voluntary usage of the e-learning. In conclusion, the TRA was

chosen to inform the utilisation aspect of the study because the findings were based on volitional actions and intentions of the respondents.

1.9 Conceptual Framework

The main aim of this conceptual framework is to link the core premises of the TRA and the DoI theories to each other in order to explore the research objectives and hypotheses. This was achieved by diagrammatically showing the interplay of the relationship between the independent and the dependent variables, identified in the theoretical frameworks.

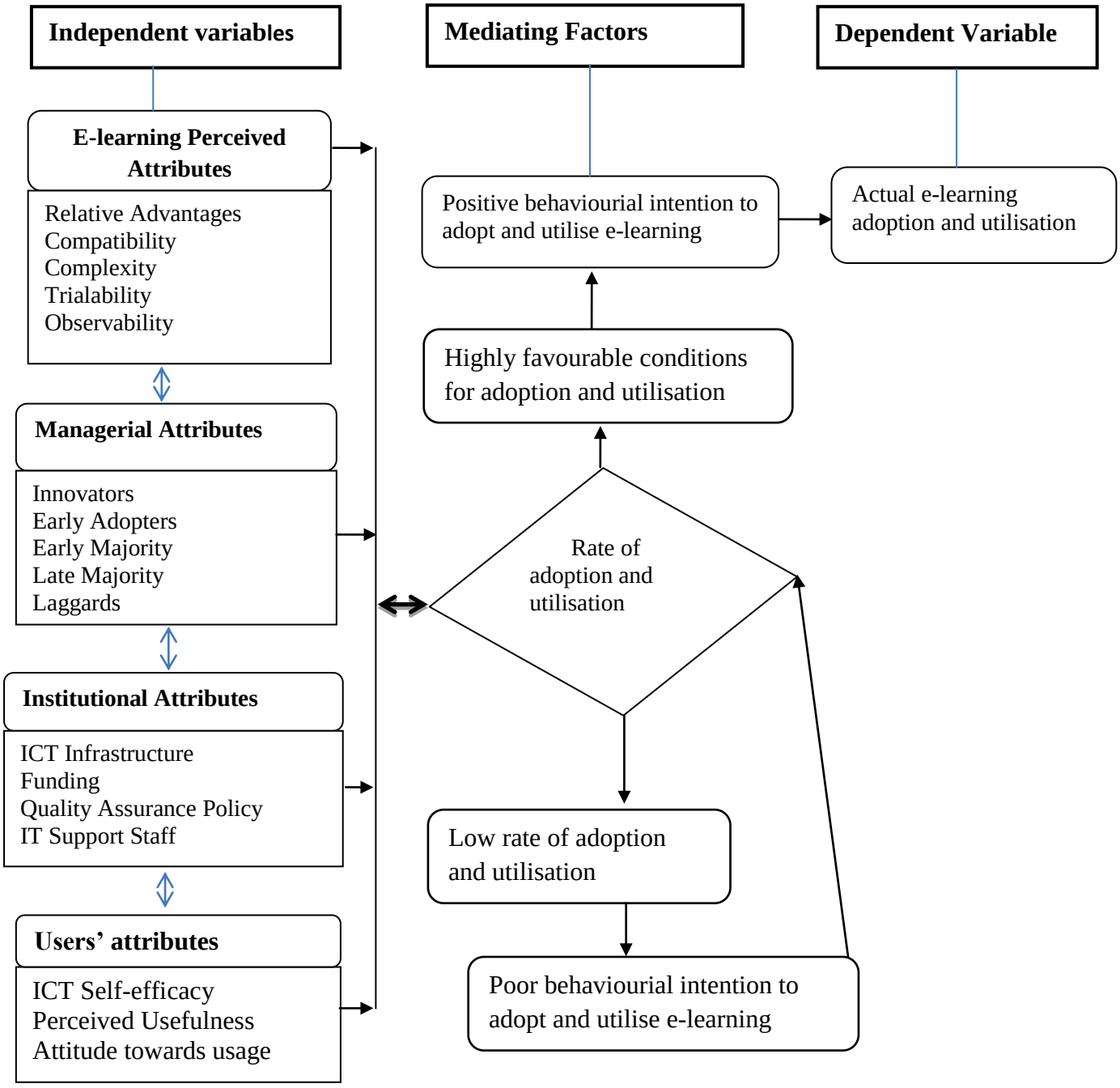

Figure 1.6: Conceptual framework**.** (Source: The researcher, 2013)

Figure 1.6 reveals that the study was accommodated within this conceptual framework which identified four major independent variables; namely: e-learning perceived attributes, managerial attributes, institutional attributes and users' attributes. These attributes influence the rate of adoption and utilisation of e-learning. If the rate of adoption and utilisation is low in any institution, it will be demonstrated by poor behaviourial intention of the stakeholders to adopt and utilise e-learning. Then, elements of these independent variables should be re-examined, and changes be made where applicable in order to measure their cumulative influence on the rate of e-learning adoption and utilisation. On the other hand, if these variables are favourable, one is likely to observe mediating variables of overt behavioural intentions to adopt and utilise the e-learning platform. These phenomena will eventually lead to the actual adoption and full utilisation of the e-learning platform.

1.9.1 The Relevance of the Conceptual Framework to the Study

The main task of the study was to explore the interplay of these identified independent variables in order to unearth the factors influencing adoption and utilisation of e-learning at the two institutions. Thus, the conceptual framework helped the researcher to identify the managerial attributes (adopter categories) at UCC and KU. In this regard, similarities and differences between the two institutions were examined. This invariably helped the researcher to assess the influence of these variables on the rate of adoption and utilisation of e-learning at UCC and KU.

The conceptual framework also identified e-learning perceived attributes. The researcher assessed how the stakeholders at UCC and KU were influenced by these attributes in their effort to adopt e-learning. Analysing these attributes is very important as the positive views about them would increase the rate of e-learning adoption. On the contrary, a negative view about them is likely to impact negatively to e-learning adoption.

The institutional attributes captured by the conceptual framework relate to availability of ICT infrastructure, funding for e-learning, quality assurance issues and IT support staff. These attributes were considered fundamental requirements for a successful e-learning adoption. The researcher explored the availability of these factors at UCC and KU and analysed their effect on adoption of e-learning at the two institutions.

The users' attributes relate to the e-learning usability of the lecturers and the distance learners at UCC and KU. The underlying assumption was that e-learning utilisation at UCC and KU is influenced by ICT self-efficacy, perceived usefulness and attitude of the lecturers and the distance learners of the two institutions. These independent variables were examined from the perspective of the lecturers and the distance learners at UCC and KU.

In conclusion, the feedback indicated by low rate of adoption and utilisation is supposed to help the stakeholders at UCC and KU to review the independent variables where possible so as to ensure smooth implementation of e-learning at the two universities.

1.10 Operational Definition of Terms

For the purpose of this study, the following are operational definition of key terms.

Adoption: The rate of implementing e-learning by the universities.

E-learning: The methods of learning that use electronic instructional content delivered via the electronic media such as internet or Intranet.

E-platform: The interface of the e-learning system that the users interact with.

E-learning perceived attributes: Features about e-learning platform that Stakeholders consider before adopting e-learning.

Innovation: An idea, practice, or object that is perceived as new by an individual or other unit for adoption.

Institutional attributes: Availability of ICT facilities, human resource and regulatory framework at the institutions upon which e-learning adoption depends.

Lecturers: Faculty members engaged to teach distance students.

Managerial attributes: Personal attributes of the e-learning directors that influence their readiness to adopt e-learning.

Perceived ease of Use: The degree to which a person believes that using a particular e-platform would require no or minimal effort.

Perceived Usefulness:	The degree to which a person believes that using a particular e-platform would enhance his or her job performance.
Rate of adoption:	The relative speed with which an innovation is adopted by the universities.
Self-efficacy:	E-platform users' self-belief to succeed in e-learning usage.
Social system:	A set of interrelated units that are engaged in joint problem solving to accomplish a common goal.
Users' attributes:	Attitudes and perceptions that learners and lecturers have about themselves regarding e-learning usage.
Utilisation:	The rate at which lecturers and distance learners use the e-learning platform.
Wi-Fi:	Technology that allows an electronic device to exchange data wirelessly (using radio waves) over a computer network.
WiMAX:	(Worldwide Interoperability for Microwave Access) is a wireless communications standard designed to provide 30 to 40 megabit-per-second data rates.

1.11 Organisation of the Study

The purpose of this study was to assess and compare factors that influence e-learning adoption and utilisation in the delivery of e-learning at KU, Kenya and UCC, Ghana. Chapter 1 presented the background to the study and identified the problem of the study. It also captured the measurable objectives and hypotheses which were meant to address the research problem related to lack of interest in the adoption and utilisation of e-learning among the university administrators, IT Support Staff, lecturers and distance learners leading to ineffective implementation of e-learning in the two universities. In order to explain the relationship between the independent and dependent variables, a conceptual framework was developed from the theory of DoI and TRA. The philosophy underpinning the conceptual framework was that when the factors identified in the theory were optimally blended e-learning adoption and utilisation will be enhanced in the universities.

Besides Chapter one, Chapter two of this study attempted to situate these variables into the broader empirical studies relevant to the conceptual framework in order to further establish the need for the study. Chapter three contains a description of the research design and the methodology used in gathering and analysing data. Chapter four presents the findings of the study emphasizing a cross-case comparison of various aspects of e-learning adoption and utilisation between CCE-UCC and ODeL-KU. Chapter five discusses the findings within the broader context of the existing literature. Finally, Chapter six provides a summary of the findings, conclusion, recommendations and suggestion for future research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the literature contributions under the broad heading of the concept of e-learning in Distance Education in the context of contemporary Africa.

2.2 E-learning as a concept

E-learning, as a concept, lacks precise definition. However, the available literature highlights terminologies such as connectivity, ICT infrastructure, flexibility of access and online content delivery. According to Salmon (2002), e-learning is an approach to facilitate and enhance learning through computer and communications technology. Such devices include personal computers and other communications technologies which will enable the use of the internet for email, discussion forum and collaborative software to facilitate team learning among students.

E-learning can be modelled to suit the individual learner's interest either online or offline. It can also target a group of learners in real-time or asynchronous. In the context of individualized self-paced e-learning situation, the learner accesses learning resources such as a database or course content online via an intranet or the internet (Romiszowski, 2004).

Alternatively, e-learning can also be setup on group-based synchronous or asynchronous mode. As postulated by Romiszowski (2004), synchronous group-based e-learning refers to situations where groups of learners are working together in real time via an intranet or the internet. Romiszowski further indicated that group-based e-learning asynchronously is a situation where groups of learners are working over an Intranet or the internet where exchanges among participants occur with a time delay (i.e., not in real time). These models and features make e-learning flexible enough to meet the learning needs of any individual students at anytime and anywhere. Further, these features of e-learning make it inseparable from distance education.

2.3 Distance Education

Distance Education, according to Poley (2001), is an educational model in which the student and instructor are separated by time and place. In the interest of conceptual clarity, Keegan (1990) described the nature of distance education to include the use of technical media - print, audio, video or computer -to unite teacher and learner, provision of two-way communication so that the student may benefit from or even initiate dialogue. Keegan further observed that learners are usually taught as individuals with the possibility of occasional meetings for both didactic and socialization purposes. These characteristics reflect the general distance education practices in the context of contemporary African higher education.

2.4 The Contemporary Status of E-learning in Africa.

There are many reasons for encouraging e-learning in Africa. According to a study by Prakash (2003), access to education in developing countries is limited with less than 5% of students in tertiary education compared to the world average of 16%. The demand for formal education in Africa far exceeds the ability to deliver and is not offered to significant portions of the population.

Many African countries including Tanzania, Zimbabwe, Nigeria, Ghana and Kenya have established Open and Distance Education programmes using the dual mode institutional arrangement and thus complementing their campus-based teaching with distance education in order to ease the pressure on institutional amenities. In his studies to ascertain the status of e-learning in Africa, Tim (2008) found that the status of e-learning in Africa is at its lowest ebb. Tim collected data from three hundred and sixteen (316) respondents who were people on the e-learning Africa database. Tim's study identified key constraints in seeking to implement and develop e-learning strategies and practices in Africa. These are lack of infrastructure (particularly connectivity, and especially in rural areas), the need for appropriate training and capacity development, a lack of relevant digital content and the cost of implementing e-learning. The study further found much enthusiasm amongst respondents for developing the potentials of e-learning in their respective countries.

Again, there is a wide variety of different e-learning practices in Africa; the overriding evidence is that the majority of those claiming to be using e-learning are not actually using an integrated formal learning management

systems, but are rather using basic digital technologies to enhance their learning, more often than not interpreting e-learning simply as accessing information from the Web. Tim concluded that e-learning in Africa is still very much in its infancy across most of the African countries.

The findings of Tim corroborated with Leary and Berge (2006 as cited in Nwachukwu, Egba & Elemchuku 2007). Leary and Berge found that nearly all countries in Africa are rapidly increasing the adoption and utilisation rates of e-learning. Countries like Senegal, Ghana, Uganda, Cameroon, Kenya, Tanzania, Malawi, Zambia, Botswana, Gabon, and Zimbabwe, among others, contain populations with growing dependence on the internet. However, slow rate of e-learning adoption is evident across the length and breadth of Africa. Thus, a lot still ought to be done to meet international standards. On his part, Yusuf (2006) recommended that electricity, internet, computers, telecommunications and postal services must be developed to the levels that can support the desired scale of open and distance education in Africa.

In sum, it was observed from the available relevant literature that e-learning adoption and utilisation is yet to take a firm root in African universities. There might be some factors accounting for these phenomena. Universities in Africa need to identify these factors and analyse the extent to which they influence the adoption and utilisation of e-learning in their institutions. To this end, the empirical review was done in accordance with the independence variables identified in the conceptual framework.

2.5 Empirical review

There is a continuing debate about the determinants of e-learning adoption and utilisation across the globe. As depicted by the conceptual framework (see Figure 1.6), the following discussions examine studies related to the key factors influencing adoption and utilisation of e-learning in the context of universities.

2.5.1 The effects of E-learning Perceived Attributes on Adoption of E-learning.

In this study, it was hypothesized that e-learning perceived attributes such as its perceived relative advantage, compatibility, complexity, trialability and observability affect its adoption. Sam and Reeve (2003) conducted a research study entitled: Diffusion of E-Learning Innovations in an Australian Secondary College: Strategies and Tactics for Educational Leaders. The results the study indicated strong support for the research hypothesis which indicates that high e-learning perceived attributes such as its perceived relative advantage, compatibility, trialability, observability and less complexity predict e-learning adoption.

The study of Sam and Reeve (2003) could be criticized on the ground that the issues associated with e-learning adoption are not one-dimensional but multi-dimensional. In order to develop effective strategies to adopt e-learning, one needs to know the key factors influencing its adoption taking into consideration the perspective of different stakeholders. One limitation to that

study is that it failed to consider e-learning adoption from the perspective of administrators and decision makers. Another limitation to the study is the size of the sample which consisted of only seventy-five teachers. It is difficult to assume that the same conclusion could be arrived at if the responses were drawn from a larger sample. It is, therefore, necessary to use the same methodology, but target administrators to ascertain predictability of e-learning adoption based on its perceived attributes.

In a related research article, Noor and Rubaiyat (2011) studied on adoption of e-commerce by the SMEs in Bangladesh. They found that perceived relative advantage, compatibility observability and trialability are positively correlated with the adoption intention of e-commerce. On the other hand, Perceived complexity is negatively correlated with adoption rate.

It was observed in the study that Noor and Rubaiyat over relied on only quantitative data collection method and, therefore, missed some important issues that might surface if group interview were considered as complimentary to the questionnaire. Thus, a combination of qualitative and quantitative methods for a larger study would have probably produced different findings. These limitations make it very difficult to generalize the findings of their study.

The findings of Noor and Rubaiyat are, however, consistent with Sam and Reeve (2003). Thus, both researches have validated the role of e-learning attributes in predicting e-learning adoption. While empirical support has

generally been established for the hypothesis outlined by Noor and Rubaiyat (2011) and Sam and Reeve, (2011), others have not yielded results consistent with the theoretical predictions. For example, in a similar study conducted by Tan, Chong, and Uchenna (2009), on internet-based ICT adoption: evidence from Malaysian SMEs, it is interesting to note that trialability has no significant associations with ICT adoption. As reported by Tan, Chong and Uchenna, many of the SMEs think that trialability of software is not an important indicator to ICT adoption as pirated software are widely available and are believed to be used by the enterprises. This finding is, therefore, inconsistent with the findings of Sam and Reeve (2003) and Noor and Rubaiyat (2011).

In conclusion, this study, therefore, took account of these limitations and inconsistencies in the existing empirical literature regarding e-learning attributes and how these attributes influence the adoption rate of e-leaning in the two universities under the study.

2.5.2 Managerial Attributes and Adoption of E-learning

The innovation processes start with an initial decision to adopt the new idea. Many researchers questioned the kind of administrative characteristics or attributes that administrators should acquire in order to function effectively in this era of globalization (Aguirre, 1997; Reynolds, 1997). According to Harvey, Novicevic, and Speier (1999), managers must develop a pluralistic management perspective that encourages and maintains multiple perspectives in order to solve complex global problems. Yi, Jackson, Mun and Jae (2006)

surveyed 412 individuals. The key intention of their study was to compare the role of individual innovativeness in determining innovation characteristics. The results of Yi, Jackson, Mun and Jae's study showed that the individual innovativeness is a direct determinant of the innovation characteristics. Thus, the more innovative an individual is the more likely he/she will perceive an innovation as being important, less complex and compatible with their existing state of affairs. Hsu, Wang and Wen (2006) used the decomposed theory of planned behaviour, to study the factors influencing attitude and behavioural intention of consumers using m-coupons. The results of their study demonstrated that personal innovativeness has no direct relationship to behavioural attitude. Behaviour and attitude of consumers are largely influenced by endorsement of family and friends.

The findings of Hsu, Wang and Wen (2006) contradicted the theoretical orientation of Rogers (1962). The existing gap in the empirical literature gives credence to the present study which sought to identify and analyse the relevant administrative attributes that influence the adoption behaviour of the top management of the two universities.

2.5.3 Availability of ICT Infrastructure and Adoption of E-learning.

Researchers postulated that availability of ICT only does not guarantee flexible access to information and educational resources. Moya (2011) opined that without the requisite human and institutional capacities, the framework and skills, required for utilizing ICTs including such applications as the internet, will remain wanting. This will make usage all impossible. In addition,

Moya further opined that without linguistically and culturally diverse digital content and material, a large portion of people, especially in developing countries, will be unable to understand and digest what is being offered. Dizon (2011) cautioned that one must guard against the temptation to subscribe to the myth of technology's inherent superiority and its accompanying technological determinist and instrumentalist mind-set because "guns do not kill people kill people" therefore technologies should not be seen as ends in themselves but as means to support innovation in all its aspects - cultural, social and technological (p.134).

Likewise, data on e-learning experiences in developed countries provide enough evidence to understand that it is not technology (Jewels & Ford, 2006) rather human issues, which can work as critical success factors and be turn into critical failure variables. Studies conducted by Andersson and Gronlund (2009, cited in Al-zoubi, 2011) and Macharia and Nyakwende (2010) agreed with Moya's philosophical contention. Anderson and Gronlund carried out a study on challenges for e-learning with a particular focus on developing countries in order to understand implementation and adoption of e-learning in developing countries. Anderson and Gronlund found that developing countries focus on access to technology, and context for adoption of e-learning and individuals' characteristics was neglected, whereas in developed countries more researchers concern individuals' characteristics for adoption of e-learning. As true as this finding may appear, it is very important that caution is taken because, this finding may not reflect institutional peculiarities regarding the subject matter. This study, therefore, established

institutional specific e-learning factors that influence e-learning adoption and utilisation.

2.5.4 Funding of E-learning Projects in Universities

Unlike developing countries, many developed countries used, what the researchers labelled as, a comprehensive strategy to sustain e-learning integration in their education. Oye, Mazleena and Iahad (2011) indicated that these countries: UK, Australia, Korea and France; (i) have vision and action plans for e-learning, (ii) have good government policies and financial support (iii) they earmark action programmes and set committees with sufficient funds to pursue its goals, (iv) they believe in research as a fundamental part of e-learning strategy, and lastly (v) they embark on awareness, training and motivational programmes to sustain e-learning.

The few empirical studies in Africa suggest that the aforementioned strategies are hardly noticeable. Stuart and Ewins (2010) conducted a research on the topic: Funding for e-learning in Africa: A question of sustainability. The study revealed four popular funding models: the foundation model, the government model, the consultancy model and the fee-paying model. Marfo (2011) also explored the implementation of e-learning in Ghanaian universities with Kwame Nkrumah University of Science and Technology, (KNUST) Kumasi, Ghana as a case study. Marfo found that e-learning KNUST's e-learning implementation strategy has been a failure due to a wide variety of reasons which included funding. Mee (2007) argues that "government support for the purchase of ICT hardware, without fully

assessing how it will be applied or sustained, is a familiar theme across many nations" (p. 65).

It has been noted that institutional funding of e-learning is a major challenge to many universities in Africa. Unfortunately, the available literature does not provide the right mix of funding for e-learning project in the universities. This study provided the possible ways of addressing e-learning funding that will ensure its sustainability in the two universities.

2.5.5 E-learning in the Context of Quality Assurance Policies of Universities

Quality Assurance Policy is a document which sets out guidelines for universities to achieve their mission, vision, goals, or objectives through development and implementation of academic programmes that meet national, regional and international standards. Swinglehurst (2008) distinguished between Quality Assurance and Quality Enhancement. Swinglehurst illustrates the above dichotomy diagrammatically as follows:

Figure 2.1: Contrast between quality assurance and quality enhancement.
(Source: Swinglehurst, 2008).

With this structure, Swinglehurst (2008) argued that not only the objectives of the organisation can be realized, but also enhancing smooth implementation process in a more structured and systematic manner. These ensure the effectiveness of the expected outcome.

Quality assurance is a key issue in the implementation of e-learning (Goddard, 2000 cited in Kayte, Gurmak & O'Donoghue 2004). However, little information is available in the literature on what universities are doing to regulate or maintain quality assurance standards in higher education, in the face of the growing criticism of e-learning adoption and utilisation. In sum, the reviewed literature suggests that e-learning is likely to strive well in an

institution where quality enhancement is emphasized rather than quality assurance. It is important to note that e-learning, in African context, is a recent development. It is not clear whether quality assurance policies used in most universities had have peculiar characteristics of distance learners. This study was, therefore, conducted to fill that knowledge gap.

2.5.6 The role of Information Technology Support Staff in E-learning Implementation

Many researchers acknowledged that the adoption of e-learning platforms is a challenge across the higher education institutions. They content that most countries face challenges in providing sustained technical because of lack of robust ITSS. In view of Valdez, Fulton, Glenn, Wimmer and Blomeyer (2004) the success of implementing e-learning projects is dependent on the skills and quality of technical support available to the end-users (Gray, Ryan & Coulon, 2003; Valcke, 2004.

The question arises as to the extent to which the universities are aware of the crucial role that ITSS play. Besides, the kind of training that ITSS are given by the universities is not quite clear. To what extent does the availability of ITSS in the universities predict the adoption and utilisation of e-learning in the universities? These are but a few critical questions that empirical studies must further explore in the context of e-leaning at the universities. There are few studies that look at these specific issues.

In a study conducted by Ellis, Jarkey, Mahony Peat, and Sheely, (2007) at the University of Sydney, Australia, it was found that the University rather encouraged the use of consultants, whose expertise would come and go, leaving little knowledge capital for e-learning within the University. Ossei-Anto (cited in UNESCO, 2004) conducted a study on Information and Communication Technologies Usage, in Higher Distance Education in Sub-Saharan Africa. According to him:

> this problem is created by International Agencies putting pressure on government officials to implement certain ICT-mediated processes and the Government then puts pressure on institutions like GIMPA, which usually respond in haste by purchasing an ICT package, but with no advice, guidance or assessment and does not ensure essential process of training the support staff (P. 52).

Unfortunately, it appears that this aspect of the empirical study has not been fully established by the available literature and, therefore, needs further studies to determine the extent to ITSS can serve as anchors for e-learning adoption and utilisation in the universities.

2.5.7 Self-efficacy as a Determinant of E-learning Usage

The effective use of an e-learning system in the universities is influenced by a number of factors: system design features, and the user's ability to use the system effectively in teaching and learning processes. Tinnerman (2007) conducted a study on the University Faculty expressions of computer self-efficacy and personal attitudes regarding the viability of e-learning and found that high proficiency and high self-efficacy respondents were significantly more accepting of using technology in distance education than were their low proficiency colleagues. In a similar research, Compeau, Higgins, and Huff

(1999) conducted a longitudinal study to determine relationships between self-efficacy and outcome expectations. Self-efficacy and outcome expectations were found to impact on an individual's affective and behavioural reactions to information technology.

Evidences presented in the research literature about self-efficacy are relevant to this study. Self-efficacy of faculties at UCC and KU needs to be assessed in order to recommend the right strategy that will increase their perceived ability to use e-learning.

2.5.8 Users' Perception of the E-learning Technology

One of the major factors identified in the literature as having an effect on the e-learning usage is the individual's perceived usefulness of the technology. It is argued that an individual may have a high level of self-efficacy in the use of the technology, but if he/she does not perceive the technology as useful that individual cannot use it (Zhao and LeAnna-Bryant, 2006). The use processes of e-learning can be handled adequately if both teachers' and the students' perceptions of technology integration are well understood beforehand (Zhao & LeAnna-Bryant, 2006).

Research in the area of teachers' perception of and attitudes towards computers has also been conducted in Pakistan by Kundi (2011). Kundi found that e-learning in Higher Education Institutions at Pakistan are determined by the perceptions of the educational technologies themselves. Whatever they perceive about the nature and role of technology, the same is reflected in their

opinion and attitudes about its use. However, the thought provoking finding of the research was that the study showed a gap between the teachers' perceptions and reality. There was just a marginal match between e-learning usage and the high level of perceptions among the teachers.

On the other hand, the findings of Kundi (2011) corroborated with Cagiltay, Yildirim and Aksu (2006) who found that learners' preferred learning path depend on their personal characteristics like perceptions about technologies and learning styles. Studies on perceived usefulness of e-learning are more centred on ICT in general. Most of such studies are inclined towards developed countries. Again, many of the findings related more to students pursuing on-campus e-learning programme at the expense of distance learners. Seemingly, there are few studies that involve the students and lecturers' e-learning perceived usefulness in open and distance learning programme especially in Kenya and Ghana.

2.5.9 Users' Attitudes towards E-learning Utilisation

Positive attitude toward using e-learning in teaching and learning is a necessary condition for e-learning utilisation. With regards to e-learning, attitude towards utilization of e-learning model can be positive or negative. Fulk, Schmitz and Steinfield (1990) asserted that supervisors' attitude toward technology affects their emotional reactions towards its usage. Piccoli, Ahmad and Ives (2001) found that instructors' attitudes toward e-learning or IT positively influence results of e-learning since instructors are major actors in learning activities. A less enthusiastic instructor or one with a negative view of

e-learning education shall not expect to have students with high satisfaction or motivation.

The effectiveness of e-learning will be discounted according to the instructor's attitude. Dillon and Gunawardena (1995) have suggested that instructors' attitudes toward distance learning should be considered in system evaluation in order to explicate online course user behaviours effectively and thoroughly. Allen and Seaman (2005) also looked at attitudes and beliefs of academic leaders in schools across the United States. They found that most academic leaders were neutral in the opinion that teaching online was more time intensive for faculty. Alenezi, Abdul-Karim and Veloo (2010) conducted an empirical investigation into the role of enjoyment, computer anxiety, computer self-efficacy and internet experience. In this study, Alenezi, Abdul-Karim and Velo sought to find out how such factors influence the students' intention to use e-learning. In other study, a case study from Saudi Arabian governmental Universities and found that attitude was the key influencing factor in the e-learning process and seemed to be related to the learning management design.

On the part of students, Ajadi, Salawu and Adeoye (2008) researched on e-learning and distance education in National Open University of Nigeria (NOUN). This study showed that many of the students admitted by NOUN have no computer education background. Hence they are afraid of operating computers. This makes the students to consider hiring experts to help them. However, the very few who have access to computers do not know how to use it and maximize its usage.

In general, most studies on were not conclusive with regard to the way lecturers and students' attitude could affect e-learning utilisation. This study contributed to the debate by examining the extent which lecturers' and distance learners' attitude affects their preparedness of using the e-learning platform at UCC and KU.

2.6 Chapter Summary

Coping with increasing demand on tertiary education, to provide access to higher education, has become very complex in the contemporary era. It is expected that higher educational institutions deploy strategic use of e-learning with the view of increasing access to quality higher education. The available literature concluded that e-learning adoption and utilisation in African higher education is at stumpy ebb and besieged with human resource and infrastructural challenges.

The second aspect of the literature reviewed was devoted to the empirical studies the findings of which are related to the variables and objectives of this study. This is done in order to capture up-to-date studies on the various dimensions and factors affecting e-learning adoption and utilisation in the delivery of higher education in Africa. The empirical studies reviewed identified factors such as managerial, institutional and users and perceived e-learning attributes that interact to determine e-learning adoption and utilisation. These studies are common in developed countries such as United State of America, United Kingdom, among others. As much as the empirical studies seem to establish a common trend in the understanding of factors

influencing e-learning adoption and utilisation, there are many other e-learning related issues that need critical examination especially in the developing countries like Ghana and Kenya. Available studies on e-learning are basically tilted towards on-campus.

Furthermore, the complex nature of e-learning demands that research studies about it are multidimensional and comprehensive. All the empirical studies so far gathered either examined e-learning from the users' or institutional perspective. Lastly, no comparative studies (to the best of the researcher's knowledge) have ever been conducted looking at Ghana and Kenya regarding factors influencing e-learning adoption and utilisation in the running of distance education programme. It is within these knowledge gaps that this study was situated. The next chapter discusses the methodology of the study.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter describes the research design that was used to explore the factors influencing e-learning adoption and utilisation at UCC and KU. This is followed by the variables as well as the location of the study. Other areas covered under this chapter are: the target population, sampling techniques and sample size from which data was collected; the instruments constructed to address the research objectives and the hypotheses and the pilot study which helped in establishing the validity and reliability of the study. The final part of this chapter discusses the data collection procedure, data analysis, logistical and ethical concerns.

3.2 Research Design

This study employed descriptive survey method utilizing mixed methodologies in which both quantitative and qualitative approaches were used in data collection and analysis. The major purpose of descriptive research is the description of the state of affairs as it exists at present. According to Kothari (2004), studies concerning individuals, groups or situations with the aim of obtaining complete and accurate information are all examples of descriptive studies. The main characteristic of this method is that "the researcher has no control over the variables; he can only report what has happened or what is happening" (Kothari 2004, p. 37).

The use of mixed research methodologies has the additional advantage. Campbell and Stanley (1963) and Cook and Campbell (1979) contended that the mixed design format is effective when examining data involving respondent's attitudes. These features of descriptive survey design were, therefore, considered the most appropriate for carrying out the study of e-learning adoption and utilisation at UCC and KU.

3.2.1 Variables of the Study

In this study, emanating from the conceptual framework, the dependent variable was the adoption and utilisation of e-learning, whereas, the independent variables were: e-learning attributes, managerial attributes, institutional attributes and users' attributes. The variable factors considered under each of the independent variables are shown in Table 3.1.

Table 3.1

Independent and Dependent Variables

Independent Variables	Perceived Factors	Dependent Variable
E-learning attributes	Relative Advantages, Compatibility, Complexity, Trialability and Observability	E-learning adoption and utilisation.
Managerial attributes	Innovators, Early Adopters, Early Majority, Late Majority and Laggards.	E-learning adoption and utilisation.
Institutional attributes	ICT Infrastructure, Funding, Quality Assurance Policy and IT Support Staff	E-learning adoption and utilisation.
Users' attributes	ICT Self-Efficacy, Perceived Usefulness and Attitude towards usage	E-learning adoption and utilisation.

Table 3.1 shows the independent variables and their associated factors. The researcher assumed that the interplay of these factors influence e-learning adoption and utilisation at UCC and KU.

3.3 Location of the Study

This comparative study was conducted at the Centre for Continuing Education, (CCE), University of Cape Coast, Ghana and Institute of Open and Distance e-Learning, (ODeL) Kenyatta University, Kenya.

The Centre for Continuing Education was chosen for this study because, compared to other universities in Ghana, CCE-UCC is arguably a pacesetter in the delivery of distance education programme in Ghana. It has the highest number of study centres. So far CCE-UCC has 33 study centres dotted in all the 10 Regions of Ghana (Asiedu-Addo 2011). The study centres are designated satellite campuses where distance learners meet fortnightly for face to face interaction with their lecturers.

The study covered the ten (10) Regional Capitals of Ghana where e-learning is being piloted by CCE. These Centres include Cape Coast, Accra, Ho, Sunyani, Takoradi, Kumasi, Bolgatanga, Tamale, Koforidua and Wa. The Centre for Continuing Education has, therefore, provided suitable variables for conducting the study.

On the other hand, the Open and Distance eLearning of KU was chosen because Kenyatta University is one of the earliest institutions in Kenya to have

offered open, distance and e-learning programmes in a single Institute (Mutabari 2009). More so, Kenyatta University was the first Public University in Kenya to be ISO 9001: 2000 certified and meets international standards for quality management (Kenyatta University, 2012). The Kenyatta University is, therefore, expected to lead the way to the delivery of modern distance education programme in Africa. Table 3.2 shows the total number of the target population of the two institutions. This aspect of the study covered all the regional study centres of KU namely: Nairobi, Mombasa, Nakuru, Kisumu, Kakamega, Nyeri, Embu and Garissa.

3.4 The Target Population

The target population from the two institutions included all the lecturers, the IT Support Staff, the Top management which comprised of the board members, directors and the centre coordinators of the e-learning programme. The last target population set was the distance learners excluding the first year students. This deliberate effort was made because such students may not have the experience in using the e-learning. Table 3.2 shows the numeric breakdown of the target population.

Table 3.2

Distribution of Target Population at CCE and ODeL

Institutions	Distance learners	Lecturers	ITSS	Top management	Total
CCE	33,000	2000	36	38	35,074
ODeL	2,163	439	32	20	2.654
Total	35,163	2,439	68	58	37,728

Source: (ODeL 2011 and CCE 2011)

Table 3.2 shows that the target population of the study is 37,728. These target populations were chosen because the success or failure of an e-learning

programme ought to be of prime concern to them. Based on the objectives of the study, it was believed that any conclusion drawn on the bases of the data collected from them would reflect the nature and profile of e-learning adoption and utilisation in Ghana and Kenya.

3.4.1 Sampling Techniques

3.4.1.1 Quota Sampling

Quota sampling is the process of deciding beforehand the type and number of members that a researcher intends sampling (Biggam, 2008). Quota sampling technique was applied to determine the regions / county from which the study centres were to be selected.

3.4.1.2 Stratified Sampling

A stratified sampling technique, according to Biggam, (2008), is made up of a group from which a researcher directly selects samples. As used in this study, the technique was used to obtain the specific study centre from each region/county. The sample size of the distance learners were selected from each of the aforementioned Centres/Counties.

The quota and stratified sampling techniques were used with the intention of ensuring that every region/county, study centre and distance learner at each study centres of the two institutions had an equal and calculable opportunity of being selected for the study. This improved the representativeness of the sample by reducing sampling error. According to Asher (1995), stratified

sampling technique is said to be very reliable with a high degree of representativeness of results.

3.4.1.3 Simple Random Sampling

Biggam (2008) described simple random sampling as a subset of a target population in which each member of the subset has an equal probability of being chosen. In this study, a simple random sampling technique was used to select the sample size of the distance learners and the lecturers. The reason was that these groups are homogeneous in nature, and it was assumed that any sample drawn from the accessible population would be acceptable enough to fairly represent a cross section of the target population at the two institutions, thereby minimizing a type-1 error.

In the case of the top management and ITSS, purposive sampling technique was employed. Unlike simple random sampling techniques, where respondents are viewed essentially as interchangeable, purposive sampling technique involves targeting respondents who have the relevant experience and information that are not necessarily similar. Patton (2002) asserted that purposive sampling is a non-random method of sampling where the researcher selects information-rich cases for study in depth. Purposive sampling takes place when the researcher selects a sample from which the most can be learned (Merriam 1998).

Based on the nature of the research objectives, the top management and ITSS fit into this technique and, therefore, advanced better understanding of the study.

3.4.2 Sample Size

A sample is a subset selected from the accessible population and should be a representative of the actual population. Gay (1983) suggested a minimum sample size of 10% for a large population and 20% for small population. Conguring with Gay, Amedahe (2002) noted that a sample size between ten (10) to twenty (20) per cent is generally ideal enough for any descriptive study. On the other hand, Ferguson (1979) proposed that when grouping for inferential statistical comparisons, each group should exceed thirty (30) subjects.

Considering the experts' view coupled with the nature of the accessible population, a proportional ten per cent (10%) sample size was used on distance learners and twenty per cent (20%) for lecturers at both institutions. In the case of ITSS, the respondents consisted of 68 participants from the two institutions. More so, a census of 20 and 38 top managements from ODeL and CCE respectively were used for the study. A census was necessary in this situation because of the numerical paucity of the target groups. In total, a sample size of 758 participants was covered in this study and was considered acceptable. Tables 3.3 through to Table 3.7 provide a breakdown of the sample sizes with respect to the accessible group.

Table 3.3

Distribution of Target Population and Strata Sample Size for the Distance Learners (ODeL)

Study Centres	Accessible Population Distance Learners	Sample Size
Nairobi	822	84
Mombasa	239	24
Nakuru	217	22
Garissa	80	8
Kisumu	216	21
Kakamega	144	15
Embu	261	27
Nyeri	184	19
Total	2,163	220

Source: ODeL, 2011

Table 3.3 shows eight (8) study centres of ODeL with a total target population of 2,163 with the sample size of 220 (10%) which is a composition of the various strata from the respective study centres.

Table 3.4 shows the distribution of target and accessible population as well as strata sample size for the distance learners at CCE.

Table 3.4

Target Population and Strata Sample Size for the Distance Learners (CCE)

Study Centres	Target Population	Accessible Population	Sample Size
Cape Coast	2727	211	21
Accra	4857	380	38
Ho	2601	198	20
Sunyani	3114	240	24
Takoradi	3510	254	25
Kumasi	5010	380	38
Bolgatanga	2565	190	19
Koforidua	3891	297	30
Tamale	2808	220	22
Wa	1917	150	15
TOTAL	33,000	2,520	252

Source: (CCE, 2011)

Table 3.4 depicts the total accessible population of CCE students as 2,520 out of which a ten (10%) sample size, constituting 252 respondents, was generated.

Table 3.5

Distribution of Sample Size of Lecturers (ODeL and CCE)

Lecturers	Target Population	Accessible Population	Sample Size
ODeL	439	439	88
CCE	2000	360	72
Total	2,439	799	160

Source (CCE, 2011 and ODeL, 2011)

Table 3.5 shows the total target population as 2,439. This constitutes lecturers from the relevant Schools and Departments from both universities engaged by ODeL and CCE to teach distance learners. The accessible population (799) is therefore made up of the lecturers who use the e-learning platform to teach distance learners out of which a sample size of 160 lecturers representing twenty per cent (20%) responded to the questionnaire.

Table 3.6

Distribution of Sample Size for Top Management

Top management	ODeL	CCE	Total
Board members	9	23	32
Directors	3	5	8
Coordinators	8	10	18
Total	20	38	58

(Source: CCE 2011, and ODeL, 2011)

Table 3.6 shows the total sample size of top management at both institutions as 58.

Table 3.7

Distribution of Sample Size for ITSS

ITSS	Target Population	Sample Size
ODeL	32	32
CCE	36	36
Total	68	68

(Source: CCE, 2011 and ODeL, 2011)

Table 3.7 depicts the total sample size for ITSS for ODeL and CCE as 68 which is 100 % of the target population. The entire target population was studied because of the relatively small size of the target population.

3.5 Construction of Research Instruments

3.5.1 Questionnaire:

Questionnaire is one of the best impersonal techniques used for eliciting data from respondents (Leedy 1993). In this study, questionnaire was the major instrument used to collect data from the respondents because they covered a large number of samples and gave standardised questions that were processed easily by the researcher. Milne (1999) asserted that, with a questionnaire, the respondents are free to express their views on issues without fear and also answer the questions at their own pace.

The four different types of questionnaires (see appendices B through to F) used in this study consisted of a mixture of closed and open-ended questions. With slight modifications to suit the objectives of the study, the questions were adapted from the empirical studies of Gokhan and Emine (2010); Pallister and Foxall (1998); Simonson, Smaldino, Albright and Zvacek, (2000) and Tinnerman (2007).

The decision to use items from already constructed instruments were made on the basis that construction of scales to measure perception and attitudes normally go through a complex and technical processes that require a high level of expertise. Indeed, the adapted scales were subjected to rigorous pre-testing processes implying that they can be relied upon to measure the intended variables of this study.

Majority of the items included in the questionnaire is measured with 5-point likert-type scale requiring the respondents to choose from a continuum which is anchored at both extremes (1= strongly disagree to 5=strongly agree). The use of likert-type scale instruments was justified in this study on the ground that participants considered all options provided and selected the most appropriate one that reflect their standpoint regarding the items on the questionnaire.

3.5.2 Focus Group Discussion

The second instrument was a focus group discussion guide (Appendix A). Wilkinson (2004) described focus group discussion as a qualitative data collection method in which one or two researchers and several participants meet as a group to discuss a given research topic or set of issues. Thus, the use of focus group discussion as an instrument in this study served as a further attempt to clarify or probe further for information that were difficult to obtain from the questionnaire. Focus groups are less threatening to many research

participants, and this environment is helpful for participants to discuss perceptions, ideas, opinions, and thoughts (Krueger & Casey, 2000).

This method concentrated on getting additional information concerning the challenges facing e-learning adoption at CCE and KU as spelt out in objectives 1 of the study. The tape-recorded qualitative data was collected from five (5) directors: the Director, the three deputies and one regional representative at ODeL-KU and the five (5) directors at CCE-UCC: the Director, two (2) deputy directors; academic, operation and one (1) regional representative.

The researcher began the group discussion session by introducing himself to the participants and explained to them the protocols of the exercise as well as the overview of the study. The same procedure was adopted during the pilot study sessions held at Jomo Kenyatta University of Agriculture and Technology (JKUAT), Kenya, and University of Education, Winneba, (UEW), Ghana.

3.6 Pilot Study

The instruments needed to be pre-tested to ensure reliability and validity. Pre-testing of the instruments was carried out at the main campuses of Jomo Kenyatta University of Agriculture and Technology (JKUAT), Kenya, and University of Education, Winneba, (UEW), Ghana. These universities were chosen because they have the variables of interest to the researcher. Table 3.8 shows the constituents of the accessible population for the pilot study.

Table 3.8

Distribution of Respondents for Pilot Study

Accessible Population	JKUAT, Kenya	UEW, Ghana
Directors	1	1
Coordinators	3	3
Board Members	3	3
ITSS	5	5
Lecturers	15	15
Distance learners	20	20
TOTAL	47	47

Source: (P. Nyagorme, 2012)

Table 3.8 shows that 47 participants were selected from JKUAT, Kenya and 47 from UEW, Ghana for the pilot study. This exercise, apart from giving the researchers hands-on experience in data collection and giving an insight into the feasibility of the main study, helped to ensure the validity and reliability, as well as external validity of the instruments.

3.6.1 Validity

It is crucial to the overall thoroughness and quality of the questionnaire that it was deemed validated prior to the actual data collection. Validity, according to Mugenda and Mugenda (2003), refers to the degree to which results obtained from analysis of the data actually represent the phenomenon under study. It has to do with how accurately the data obtained in the study represents the variables of the study. As indicated by Morrow (2002 cited in Ridley 2005), there are three forms of validity that can be related to instruments: content; construct and criterion. These forms of validity are assured in the study.

3.6.1.1 Construct Validity

This is a measure of the degree to which data obtained from an instrument meaningfully and accurately reflects or represents a theoretical concept (Morrow 2002, cited in Ridley 2005). Construct validity is assessed by comparing trends or relationships from data collected via a self-report questionnaire with established trends or relationships that previous research findings are in clear agreement with. Therefore, an instrument with construct validity should provide information on a trend or relationship that should logically or theoretically occur if the instrument were valid *(ibid).*

In this study, care was taken to construct the instruments based on related previous studies and the theories reviewed. The study hypothesised relationships among variables (constructs) some of which have been statistically validated by the previous studies published in credible magazines, journals, books and websites as exemplified by Gokhan and Emine (2010); Pallister and Foxall (1998); Simonson, Smaldino, Albright and Zvacek, (2000) and Tinnerman (2007). This study was, therefore, situated into the broad established construct validity by looking at the variables in the context of e-learning adoption and utilisation in distance education delivery in Ghana and Kenya.

Other measures taken to ensure construct validity was to include the following statements on the questionnaire as a preamble: that “the study is purely an academic exercise and respondents will not be asked to give their names. There will be no reward associated with responding to the questionnaire and it

will fully be voluntary". These statements were meant to instil confidence in the respondents to give reliable responses. During data analysis questionnaires with excessively missing data were eliminated with the view of maintaining construct validity of the study.

3.6.1.2 Content Validity

Content validity, according to Mugenda and Mugenda (1999) is a measure of the degree to which data collected using a particular instrument represents a specific domain of indicators or contents of a particular concept. To ensure content validity for the study, all the major independent variables necessary to validate the content of the study were identified in the existing literature and theoretical framework reviewed. Further, to ensure a comprehensive coverage of the content, mixed methodology was employed to explore the various facets of e-learning adoption and utilisation, from the adopters' and the end-users' perspectives.

Moreover, content validity of the instrument was also established by selecting experts consisting of six individuals (two faculty members from Educational Communication Technology Department, KU, two faculty members from ODeL-KU and CCE-UCC respectively and two PhD students) who had experience in fields related to the instrument design. These experts were asked to review the adapted version of the instrument and compare them with the original instruments presented to them. The essence of this process was to further ensure the clarity and accuracy, appropriateness as well as the consistency of the questionnaire in measuring the objectives of the study. The

feedback received helped the researcher to delete items considered inappropriate. Furthermore, biased, unclear and ambiguous items, which were detected, were accordingly modified in line with the objectives guiding the study.

3.6.1.3 Criterion Related Validity

Criterion related validity is used to demonstrate the accuracy of a measure or procedure by comparing it with another measure or procedure which has been demonstrated to be valid (Moss 1998). Ridley (2005) also indicated that criterion validity is demonstrated when there is a strong relationship between the scores from the two measurement procedures.

To maintain a high criterion related validity for this study, the instruments were assembled based on already well-established instruments which have demonstrated content, construct, criterion validity and reliability. For example, with the adoption of e-learning at the universities almost all the questions contained in the questionnaire were substantially based on the Innovativeness Scale (IS) which was first developed by Hurt, Joseph and Cook (1977) and had reliability of 0.94. Other researchers such as Pallister and Foxall (1998) and Simonson, Smaldino, Albright and Zvacek, (2000) used the (IS) instruments in their studies. With the IS, Pallister and Foxall studied a population of 308 British consumers and found a high reliability of 0.88 and high validity. Similarly, Simonson, Smaldino, Albright and Zvacek (2000) administered the IS to 1693 teachers and found the mean to be 105.1 with a

standard deviation of 14.46 and the IS found to have, an internal consistency reliability, of 0.88.

The rest of the questions were picked from the study of Gokhan and Emine (2010). The research focus of Gokhan and Emine centred on the comparison of the theory of reasoned action and the theory of planned behavior: An application of accountants' information technology usage. Gokhan and Emine used Cronbach's Alpha coefficient to measure the reliability and internal validity. All variables of TRA yielded cronbach Alpha values over 0.83. According to Gokhan and Emine, the scale items used in their study have been tested in previous researches and, therefore, are theoretically strong. For example, the scales that measure accountants' intention to use IT were modified from the studies of Lee, Cheung and Chen (2005); Madden, Ellen, Pamela and Ajzen (1992) and Cheng, Sheen and Lou (2006).

Also, the attitude and the perceptions scales were adapted from the studies of Yang and Yoo (2004); Lee (2006); Shih (2004). Furthermore, Planned Behaviour Control scales were also modified from the study of Ajzen and Madden (1986). All these instruments provided sources of secondary data from which the questionnaire items for this study were built.

With the instruments (Appendix D and F) that measured distance learners and lecturers' perceptions, attitude and skills about e-learning utilisation, the survey questions were adapted from Tinnerman's (2007) dissertation entitled 'University Faculty Expressions of Computer Self-efficacy and Personal

Attitudes Regarding the Viability of Distance Learning'. Tinnerman also adapted these questions from Gilmore's (1998) dissertation entitled 'Impact of Training on the Information Technology Attitudes of University Faculty'. The analysis for internal reliability conducted by Tinnerman yielded a Chronbach's alpha of 0.83 and was deemed to be acceptable and appropriate for the current study.

It is noteworthy that the consistency observed in the instruments of Pallister and Foxall; Simonson; Tinnerman, and Gokhan and Emine clearly indicated that the instruments for this study could be relied upon as a true measure of the objectives of the study. Besides, during coding, extra care was taken not to drift in the definition of codes. This was accompanied by constantly comparing data with the codes and by writing memos about the codes and their definitions.

On the other hand, unlike the quantitative research which on the onset could produce objective validity and reliability, qualitative research yields subjective information observed and analysed through the lenses of the researcher. Creswell (2003) advised that the researcher must strive to produce high quality qualitative data that are credible, trustworthy, authentic and balanced through systematic data collection procedures, multiple data sources, triangulation and external reviews. In the process of the focus group discussion held with the directors at ODeL-KU and CCE-UCC, issues of credibility cropped up but were tackled instantly. Probing questions were asked to refine ambiguous statements and personal sentiments expressed by the discussants. Furthermore,

during analysis of the data, the transcripts were thoroughly checked against the audio recording to make sure that they do not contain obvious mistakes during transcription.

3.6.2.1 External Validity

External validity is the extent to which the finding of a particular study or experiment can be applied to the individual and settings beyond those that were studied. Thus, it is the degree to which findings can be generalised to populations and environment outside the experimental settings (Mugenda & Mugenda 2003). The researcher's careful selections of the sample size to a larger extent guaranteed this aspect validity. Besides, selection of JKUAT to pilot-test the instrument before administering them to UCC and ODeL turns to demonstrate external validity of the study.

3.6.3 Reliability

Reliability refers to the measure of the degree to which a research instrument yields consistent results. It is the stability of measurement and relates to the absence of random errors of measurements (Mugenda & Mugenda 2003). Reliability measure demonstrates that the operations of study such as data collection procedures could be repeated, with similar results. Mugenda and Mugenda recommended using the internal consistency technique to calculate the reliability coefficient.

Besides estimating conservative value of reliability coefficient, the Cronbach's Coefficient Alpha has an added advantage of reducing the time required to

compute a reliability coefficient. Like, Mugenda and Mugenda (2003), Cooper and Schindler (2003) also confirmed that Cronbach's Alpha is a good way to measure construct reliability because the higher the Cronbach's Alpha is, the more reliable the construct is. Nunnally (1978) indicated that when researchers achieve an alpha level of 0.70 or above, it provides a sufficient ground for researchers to proceed to use their reliable scales with greater confidence in their result. The statistical package for social sciences version 16 (SPSS v. 16) was used to calculate the Cronbach's alpha reliability coefficient of the scales. The composite scales of Cronbach's alpha reliability coefficient are presented in Table 3.9.

Table 3.9

Distribution of Cronbach's Alpha Reliability Coefficient for the Study

Variables	Reliability Coefficient
Managerial attributes scale for top management	0.76
E-learning attributes scale for top management	0.87
Institutional attributes scale for top management	0.84
Basic ICT scales for ITSS	0.95
Information System management Scale for ITSS	0.96
Perceived e-learning self-efficacy scales for lecturers	0.84
Perceived e-learning usefulness scales for lecturers	0.85
Perceived e-learning attitudes scales for lecturers	0.71
Perceived e-learning self-efficacy scales for distance learners	0.85
Perceived e-learning usefulness scales for distance learners	0.92
Perceived e-learning attitudes scales for distance learners	0.91

Table 3.9 shows the results of the Cronbach's alpha reliability coefficient of this study. The Table revealed that Cronbach alpha reliability coefficient of all the scales were above the critical value of 0.70. Given the determined reliability, the questionnaires were considered reliable and, therefore, adopted for the collection of data.

3.7 Data Collection Techniques

Data collection refers to "gathering information to serve or prove some facts" (Kombo & Tromp 2006. P. 99). After the instruments for this study were thoroughly refined, eight (8) research assistants were engaged and trained on how to collect the required data for the study. Firstly, an introductory letter collected from the Kenyatta University and the Ministry of Higher Learning, which regulates research related activities for various educational institutions in Kenya. Secondly, a preliminary contact was made to the Directors of ODeL-KU and CCE-UCC to discuss the purpose and the significance of the study with them and thereby creating rapport and seeking their support for the intended study. During this meeting, arrangement was made to get the contact details of the respondents in order to contact them in advance and decide on when to administer the instruments.

The administration of the questionnaire lasted for 4 months. Starting in Kenya, the first month was used for the questionnaire distribution. The second month was dedicated to the retrieval of the questionnaire. As the Research Assistants were going round retrieving the questionnaire, the researcher used the opportunity to conduct discussions with the directors. The same process was repeated in Ghana for the remaining two months.

3.8 Data Analysis

In this study, the data collected was represented in narrative, descriptive and inferential manner. Analysing the qualitative data from the top management directors involved reading through the transcripts to develop patterns and

relationships between discrete pieces of the data collected. The synthesised qualitative responses were arranged under the major themes of objectives one (1) of the study. In order to maintain data integrity, confidentiality and anonymity, the participating directors were coded. Thus, the participants from ODeL, KU were coded as ODeP1, ODeP2, ODP3, ODeP4 and ODeP5 referring to directors involved in the discussion. On the other hand, the participants from the CCE, UCC were also coded CCEP1, CCEP2, CCEP3, CCEP4 and CCEP5.

The quantitative data was analysed using the Statistical Package for Social Sciences (SPSS version 16). The descriptive analysis, covering objectives three (3) through to six (6), involved calculating, the percentages, mean (M) and standard deviations (SD) of the variables and presenting the information in the form of cross-tabulations to showcase the comparative aspects of the study.

Furthermore, with the inferential statistics, independent sample t-test, tested at the alpha level of 0.05 was applied on all the hypotheses with the view of determining the statistically significant differences between UCC and KU in the areas specified under the hypotheses.

3.9 Logistical and Ethical Considerations

The researcher worked with the available funds and other logistics within reach and gave due considerations to the legal framework governing the conduct of academic research. Participation in this research was voluntary. All

participants were identified only by means of randomly assigned case numbers on the survey instruments during data analysis. Personally identifying information such as names, email address and other contact details incidentally put on the instruments were cancelled. The researcher assured all the participants, full confidentiality and anonymity. Directors of CCE and ODeL at the two Universities were unaware of which members of the faculty or distance learners have agreed or declined to participate. With these safeguards, the study posed no ethical problems to the participants.

4.0 Chapter Summary

Chapter three covered the research procedures followed to obtain and analyse data on the e-learning adoption and utilisation in Kenyatta University, Kenya and university of Cape Coast, Ghana. The chapter focused on using the statistical tools to analyse the data and present findings of the study.

CHAPTER FOUR

DATA ANALYSES AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter covers the analysis of data, its presentation of the major outcomes of the statistical analysis used to investigate the various facets of e-learning adoption and utilization at Kenyatta University, Kenya and University of Cape Coast, Ghana.

The research objectives of this study were used to guide the analyses and presentation of the data from the two universities. The qualitative data, which showcased each of the universities in terms of challenges facing e-learning adoption and utilisation, was presented in a narrative form. On the other hand, the quantitative data was analysed descriptively using cross-tabulations expressed in percentages; presented in frequency tabular format. The items, based on the five-point likert scale: 5 = strongly agree, 4 = Agree, 3 = undecided, 2 = Disagree, 1 = Strongly Disagree were recoded into two categories: 4-5 as agree and 3, 2 and 1 as disagree. For the purpose of the variable comparisons between ODeL- KU and CCE-UCC, only the responses that indicated “agree” were analysed and used in this study.

A further statistical tool employed to test the hypotheses of the study was independence sample t-test. This inferential statistical tool helped to establish differences between University of Cape Coast and Kenyatta University in

relation to the variables being investigated. The independence sample t-statistic was tested at 0.05 alpha levels. The use of independence sample t-test was based on the assumption that the independent variables under investigation were normally distributed, and the two institutions were independent of each other. However, where the homoscedasticity assumption was violated for the two samples, the appropriate adjusted t-statistic was reported. Conclusions were then drawn to reject or fail to reject the null hypotheses guiding the study.

Below are the research objectives and the hypotheses:

i. Find out the major challenges facing e-learning adoption at UCC and KU;

ii. Find out the major attributes that affect e-learning adoption and utilization at UCC and KU;

iii. Evaluate the ICT skill level of Information Technology Support Staff (ITSS) at UCC and KU;

iv. Establish lecturers' perceived preparedness to use e-learning at UCC and KU,

v. Establish the students' perceived preparedness to use e-learning at UCC and KU.

The hypotheses are:

H_{01}: There is no statistically significant difference between UCC and KU in terms of perceived e-learning attributes;

H_{02}: There is no statistically significant difference between UCC and KU in terms of e- learning managerial attributes;

H_{03}: There is no statistically significant difference between UCC and KU in terms of Institutional e-learning attributes;

H_{04}: There is no statistically significant difference between UCC and KU in terms of ICT skills acquired by ITSS;

H_{05}: There is no statistically significant difference between UCC and KU in terms of lecturers' preparedness to use e-learning;

H_{06}: There is no statistically significant difference between UCC and KU in terms of distance learners' preparedness to use e-learning.

4.2 The Major Challenges Facing E-learning Adoption

This section addressed the first objective of this study which was meant to find out the views of directors about the major challenges facing adoption and utilisation of e-learning in ODeL-KU and CCE-UCC. Unstructured focus group discussion guide was used (See Appendix A).Every participant was given equal opportunity to comment on the subject matter. Therefore, the qualitative data gathered provided a rich account of the e-learning implementation challenges that need to be tackled in both institutions.

4.2.1 The Major Challenges Influencing E-learning Implementation at Open and Distance eLearning, Kenyatta University

The qualitative data collected from the focused group discussion held with the directors of ODeL-KU have been presented based on the following major themes:

A. Individual characteristics;

B. Technological Challenges;

C. Institutional Factors;

D. Energy related problems.

4.2.1.1 Individual Characteristics Affecting E-learning Implementation at Open and Distance E-learning, Kenyatta University

Under the sub-theme of individual characteristics, information was sought on diverse human factors that negatively affect implementation of e-learning in Kenyatta University. Different barriers that emerged are presented below:

a. Attitude of Lecturers

All the directors identified negative attitude of the lecturers as a major challenge to effective utilisation of e-learning in Kenyatta University. One of the directors said:

> Many of the lecturers were used to face-to face method of teaching for a long time, produced professors, and do not understand how e-learning could be more effective than face-to-face interaction with the students (ODeP2, 2012)

Another discussant highlighted:

> …this perception is more pronounced among the older lecturers who find it difficult to learn new skills of teaching on-line than the younger lecturers (ODeP1, 2012).

Notwithstanding the acquisition of e-learning facilities in KU, Comments from the directors of ODeL, KU suggested that negative attitude of lecturers remains one of the major challenge to e-learning adoption and utilisation in Kenyatta University.

b. The Level of Motivation of Lecturers

Closely linked to the discussion of lecturers' attitudes identified was their low level of motivation to use Moodle platform in KU. According to the directors, some of the lecturers usually complain that they were not well motivated (remunerated) to teach on-line. One of the respondents asserted that:

> They most often agitate for more pay if they were engaged on on-line teaching…many of them do not insist that students participate in the on-line activities such as submitting assignments on-line and on-line discussion forum, among others (ODeP3, 2012)

The low level of motivation as expressed by the directors of ODeL-KU seemed to have negatively impacted on the effective use of the e-learning platform in Kenyatta University.

c. Attendance of E-learning Training Workshops and Seminars

Another challenge facing the ODeL, KU management, as pointed out by one of the directors, is the general lack of interest in attending e-learning workshops organized by the institute. One of the deputy directors quantified that:

> …. about 40% of the targeted lecturers do not attend training workshops organized for them…..the apathy displayed by some of these lecturers especially the older ones is a great source of worry for the ODeL-KU management team (ODeP2, 2012)

Poor attendance at e-learning workshops and seminars of lecturers undoubtedly resulted in low level of e-learning utilisation in Kenyatta University.

d. Loss of Intellectual Property

Teaching notes and other such materials belonging to lecturers are held in high esteem and protected by the lecturers. When the discussants were asked to comment on the intellectual property of the lecturers they had this to say:

> Lecturers were apprehensive to upload their lesson notes onto the e-platform for fear of losing control over their intellectual property…The reason some of them ascribed was that if the university fails to renew their contract, they cannot retrieve their lesson notes and other intellectual property uploaded unto the e-platform (ODeP5, 2012)

This fear has the tendency of reducing e-leaning adoption and utilisation in Kenyatta University.

4.2.1.2 Technological Challenges Influencing E-learning implementation at Open and Distance E-learning, Kenyatta University

Technology plays a critical role in e-learning implementation. Therefore, the study participants were asked to share their views on the technological issues affecting e-learning adoption and utilisation in KU. The following factors emerged from the discussants:

a. Access to Personal Computers

The discussants were unanimous in considering access and ownership of personal computers as a major challenge. One of the directors remarked:

> Despite the programmes embarked upon by the university to resource the lecturers and students with laptops at affordable prices, the number of them who still do not have personal computers are very high (ODeP1, 2012)

The implication of this finding is that unavailability of personal computers invariably hampers the rate at which lecturers and students acquire the needed ICT skills for e-learning usage.

b. Internet Connectivity

The basic requirement for meaningful use of any e-learning platform is to be able to have hassle-free access to the internet. The discussants expressed disappointment about the daily sporadic and low internet connectivity that bedevilled Kenyatta University as one of them noted:

> Making the internet services accessible, reliable and affordability, especially at the rural areas of Kenya, remain a complex and difficult challenge for the smooth implementation of e-learning at ODeL-KU (ODeP2, 2012)

Effective e-learning utilisation in the universities hitches on internet availability and reliability. Therefore, instability in internet connections can frustrate the Kenyatta University administrator, lecturers as well as the distance students.

c. Virus Attack

It emerged from the discussion that incessant virus attacks on the e-platform has been a real challenge for the University. This is what one director had to say:

> Management used several versions of anti-virus software but no permanent solution seems forthcoming……some of the viruses corrupt the systems (ODeP1, 2012)

Another director hinted:

> Some of the computers which the lecturers us do not have licensed antivirus software, making it difficult for them to boot those computers and let alone upload lesson notes from their office computers (ODeP3, 2012)

The foregoing comments on the issue of viruses seemed to be frustrating ODeL management.

d. Data Security.

Data security is a critical issue alluded to by the directors as the e-platform operates on an online environment which is difficult to regulate. A deputy director reported:

> …attempts at hacking the e-learning platform by unscrupulous individuals are experienced intermittently by the system administrators….the management is very apprehensive as to how to maintain security level of the e-learning platform to prevent infiltrators (ODeP4, 2012)

The occurrences of hacking suggest that management faces a serious problem protecting the e-platform.

4.2.1.3 Institutional Factors

a. Absence of E-learning Policies

Successful implementation of e-learning in universities must follow comprehensive e-learning policy guidelines. One of the deputy discussants revealed:

> Kenyatta University does not have an e-learning policy document (ODeP2, 2012)

However, another participant was quick to explain:

> the university has ICT implementation strategy policy embodied in the University's Strategic and Vision Plan 2005 – 2015 document…..This document is an embodiment of ICT policy in KU of which ODeL is a part (ODeP1, 2012)

This constraint identified limits consistent implementation of e-learning in Kenyatta University.

b. Administrative Bureaucracy

Payment made to faculty members after teaching online came out as a critical issue.

> While the lecturers expect payment to be done within a few days after work is done, the university administrative and financial regulations are quite cumbersome hence delaying payment. (ODeP5, 2012)

This was a comment from one of the directors. This situation is likely to infuriate the staff, hence affecting their morale at work.

4.2.1.4 Energy Related Problems: Frequent Power Outage

Universities cannot effectively implement e-learning without uninterrupted supply of electricity. When asked about status of electricity supply, a director had this to say:

> The university is saddled with frequent electricity outages….and it is also exorbitant to maintain the thermal plants because the university spends a lot of money on fuel (ODeP4, 2012).

It is obvious that this phenomenon has the tendency of disrupting smooth running of e-learning systems of the University.

4.2.2 The Major Challenges Influencing E-learning Adoption and Utilisation at the Centre for Continuing Education, University of Cape Coast

Since it is a comparative study, the same items were administered at CCE-UCC. This subsection is therefore organized in line with the aforementioned themes prescribed under ODeL-KU.

4.2.2.1 Individual Characteristics: Lack of Top Management Commitment to E-learning Implementation

On the issue of individual characteristics affecting e-learning adoption and utilisation, all the six focus group members believed that commitment by top administrators to implement e-learning is low. One of the directors asserted:

> The need to advance the adoption of e-learning has been topical issue for CCE-UCC in recent times at the university….many suggestions and proposals, on the advancement of e-learning for CCE, have been forwarded to the university administration on many occasions. However, attitudes and commitment to e-learning adoption at CCE especially among the top administration of UCC were mixed, ranging from highly sceptical, to highly supportive of e-learning adoption". Some of the top administrators of UCC most often question the pedagogical philosophy underpinning effectiveness of e-learning (CCEP1, 2012)

The discussants observed that there was a strong allegiance to face to face teaching model than online teaching at UCC.

Another group member also vividly recalled:

> On one occasion, a top administrator of UCC reportedly said: "we are not able to perfect the manual system we adopted so far let alone e-learning (CCEP3, 2012)

The said member further asserted:

> Majority of the top administrators of UCC fear loss of control over the distance learning programme and content and therefore would like to remain with the face-to-face model (CCEP3, 2012)

These observations are indicative that there is widespread lack of awareness among the top administration of UCC about the advantages of e-learning over face-to-face teaching.

4.5.2.2 Technological Challenges: Internet Connectivity.

Low internet connectivity was also mentioned as a barrier to effective e-learning adoption at CCE-UCC. There was a convergent view of the discussants that:

> Enthusiastic lecturers who are using the Moodle platform normally complain of low bandwidth resulting in unreliable internet connectivity (CCEP5, 2012)

One of the directors observed that:

> This situation frustrates and discourages the few enthusiastic lecturers who use the e-platform (CCEP2, 2012)

These experiences suggest that access to bandwidth by the university is a herculean task that the university must overcome.

4.5.2.3 Institutional Challenges:

a. Lack of Funds for E-learning Project

Successful adoption and utilisation of e-learning depends on availability of fund. Commenting on this assertion, one of the directors said:

> Even though CCE-UCC can boast of availability of large sums of financial resources, its allocation specifically for e-learning adoption projects is worrisome (CCEP4, 2012)

Yet another discussant indicated:

> The university administrators accorded priority to building regional study Centres and management believed that when these Centre building projects are completed, the next agenda will be to formally embark upon an aggressive e-learning project for the Centre. (CCEP5, 2012)

This arrangement, to some of the directors, contributes to late adoption and utilisation of e-learning.

b. ICT Skill Training

One major area of concern for e-learning adoption in universities is the level of ICT skills acquired by the staff and the lecturers. In this regards, the discussants were unanimous in agreeing to the suggestion posed by the researcher whether they consider ICT skill level of lecturers and students as a challenge.

In response to this, a discussant indicated that

> Both students and lecturers especially those in rural areas lack the needed ICT skills to effectively use the e-learning platform being implemented by the Centre (CCEP5, 2012)

This finding revealed that lack of ICT skills of lecturers and distance learners at UCC constitute barrier to effective e-learning implementation in the university.

4.5.2.4 Energy Related Factors: Sporadic Power Supply

Smooth academic work largely depends on auxiliary facilities such as constant electricity supply. All the participants expressed a common view on lack of sufficient supply of electricity to constantly power the equipment (servers) at the university.

> This problem, is more pronounced at the rural areas of Ghana where getting power constantly for a week seems to be a miracle for the rural dwellers (CCEP4, 2012)

This phenomenon is likely to discourage many lecturers and distance learners who are on the e-platform

4.5.3 Summary of the Challenges Facing E-learning Adoption and Utilisation

The foregoing analyses revealed that, despite efforts by the Kenyatta University and University of Cape Coast to implement e-learning, there are teething common problems threatening full adoption and utilisation of e-learning in the two universities. These challenges (1) general lack of knowledge about e-learning, (2) low level of motivation among lecturers, (3) fear of loss of intellectual property, (4) low internet connectivity, (5) absence of e-learning policy, (6) lack of ICT skills, lack of access to personal computers, (7) data security issues, (8) virus attack,

(9) administrative bureaucracies, (10) lack of funds, (11) poor attendance of e-learning workshops, seminars and power outages.

The qualitative data gathered on the challenges as stated in objectives one was not sufficient enough to comprehensively address the topic under investigation. This is due to the inherent biases that are associated with qualitative research design. In order to mitigate the negative effects that these biases might pose to the final picture of e-learning adoption and utilisation in the two universities, the study further explored other related factors which were quantitatively examined.

4.3 The Major Attributes that Affect E-learning Adoption and Utilization at University of Cape Coast, Ghana and Kenyatta University, Kenya

The second objective sought to find out the extent that the major attributes affect e-learning adoption in the two universities. The three critical but yet understudied factors that are related to: The e-learning attributes, managerial personality attributes and institutional attributes.

4.3.1 Profile of Respondents (Top Management)

The data for this objective were obtained from the top-management of Open and Distance eLearning, Kenyatta University (ODeL-KU), Kenya and Centre for Continuing Education, University of Cape Coast (CCE-UCC), Ghana. The Top-Management, in this study, comprised of the Board members, Directors and the Centre Coordinators of ODeL-KU, Kenya and CCE-UCC, Ghana. A total of 58 questionnaires, 23 for ODeL-KU and 35, CCE-UCC, were

distributed. The response rate of ODeL- KU was (23) 100% while CCE-UCC was (30) 86%. At the time of data collection from CCE-UCC, 5 of the target participants were not accessible. However, these response rates were considered sufficient enough for the conduct of research and the inductive conclusions drawn from the data fairly represents the state of e-learning adoption at ODeL- KU and CCE-UCC.

4.3.2 Effects of E-learning Attributes on E-learning Adoption

This sub-section presents the findings related to e-learning attributes that influence adoption of e-learning. The attributes include e-learning relative advantage, compatibility, complexity, trailability and observability. Questionnaire items, which were initially 5-point likert scale ranging from strongly disagreed to strongly agree were recoded into two: disagreed and agree. For the purpose of this analysis, the percentages of the respondents who agreed on the statements were presented in frequency Tables and inferential statistics using independent sample t-test to test the hypotheses.

The 1-5 items on the questionnaire (see appendix B) sought the views of the top management on e-learning relative advantages and their influence on the adoption of e-learning as presented in Table 4.1

Table 4.1

Distribution of Top-Managements' View on Relative Advantages of Adopting E-learning

Relative advantages as a factor for e-learning adoption	Institutions	
Statements	ODeL-KU	CCE-UCC
E-learning enables lecturers to provide faster feedback to distance learners than face to face teaching and learning	92%	73%
E-learning improves distance learners' performance better than face teaching and learning	46%	30%
E-learning improves institution's administrative effectiveness and efficiency.	83%	73%
E-learning enables distance learners interact with their lecturers more frequently than face to face teaching and learning	75%	83%
My institution opted for e-learning based on the relative advantages it has over face to face teaching and learning	75%	53%

Table 4.1 shows that the top managements of ODeL-KU (92%) and CCE-UCC (73%) agreed that e-learning enables lecturers to provide faster feedback to distance learners than face to face teaching and learning. It was also revealed that the majority of the respondents from both institutions considered adopting e-learning. This was because they found it important in improving the respective institutions' administrative efficiency and effectiveness (ODeL-KU, 83% and CCE-UCC, 73%). Besides, it was widely held that e-learning enables distance learners to interact with their lecturers more frequently than face-to-face teaching and learning (ODeL-KU, 75% and CCE-UCC, 83%). On the other hand, as compared to face-to-face teaching and learning, as high as 64% and 70% from ODeL-KU and CCE-UCC respectively perceived e-learning not able to improve distance learners' performance. 75% of respondents from ODeL-KU, and 53 percent from CCE-

UCC agreed to the assertion that institution opted for e-learning based on the relative advantages.

The variations in the two institutions suggested that while ODeL-KU rated high relative advantages associated with e-learning adoption, CCE-UCC respondents seemed to be a bit sceptical about the relative advantages of e-learning. This scepticism affects the rate of e-learning adoption in CCE-UCC.

The questionnaire items from 6-10 (see appendix B) sought the views of the top management on perceived e-learning compatibility and its influence on the adoption of e-learning as presented in Table 4.2

Table 4.2

Distribution of Top-Managements' View on Compatibility as a Factor of Adopting E-Learning

Statements institutions	ODeL-KU	UCC-CCE
I opted for e-learning because it fits well with the existing ICT infrastructure of my institution	71%	50%
I opted for e-learning because it fits well with the administrative structure and strategies of my institution	67%	58%
I opted for e-learning because it fits well into the lecturers' mode of teaching in my institution	58%	30%
I opted for e-learning because it fits well into the learning style of distance learners of my institution	75%	43%
I opted for e-learning because it is compatible with all aspects of distance education programme delivery of my institution.	79%	47%

Generally, Table 4.2 revealed that, unlike CCE-UCC, ODeL-KU considered e-learning fitting quite well with their administrative structure, strategies, and e-learning styles of the distance learners. However, the results in Table 4.2 depict that both institutions (ODeL-KU, 58% and CCE-UCC, 30%) are

sceptical about e-learning being compatible with the Lecturers' mode of teaching.

The questionnaire items from 11-15 (see appendix B) sought the views of the top management on perceived e-learning complexity factor and its influence on the adoption of e-learning as presented in Table 4.3.

Table 4.3

Distribution of Top-Managements' View on Complexity as a Factor of Adopting E-learning

Complexity as a factor for e-learning adoption:	Institutions	
Statements	ODeL-KU	UCC-CCE
I cannot opt for e-learning for my institution if lecturers find it difficult to use it	50%	60%
I cannot opt for e-learning for my institution if distance learners find it difficult to use it	50%	67%
I opted for e-learning for my institution because Information Technology Support Staff finds it easy to maintain it.	71%	56%
I opted for e-learning for my institution because l understand how to use it	58%	51%
I will opt for e-learning for my institution only if it is easy to troubleshoot	73%	77%

Table 4.3 shows the questions reflecting the e-learning complexity as a determining factor of e-learning adoption. The table revealed that 50% of the ODeL-KU participants, and 60% of CCE-UCC participants were on the view that they cannot opt for e-learning for their institutions if lecturers find it difficult to use it. Furthermore, 50% of ODeL-KU participants as well as 67% participants from CCE-UCC opined that if learners find e-learning difficult to use it they are not likely to adopt e-learning. Seventy one (71%) of ODeL-KU participants stated that the ITSS finds it easy to maintain the e-learning platform while, in the case of CCE-UCC, only 56% participants believe in the

same. However, both institutions were of the view that e-learning system should be easy to troubleshoot to facilitate its adoption as 73% and 77% participants from ODeL-KU and CCE-UCC respectively agreed to the statement.

The questionnaire items from 16-20 (see appendix B) sought the views of the top management on perceived e-learning trialability factor and its influence on the adoption of e-learning as presented in Table 4.4

Table 4.4

Distribution of Top Managements' View on Trialability as a Factor of Adopting E-Learning

Trialability as a factor for e-learning adoption:	Institutions	
Statements	ODeL-KU	UCC-CCE
My decision to opt for adopting e-learning is based on the opportunity to run a trial version.	54%	67%
My decision to opt for adopting e-learning is based on being part of its development and pilot testing.	50%	67%
My decision to opt for adopting e-learning is based on the opportunity given to my lecturers to try it out for a reasonable period	58%	80%
My decision to opt for adopting e-learning is based on the opportunity given to the learners to try it for a reasonable period	75%	73%
I opted for e-learning for my institution because its usage is demonstrated to me.	61%	80%

Table 4.4 captured the participants' opinion on whether they based their decision to adopt e-learning on the opportunity to pilot-test its workability. On the average, both universities considered trial tests of the e-platform as a prerequisite for e-learning adoption. Centre for Continuing Education participants indicated the highest emphasis (80%) in the area of e-learning

system to be demonstrated to their lecturers and learners at a reasonable period before the decision to adopt it.

The questionnaire items from 21-25 (see appendix B) sought the views of the top management on perceived e-learning observability factor and its influence on the adoption of e-learning as presented in Table 4.5

Table 4.5

Distribution of Top-Managements' View on Observability as a Factor of E-Learning Adoption

Observability as a factor for e-learning adoption:	Institutions	
Statements	ODeL-KU	UCC-CCE
I opted for e-learning for my institution because the benefits of using it are apparent to me	91%	80%
I opted for e-learning for my institution because the lecturers observe its functionality and recommended its adoption	50%	83%
I opted for e-learning for my institution because I have seen other universities adopting it.	66%	43%
I opted for e-learning for my institution because the distance learners observe its functionalities and recommended its adoption	50%	69%
I opted for e-learning for my institution because the ITSS observes its functionalities and recommended its adoption	41%	63%

Table 4.5 presents data on observability as a factor determining e-learning adoption at ODeL-KU and CCE-UCC. An overwhelming majority (91% ODeL-KU participants and 80% CCE-UCC participants) asserted that the benefits of using must be demonstrated to them. CCE-UCC participants strongly felt that lecturers and distance learners must also observe the functionalities of e-learning and recommend its adoption. While Table 4.5 revealed that ODeL-KU did not see the absolute necessity of ITSS

recommending e-learning adoption as represented by 41% of the respondents, 63% of CCE-UCC participants agreed with the statement that ITSS must observe the functionalities of the e-learning platform and recommend its adoption.

To assess the respondents' perception on the variables associated with the significant factors influencing e-learning adoption at ODeL-KU and CCE-UCC, the respective statements were aggregated and recorded. The results are captured in Figure 4.1

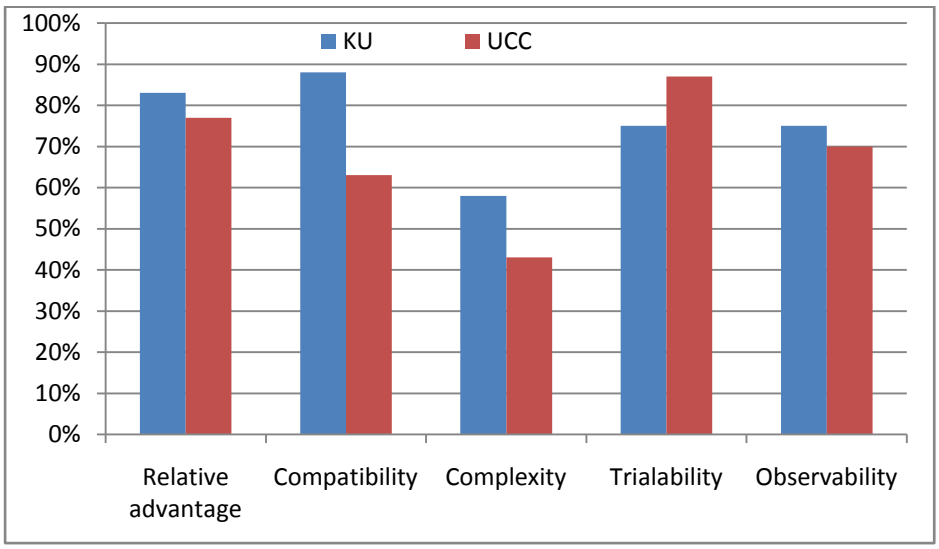

Figure 4.1: Inter-institutional comparison of e-learning attributes.

Figure 4.1 presented a composite picture of factors affecting e-learning adoption at ODeL-KU, Kenya and CCE-UCC, Ghana. While ODeL-KU considered compatibility (88%) as an important determinant factor of e-learning adoption, CCE-UCC respondents viewed trialability as a major factor. It is worth noting that both institutions do not place much premium on e-learning complexity. Only 58% and 43% participants from ODeL-KU and CCE-UCC respectively agreed that complexity should be a factor to consider.

In sum, it was revealed that e-learning attributes such as its relative advantage, compatibility, complexity, trialability and observability are major factors influencing e-learning adoption in ODeL-KU, Kenya and CCE-UCC, Ghana.

4.3.2.1 There is no Statistically Significant Difference between CCE-UCC and ODeL-KU in terms of the E-learning Attributes

The following specific null hypotheses, emanating from the e-learning attributes were tested at the alpha level of 0.05.

a. H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of relative advantage factor influence on adopting e-learning;
b. H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of compatibility factor influence on e-learning adoption;
c. H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of complexity factor influence on e-learning adoption,
d. H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of trialability factor influence on e-learning adoption,
e. H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of observability factor influence on e-learning adoption.

To provide a comparative direction to the independence variables stated in the hypotheses, mean (*M*) and standard deviation (*SD*), as depicted in Table 4.6, were calculated.

Table 4.6

Group statistics: Comparison of E-learning Attributes at Open and Distance E-learning, Kenyatta University and Centre for Continuing Education

Factors	Institution	N	Mean	Std. Deviation	Std. Error Mean
Relative Advantage	CCE-UCC	30	3.77	.679	.124
	ODeL-KU	24	4.29	.751	.153
Compatibility	CCE-UCC	30	3.57	.626	.114
	ODeL-KU	24	4.21	.658	.134
Complexity.	CCE-UCC	30	3.23	.935	.171
	ODeL-KU	24	3.67	.963	.197
Trialability	CCE-UCC	30	4.07	.868	.159
	ODeL-KU	24	3.88	.741	.151
Observability	CCE-UCC	30	3.97	.765	.140
	ODeL-KU	24	3.88	.612	.125

Table 4.6 shows the *M* and *SD* comparisons of the e-learning attributes as perceived by the two universities. Generally, the mean scores as shown in Table 4.6 revealed that the e-learning attributes were highly considered in both institutions when taking e-learning adoption decision.

Independent samples t-test was used to compare the mean scores of the two Institutions regarding: relative advantage, compatibility, complexity, trialability and observability.

Table 4.7

Results of the Independence Sample T-test: E-learning Attributes

		t-test for Equality of Means							95% Confidence Interval of the Difference	
Factors	Levene's Test for Equality of Variances	F	Sig.	t	df	Sig. (2-tailed)	Mean Dif.	Std. Error Dif.	Lower	Upper
Relative Advantage	Equal variances assumed	1.934	.170	-2.694	52	.009	-.525	.195	-.916	-.134
	Equal variances not assumed			-2.664	46.993	.011	-.525	.197	-.921	-.129
Compatibility	Equal variances assumed	.055	.815	-3.659	52	.001	-.642	.175	-.994	-.290
	Equal variances not assumed			-3.638	48.290	.001	-.642	.176	-.996	-.287
Complexity.	Equal variances assumed	.003	.953	-1.670	52	.101	-.433	.260	-.954	.087
	Equal variances not assumed			-1.664	48.777	.102	-.433	.260	-.957	.090
Trialability	Equal variances assumed	.057	.812	.859	52	.394	.192	.223	-.256	.639
	Equal variances not assumed			.875	51.756	.386	.192	.219	-.248	.631
Observability	Equal variances assumed	1.291	.261	.477	52	.635	.092	.192	-.294	.477
	Equal variances not assumed			.489	51.999	.627	.092	.187	-.284	.468

Table 4.7 shows the independence sample t-test of the two institutions. The results of the t-statistics presented in Table 4.7 assumed equality of variance for the two institutions.

a. *H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of relative advantage factor influence on adopting e-learning*

Regarding relative advantage as a factor of e-learning adoption at ODeL-KU and CCE-UCC, Tables 4.6 and 4.7 revealed a statistically significant difference between ODeL-KU (M = 4.28, SD = 0.751) and CCE-UCC (M = 3.77, SD = 0.679) with t(52) = 2.694, p = (0.009). Therefore, the null hypothesis that there is no statistically significant difference between ODeL-KU and CCE-UCC in terms of relative advantage as a factor influencing e-learning adoption is rejected. These results suggested that ODeL-KU placed a higher level of emphasis on relative advantage as a factor to consider when taking decisions on e-learning adoption than CCE-UCC.

b. *H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of compatibility factor influence on e-learning adoption*

Furthermore, Tables4.6 and 4.7 showed a statistically significant difference between ODeL-KU (M = 4.21, SD = 0.658) and CCE-UCC (M = 3.57, SD = 0.626),t(52) = 3,659, p = 0.001. The test statistics revealed that ODeL-KU considered highly compatibility factor to implement e-learning than CCE-UCC. Therefore, the specific null hypothesis that there is no statistically significant difference between ODeL-KU and CCE-UCC in terms of compatibility as a factor influencing e-learning adoption is rejected.

c. *H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of complexity factor influence on e-learning adoption*

With complexity as a factor influencing e-learning adoption at ODeL-KU and CCE-UCC, Tables 4.6 and 4.7 revealed that there is no statistically significant difference between ODeL-KU (M = 3.67, SD = 0.963) and CCE-UCC (M = 3.23, SD = 0. 935), with $t(52) = 1.670$, $p = 0.101$. The test statistics suggested that even though the mean scores are different between the two institutions, the difference is not statistically significant. Thus, both institutions gave the same weight to perceived e-learning complexity as a factor to consider while taking adoption decisions. The statistical test, therefore, failed to reject the null hypothesis because there is no statistically significant difference between ODeL-KU and CCE-UCC in terms of complexity as a factor influencing e-learning adoption.

d. *H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of trialability factor influence on e-learning adoption*

Furthermore, the independent sample t-test conducted to compare ODeL-KU and CCE-UCC as shown in Tables 4.6 and 4.7 portrayed CCE-UCC (M = 4.07, SD = 0.868) showing higher preference to trialability factor than ODeL-KU (M = 3.88, SD = 0.741). However, the test statistics revealed that there is no statistically significant difference between ODeL-KU and CCE-UCC in terms of trialability factor influence on e-learning adoption; (t (52) = 0.859, p = 0.394)). The test statistics therefore failed to reject the null hypothesis.

e. *H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of observability factor influence on e-learning Adoption*

Finally, the results of the test statistics as depicted in Tables 4.6 and 4.7,indicate that CCE-UCC had slightly higher preference to observability factor (M = 3.97, SD = 0.765) than ODeL-KU (M = 3.88, SD = 0.612), $t(52)$ = 477, p = 0.635. However, the test shows that there is no statistically significant difference between ODeL-KU and CCE-UCC in terms of observability factor influence on e-learning adoption. This implied that the test statistics failed to reject the null hypothesis that there is no statistically significant difference between ODeL-KU and CCE-UCC in terms of observability as a factor affecting e-learning adoption.

In conclusion, the study revealed that the two universities do not give the same weighting to perceived relative advantage and compatibility factors in adopting e-learning. On the other hand, the test statistics revealed no differences in the two universities in the areas of perceived complexity, trialability and observability.

4.3.3 Effects of Managerial Personality Traits on E-learning Adoption

This sub-section presents findings related to management personality traits such as innovator traits, early adopter, early majority, late majority characteristics as well as the laggard traits exhibited by the top managements of ODeL-KU and CCE-UCC.

The questionnaire items from 1-5 (see appendix B) elicited responses from the top management regarding innovator attributes as presented in Table 4.8.

Table 4.8

Distribution of Innovators' Attributes Factor Affecting the Rate of E-learning Adoption

Innovators' attributes influencing the rate of e-learning adoption	Institutions	
Statements	KU-ODeL	UCC-CCE
I have the ability to cope with a high degree of uncertainty while taking e-learning adoption decision	75%	27%
I am eager to adopt e-learning solutions which are not well proven	41%	23%
I can withstand financial loss as a result of adopting unsuitable e-learning system	42%	43%
I have the ability to quickly understand complex technical issues about e-learning.	41%	43%
I am daring in taking e-learning decisions	75%	57%

Table 4.8 depicted the major personality traits of innovators regarding e-learning adoption. Overwhelming respondents form ODeL-KU (75%) indicated that they have the ability to cope with a high degree of uncertainty while taking e-learning adoption decision and they are daring to do so. This position was juxtaposed with 27% and 57% indicated by CCE in terms of the specific statements outlined in Table 4.8. Moreover, on the average, 42% of the respondents in the two institutions indicated that they are eager to adopt e-learning solutions which are not well proven, they can withstand financial loss as a result of adopting unsuitable e-learning system and they have the ability to quickly understand complex technical issues about e-learning. It needs to be pointed out that CCE-UCC on the whole recorded the lowest percentage (23%) in relation to adopting e-learning solutions that are not well proven.

Furthermore, the questionnaire items from 6-10 (see appendix B) elicited responses from the top management regarding early adopter attributes as captured in Table 4.9.

Table 4.9

Distribution of Early Adopters' Attributes as a Factor Affecting the Rate of Adoption of E-learning

Early adopters' attributes influencing the rate of e-learning adoption	Institutions	
Statements	KU-ODeL	UCC-CCE
I am interested in e-learning solutions for my institution	50%	63%
I want to see e-learning work in other institutions before adopting it	27%	37%
Other Board members refer e-learning related issues to me.	42%	47%
I want my institution to be seen as a leader in e-learning adoption	76%	40%
My opinions are respected by other peers in the e-learning committee	62%	38%

Table 4.9 shows the characteristics of early adopter category. The respondents (63% from UCC-CCE and50% of ODeL-KU) indicated their preparedness to adopt e-learning. In the same vein, 76% of participants at ODeL-KU opined that they wanted to see ODeL-KU as a leader in e-learning adoption while only 40% of CCE-UCC respondents stated so. It is interesting to note that both institutions disaffirmed the statement which suggested that they have to wait and see e-learning work in other institutions before adopting it. This was indicated by the low rate of respondents from the two institutions. On the question of peers in the e-learning committee respecting the views of others in the team, 62% of ODeL-KU responded in the positive while only 32% from CCE-UCC responded in the like manner. This implied that team work strived

relatively well in ODeL-KU e-learning committee members than in CCE-UCC.

The questionnaire items from 11-15 (see appendix B) elicited responses from the top management regarding early majority attributes as displayed in Table 4.10.

Table 4.10

Distribution of Early Majority' Attributes Influencing the Rate of E-Learning Adoption

Early majority attributes influencing the rate of e-learning adoption	Institutions	
Statements	KU-ODeL	UCC-CCE
It is better to fall too far behind and adopt the best e-learning solution than to rush for it	58%	50%
I always insist that my institution adopt a thoroughly proven innovation	71%	50%
I am unwilling to risk scarce resources.	54%	60%
I am sceptical and cautious about e-learning	31%	40%
I opted for adopting an e-learning solution due to peer pressure.	24%	36%

Table 4.10 shows the outlook of early majority attributes of ODeL-KU and CCE-UCC participants. Fifty-eight per cent (58%) and 50% from ODeL-KU and CCE-UCC respectively opined that it is better to fall too far behind and adopt the best e-learning solution than to rush for it. Furthermore, ODeL-KU respondents (71%) indicated that innovations must be well proven before its adoption and half of the respondents (50%) of UCC agreed on the same. These findings suggest that e-learning adoption may not be aggressively pursued by the two institutions.

Furthermore, in terms of releasing resources for e-learning adoption, the results indicated that CCE-UCC respondents are more willing to invest in e-learning than ODeL-KU as 54% of ODeL-KU respondents agreed on the statement while 60% of CCE-UCC indicated same. Whiles 31% of the ODeL-KU respondents expressed scepticism about e-learning adoption, 40% of CCE-UCC indicated so. Of the participants responding to decision to adopt e-learning due to peer pressure, only 24% of ODeL-KU affirmed the statement while 36% of CCE-UCC also responded in the like manner.

The questionnaire items from 16-20 (see appendix B) elicited responses from the top management regarding late majority attributes as displayed in Table 4.11.

Table 4.11

Distribution of Late Majority' Attributes Influencing the Rate of E-Learning Adoption

Late majority' attributes influencing the rate of e-learning adoption	Institutions	
Statements	KU-ODeL	UCC-CCE
I always insist on buying e-learning products from well-established e-learning developers	54%	63%
I always insist on improvement without inconvenience	25%	63%
I deliberate some time before adopting a new idea.	37%	56%
I rarely like to hold positions of leadership	29%	27%
I hold the view that innovations need to be affordable	25%	50%

Table 4.11 portrayed the extent of late majority attributes found in ODeL-KU and CCE-UCC. Fifty-four (54%) of ODeL-KU indicated that they deliberate for some time before adopting a new idea while 63% of CCE-UCC respondents also showed same. On the other hand, CCE-UCC respondents

(63%) indicated that they seek improvement on their activities, which should not result in inconvenience but the responses, (25%), suggests the majority of ODeL-KU, do not share this view. Generally, the results portrayed that the predispositions of ODeL-KU do not support the statements outlined in Table 4.11. The questionnaire items from 21-25 (see appendix B) elicited responses from the top management concerning laggards' attributes as displayed in Table 4.12.

Table 4.12

Distribution of Laggards' Attributes Influencing the Rate of E-Learning Adoption

Laggards' attributes influencing the rate of e-learning adoption	Institutions	
Statements	KU-ODeL	UCC-CCE
I am reluctant to make e-learning decision because it always brings changes in the administrative set-up of the institution	13%	23%
I can only adopt e-learning if I cannot avoid its adoption	25%	30%
I am least well-informed about e-learning	33%	41%
The traditional ways of teaching and learning are better than e-learning	29%	30%
I am pessimistic about e-learning; it failed to work well in some other institutions.	13%	38%

Table 4.12 captured a summary of the laggard's attributes in both Institutions. Generally, Table 4.12 shows that there seemed to be more laggards' traits at CCE-UCC than in ODeL-KU.

In order to present a systematic comparison of ODeL-KU and CCE-UCC, the specific traits were recoded and expressed in percentages. The results were

compared with the criterion reference points (CRP, see *Figure 1.4*), captured in Figure 4.2.

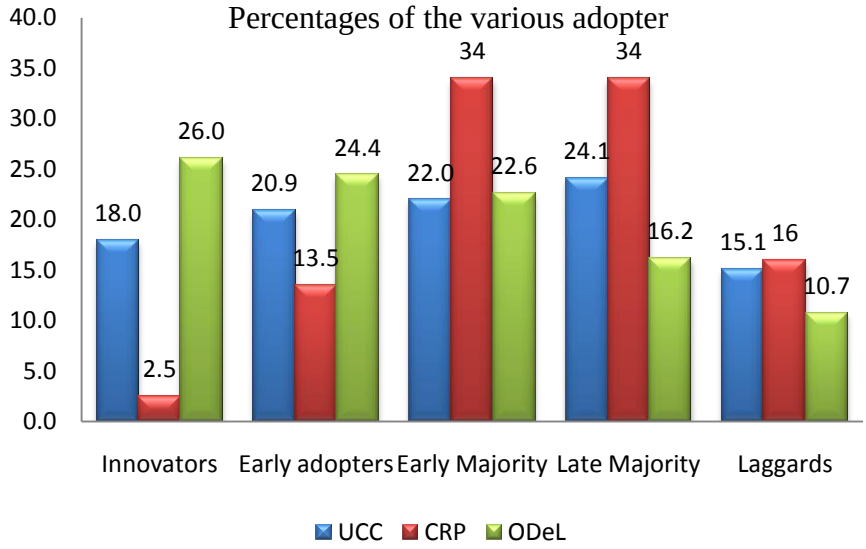

Figure 4.2: Summary of inter-institutional comparison of managerial attributes against the criterion reference.

The essence of Figure 4.2 is to graphically display the managerial attributes of the managements of both institutions- against the criterion reference points postulated by Rogers (2003). The findings in Figure 4.2 suggest that with the criterion reference point as 2.5%, there are more innovators in ODeL-KU (26%) than CCE-UCC (18%). In the same vein, the data in Figure 4.2 shows that there are more early adopters (24%) in ODeL-KU than in CCE-UCC, (21%). However, the two institutions seemed to be at par in terms of early majority attributes. In terms of the late adopter category, the results showed that CCE-UCC respondents portrayed the higher attributes (24%) as against 16% demonstrated by ODeL-KU. Furthermore, of the participants responding to Laggard attributes CCE-UCC respondents demonstrated more Laggards traits (15%) than 11% of ODeL-KU.

In summary, the results in Figure 4.2 show that e-learning adoption seemed to be more rapid in ODeL-KU than in CCE-UCC, Ghana.

4.3.3.1 There is no Statistically Significant Difference between CCE- UCC and ODeL-KU in terms of the Managerial Attributes

There are five managerial attributes identified in the literature: Innovators, early adopters, early majority, late majority and the laggards. These attributes exert great influence on the rate of e-learning adoption. Empirical evidence in the literature in not conclusive on these attributes being fairly distributed in all universities or some universities having more or less than others. To fill this gap, the study assessed these personality traits from the perspective of top managements of CCE-UCC and ODeL-KU.

The following five specific hypotheses were set to prove the null hypothesis afore-stated:

a. H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of innovator attributes influencing e-learning on adoption;
b. H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of early adopter attributes influencing e-learning adoption;
c. H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of early majority personality traits influence on e-learning adoption;

d. H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of late Majority attributes influencing e-learning adoption,

e. H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of the attributes of laggards influencing e-learning adoption.

To show a comparative direction to the independence variables afore-stated in the hypotheses, mean (*M*) and standard deviation (*SD*), as shown in Table 4.13, were calculated.

Table 4.13

Group statistics: Comparison of Managerial Attributes of ODeL-KU and CCE-UCC Top Management

Factors	Institution	N	Mean	Std. Deviation	Std. Error Mean
Innovation	CCE-UCC	30	1.40	.498	.091
	ODeL-KU	24	1.50	.511	.104
Early adopter	CCE-UCC	30	3.53	.571	.104
	ODeL-KU	24	3.58	.717	.146
Early Majority	CCE-UCC	30	3.70	.651	.119
	ODeL-KU	24	3.75	.532	.109
Late Majority	CCE-UCC	30	3.43	.626	.114
	ODeL-KU	24	3.00	.722	.147
Laggards	CCE-UCC	30	3.07	.868	.159
	ODeL-KU	24	2.54	.779	.159

Table 4.13 shows the mean (*M*) and standard deviation (*SD*) comparison of managerial attributes at ODeL-KU and CCE-UCC. On the other hand, independent sample t-test distributions of managerial attributes are shown in Table 4.14.

Table 4.14

Results of the Independence Sample T-test: Managerial Attributes

Attributes		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Dif.	Std. Error Dif.	Lower	Upper
Innovation	Equal variances assumed	.963	.331	-.725	52	.472	-.100	.138	-.377	.177
	Equal variances not assumed			-.723	48.882	.473	-.100	.138	-.378	.178
Early adopter	Equal variances assumed	1.383	.245	-.285	52	.777	-.050	.175	-.402	.302
	Equal variances not assumed			-.278	43.405	.782	-.050	.180	-.412	.312
Early Majority	Equal variances assumed	2.168	.147	-.304	52	.763	-.050	.165	-.380	.280
	Equal variances not assumed			-.311	51.969	.757	-.050	.161	-.373	.273
Late Majority	Equal variances assumed	.398	.531	2.360	52	.022	.433	.184	.065	.802
	Equal variances not assumed			2.323	45.826	.025	.433	.187	.058	.809
Laggards	Equal variances assumed	.119	.732	2.310	52	.025	.525	.227	.069	.981
	Equal variances not assumed			2.338	51.271	.023	.525	.225	.074	.976

The Levene's Test for Equality of Variances as shown in Table 4.14 revealed that all the variables assumed equality of variance for the two institutions. The alpha level was set at 0.05.

a. H_0: *There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of innovators' attributes influencing e-learning on adoption.*

Regarding innovators' attribute as a factor for e-learning adoption, Tables 4.14 and 4.15 indicated that ODeL-KU registered higher innovator's personality traits (M = 1.50, SD=0.511) than in CCE-UCC (M = 1.40, SD = 0.498) with

t(52) = 7.25, *p* = 0.47. The independent sample t-test established no statistically significant difference between ODeL-KU and CCE-UCC in terms of innovators' attributes influencing e-learning on adoption. This implies that the test statistic failed to reject the null hypothesis that there is no statistically significant difference between ODeL-KU and CCE-UCC in terms of innovators' attributes influencing e-learning on adoption.

b. *H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of early adopter attributes influencing e-learning adoption*

The data analysed in Table 4.14 and 4.15 revealed no statistically significant difference between ODeL-KU and CCE-UCC in the area of early adopter category even though ODeL-KU had recorded relatively higher *M* than CCE-UCC. (ODeL-KU, *M* = 3.58, *SD* = 7.17) and (CCE-UCC, *M* = 3.53, *SD* = 5.71), t(52) = 0.285, *p* = 0.77. The results therefore failed to reject the null hypothesis that there is no statistically significant difference between ODeL-KU and CCE-UCC in terms of early adopter attributes influencing e-learning adoption.

c. *H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of early majority personality traits influence on e-learning adoption*

Furthermore, in terms of early majority attributes, ODeL-KU recorded higher marks (*M* = 3.75, *SD* = 0.532) than CCE-UCC (*M* = 3.70, *SD* = 0. 651), *t*(52) = 3.04, *p* = 0.76. This analysis established no statistically significant

difference between the two Universities in connection to early majority personality traits. The study, therefore, failed to reject the null hypothesis that there is no statistically significant difference between ODeL-KU and CCE-UCC in terms of early majority personality traits influence on e-learning adoption.

d. *H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of late Majority attributes influencing e-learning adoption*

The data shown in Tables 4.14 and 4.15thatCCE-UCC (M=3.43, SD=0.626), recorded relatively higher scores in the area of late majority attributes than ODeL-KU (M=3.00, SD = 0.722) with $t(52)$ =2.360, p = 0.02.This test statistics further suggested that there is a statistically significant difference between ODeL-KU and CCE-UCC in terms of late majority attributes influencing e-learning adoption. The null hypothesis is therefore rejected.

e. *H_0: There is no statistically significant difference between ODeL-KU and CCE-UCC in terms of the attributes of laggards influencing e-learning adoption*

Finally, the test statistics rejected the null hypothesis that there is no statistically significant difference between ODeL-KU and CCE-UCC in the area of laggards attributes. As indicated in Tables 4.14 and 4.15, CCE-UCC recorded higher scores (M = 3.07, SD = 0.868) than (M = 2.54, SD = 0.779), with $t(52)$ = 2.310, p = 0.03.This information revealed that there are more laggards in CCE-UCC than ODeL-KU.

In conclusion, the study revealed no differences between CCE-UCC and ODeL-KU in the areas of early adopters and early majority personality traits. However, the researcher noted that there were differences between the two institutions in the areas of innovator's attributes, late majority and laggards personality traits. These differences may bring variations in the rate of e-learning adoption in the two universities.

4.3.4 Institutional Attributes Influencing E-learning Adoption

This subsection focuses on the availability of institutional technological infrastructure, funding, quality assurance issues and technical support services influencing e-learning adoption in ODeL, KU and CCE-UCC.

Questionnaire items in Appendix B sought information on four related institutional attributes that influence e-learning adoption in the two universities. These are the level of the ICT infrastructure, quality assurance policies, funding and technical support service. These independence variables are captured in Table 4.15.

Table 4.15

Institutional Factors Influencing E-Learning Adoption

Statements	ODeL-KU		CCE-UCC	
	Frq	Pct	Frq	Pct
ICT Infrastructure:				
The level of the electronic technology infrastructure of this University is adequate for e-learning programme adoption in my institution.	22	91%	7	23%
Funding:				
Sources of e-learning project funding are reliable	17	71%	6	20%
Allocation of financial resources for e-learning in this University is sufficient for e-learning programme adoption of my institution.	17	71%	4	13%
Quality Assurance:				
The Quality Assurance Policies of this University specifically related to e-learning adoption are relevant.	22	91%	16	53%
The Quality Assurance Policies of this University specifically related to e-learning adoption are up to date.	22	91%	7	23%
The Quality Assurance Policies of this University specifically related to e-learning adoption are documented and well known to all the stakeholders of my institution	17	71%	10	33%
The Quality Assurance Policies of this University do not hinder e-learning adoption agenda of my institution.	24	100%	21	70%
Technical Support Services:				
The technical support for e-learning adoption in my institution is up to date	20	83%	18	60%
The technical support requirements for e-learning adoption in my institution are well documented	20	83%	17	58%
The technical support for e-learning adoption in my institution does not hinder e-learning adoption.	22	91%	18	60%

Table 4.15 provides information on how the top management assessed the availability of institutional attributes in the context of e-learning adoption in ODeL, KU and CCE, UCC. The analysis of the data showed that 91% of the respondents at ODeL, KU rated highly the level of the electronic technology

infrastructure supporting e-learning adoption than in CCE-UCC, accounting for only 23%.

In terms of funding e-learning adoption programme, 71% of respondents in ODeL-KU as against 20% of CCE-UCC indicated that the source of e-learning funding is reliable. While the overwhelming majority of the respondents at ODeL, KU (91%) was convinced that financial allocation for e-learning adoption sufficient, a small number (13%) of the participants at CCE-UCC suggested same.

Quality assurance policies provide a major framework within which e-learning adoption operates. The policy framework ought to be relevant, up-to date, documented and well understood by all the stakeholders. With this in view, the results in Table 4.15 shows that quality assurance issues concerning e-learning adoption are given prominent attention at ODeL-KU than CCE-UCC.

Lastly, regarding technological support services for the adoption of the e-learning, Table 4.15 shows that the participants in ODeL-KU as compared to CCE-UCC, expressed general high level satisfaction about the status of support services available for adoption of e-learning.

4.3.4.1 There is no Statistically Significant Difference between CCE-UCC and ODeL-KU in terms of the Institutional Attributes

The following four specific null hypotheses related to institutional attributes were formulated and tested under the broad hypothesis. Thus:

a. H_0: There is no statistically significant difference between CCE-UCC and ODeL-KU in terms of availability of electronic technology infrastructure in the two Universities;
b. H_0: There is no statistically significant difference between CCE-UCC and ODeL-KU in terms of quality assurance policies regulating e-learning adoption in the two Universities;
c. H_0: There is no statistically significant difference between CCE-UCC and ODeL-KU in terms of funding e-learning in the two Universities,
d. H_0: There is no statistically significant difference between CCE-UCC and ODeL-KU in terms of Technical support service available for the two universities.

In order to compare the two institutions, mean (M) and Standard deviations (SD) were calculated. This is presented in Table 4.16

Table 4.16

Group statistics: Comparison of Institutional Attributes Influencing E-learning Adoption.

Institutional Attributes	Institution	N	Mean	Std. Deviation	Std. Error Mean
The level of the ICT infrastructure.	CCE-UCC	30	1.23	.430	.079
	ODeL-KU	24	1.92	.282	.058
Quality Assurance	CCE-UCC.	30	1.57	.504	.092
	ODeL-KU,	24	1.62	.495	.101
Funding	CCE-UCC	30	1.27	.450	.082
	ODeL- KU.	24	1.79	.415	.085
Technical support service	CCE-UCC	30	1.30	.466	.085
	ODeL-KU	24	1.71	.464	.095

Table 4.16 shows the profile of the two institutions regarding the institutional attributes influencing e-learning adoption.

Table 4.17

Results of the Independence Sample T-test: Institutional Attributes

Factors	Levene's test for equality of variances			t-test for Equality of Means				95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Dif	Std. Error Dif	Lower	Upper
The level of ICT infrastructure	Equal variances assumed	10.407	.002	-6.706	52	.000	-.683	.102	-.888	-.479
	Equal variances not assumed			-7.015	50.263	.000	-.683	.097	-.879	-.488
Quality Assurance	Equal variances assumed	.718	.401	-.426	52	.672	-.058	.137	-.333	.216
	Equal variances not assumed			-.427	49.821	.671	-.058	.137	-.333	.216
Funding	Equal variances assumed	.991	.324	-4.410	52	.000	-.525	.119	-.764	-.286
	Equal variances not assumed			-4.451	50.899	.000	-.525	.118	-.762	-.288
Technical support Services	Equal variances assumed	.017	.896	-3.204	52	.002	-.408	.127	-.664	-.153
	Equal variances not assumed			-3.206	49.511	.002	-.408	.127	-.664	-.152

Table 4.17 shows the independent sample t-test results of institutional attributes. The Table reveals that apart from the measurement of ICT infrastructure where the adjusted t-statistics is reported, equal variances are assumed for the other institutional attributes.

a. *H_0: There is no statistically significant difference between CCE-UCC and ODeL-KU in terms of available of electronic technology infrastructure in the two Universities*

Examining the results presented in Tables4.16 and 4.17, the test revealed statistically significant difference between ODeL-KU and CCE-UCC in the area of the level of ICT infrastructure existing in the two Universities with ODeL-KU recording more availability(M = 1.92, SD = 0.282)than in CCE-UCC (M = 1.23, SD = 0.430) with $t(50.263) = 7.015$, $p = .000$. The analysis therefore rejected the formulated null hypothesis that there is no statistically significant difference between ODeL-KU and CCE-UCC in terms of the level of ICT infrastructure supporting e-learning adoption.

b. *H_0: There is no statistically significant difference between CCE-UCC and ODeL-KU in terms of quality assurance policies regulating e-learning adoption in the two Universities*

Further, considering quality assurance issues in Tables 4.16 and 4.17, the t-statistics revealed that even though ODeL-KU participants indicated favourable quality assurance policy environment for e-learning adoption (M = 1.62, SD = 0.495) than in CCE-UCC (M = 1.57, SD = 0.504), the difference between the two universities is not statistically significant: $t(52) = 0.401$, p = 0.672. This means that the test failed to reject the null hypothesis that there is no statistically significant difference between CCE-UCC and ODeL-KU in terms of quality assurance policies regulating e-learning adoption.

c. *H_0: There is no statistically significant difference between CCE-UCC and ODeL-KU in terms of funding e-learning in the two Universities*

Furthermore, the results in Tables 4.16 and 4.17 established statistically significant difference between CCE-UCC and ODeL-KU in the area of funding e-learning project in the two universities ($t(52) = 0.324$, $p = .000$) with ODeL-KU indicating higher scores ($M = 1.79$, $SD = 0.415$) than in CCE-UCC ($M = 1.27$, SD = 0.450). The independent sample t-test conducted therefore rejected the null hypothesis that there is no statistically significant difference between CCE-UCC and ODeL-KU in terms of funding e-learning project.

d. *H_0: There is no statistically significant difference between CCE-UCC and ODeL-KU in terms of Technical support service available for the two Universities*

Lastly, as presented in Tables 4.16 and 4.17, the results concerning technical support services revealed statistically significant difference between ODeL-KU ($M = 1.71$, SD = 0.464) and CCE-UCC ($M = 1.30$, SD = 0.466), $t(52) = 3.204$, $p = 0.02$. Further examination of the scores indicated that ODeL-KU recorded higher means scores than CCE-UCC. The t-statistics, therefore, rejects the null hypothesis that there is no statistically significant difference between CCE-UCC and ODeL-KU in terms of technical support services.

In summary, the analysis revealed varied institutional attributes across the two universities. However, it was clearly noted that ODeL-KU participants presented favourable institutional e-learning attributes for rapid e-learning adoption than their counterparts at CCE-UCC.

4.4 Information Communication and Technology Skill Level of Information Technology Support Staff: Open and Distance e-Learning, Kenyatta University, Kenya and University of Cape Coast, Ghana

The purpose of this objective was to evaluate the ICT skill level of Information Technology Support Staff (ITSS) at CCE-UCC and ODeL-KU. The study attempted to highlight on the skills that the ITSS acquired and what they require in order to improve the rate of adoption and utilisation of e-learning in the two universities being studied. Participants in the study consisted of technology support staff in the two universities who are supporting the e-learning systems. Questionnaire was used to elicit responses from the participants (see appendix C). In all, thirty-five and 33 ITSS, representing 100% response rate, from CCE-UCC and ODeL-KU respectively, took part in the study.

Questionnaire items 1, 2 and 3 sought personal data from the participants. Table 4.18 provides the gender distribution of the participants.

Table 4.18

Sex Distribution of Information Technology Support Staff

Institution	Male	Female	Total
CCE-UCC	24 (68.6%)	11 (31.4%)	35 (100.0%)
ODeL- KU	20 (60.6%)	13 (39.4%)	33 (100.0%)
Total	44 (64.6%)	24 (35.4%)	68 (100.0%)

Table 4.18 presents the sex profile of the participants. The Table shows that more than half of the participants were male. In inter-university comparison, the Table indicated that more female (39%) were engaged as ITSS in ODeL-

KU than in CCE-UCC (31%). The study therefore revealed male's dominance in ICT related career than female.

The age distribution of the participants was also studied. This was captured in Table 4.19.

Table 4.19
Age Distribution of Information Technology Support Staff

Institutions	20-29	30-39	40-49	50-59	60+
CCE-UCC	15 (43%)	16 (46%)	2 (6%)	2 (6%)	0 (0%)
ODeL-KU	17 (51%)	14 (42%)	2 (6%)	0 (0%)	0 (0%)

Table 4.19 depicts the age distribution of ITSS from the two universities. The range of the participants' ages was from 20 years to 60 years. The majority of the participants in CCE-UCC (46%) were between the ages of 30-39 years. While ODeL-KU has her majority (51%) in the age bracket of 20-29. The second highest group of participants for CCE-UCC (43%) fell in the age group of 20-29, followed by those whose age ranged was 50-59, (6%). In the case of ODeL-KU, the second highest group of participants (42%) aged 30-39, the rest 2% falling in the age range of 40-49 years.

In summary, Table 4.19 showed that more young staff are engaged in Information technology related work at ODeL-KU than CCE-UCC.

The participants in both universities were also asked to identify their academic qualifications. This was summarized in Table 4.20.

Table 4.20

Qualification Distribution of Information Technology Support Staff

Qualifications	ODeL-KU	CCE-UCC
PhD	-	-
Master	2 (6%)	6 (17%)
1st Degree	14 (42%)	16 (46%)
Diploma and Certificates	17 (52%)	13 (37%)
Others	-	-

Table 4.20 shows the qualification distribution of ITSS in both universities. It was revealed that in both ODeL-KU and CCE-UCC, there were no ITSS with PhD qualification. The Table further showed that CCE-UCC had a higher number of masters' degree qualification (17%) as compared to those in ODeL-KU (6%). Those with a first degree qualification were still more in CCE-UCC (46%) than those in ODeL-KU (42%). However, the data in Table 4.20 indicates that ODeL-KU engaged more Diploma holders (52%) as ITSS than CCE-UCC (37%).

Questionnaire item 4 sought data about the responsibilities of the ITSS. The participants were asked to indicate their areas of responsibility. The ITSS from both universities seemed to be unanimous in stating the following:

i. Managing network availability and capacity
ii. Troubleshooting network outages
iii. Creating learning course elements under the guidance of instructors
iv. Researching online materials and copyright issues
v. Training instructors/ lecturers to the e-learning technology
vi. Assisting with pedagogical issues to adapt/develop curriculum and
vii. Course materials

viii. The selection of appropriate technical tools and resources

ix. Assisting with hardware, network technology infrastructure issues

x. Managing intellectual property issues

Furthermore, questionnaire item 5 sought data on whether the ITSS were given any further training in their areas of responsibilities. The responses were depicted in Table 4.21.

Table 4.21

Distribution of Respondents who received further Training to Use E-learning

Institutions	Yes	No
CCE-UCC	25 (71%)	10 (29%)
ODeL-KU	16 (48%)	17 (52%)

Table 4.21 shows the distribution of respondents who received further training to implement e-learning. The Table depicted that more ITSS (71%) in CCE-UCC, Ghana had received further training to support e-learning adoption and utilisation as compared to their counterparts from ODeL-KU, Kenya (48%). When asked to indicate where they got the training from, majority of the participants from both universities mentioned that they got further training through short courses and workshops organized by their universities, Some of them indicated through self-taught and a very few of the participants got further training through private computer training Centres

The number of years of experience was also sought from the participants. (Questionnaire item 6). The result was captured in Table 4.22.

Table 4.22

Distribution of Years Spent Working on the E-learning Platform

Institution	Below a year	1-2 years	3-4 years	5-6 years	Total
CCE-UCC	14 (40.0%)	18 (51.4%)	1 (2.9%)	2 (5.7%)	35 (100.0%)
ODeL-KU	21 (63.6%)	3 (9.1%)	4 (12.1%)	5 (15.2%)	33 (100.0%)
Total	35 (51.5%)	21 (30.9%)	5 (7.4%)	7 (10.3%)	68 (100.0%)

Table 4.22 shows the level of experience ITSS acquired in terms of years spent working on the e-learning platform. The information in Table 4.22 revealed that while majority of ITSS of ODeL-KU (64%) spent less than a year working with e-learning platform in their institution, the majority of the ITSS at CCE-UCC (51%) spent between one to two years working on the same. There are fewer Information Technology Support Staff at CCE-UCC who spent between 3 to 6 years working on e-learning platform than their counterparts at ODeL-KU. Generally, Table 4.22 portrayed ITSS in both universities having less than three years e-learning working experience.

Questionnaire item 7a and 7b asked the participants to assess the level of e-learning adoption and utilisation in their respective institutions and give reasons. The responses are shown in Table 4.23.

Table 4.23

Rating the Level of E-Learning Adoption and Utilisation

Rating	KU-ODeL, Kenya	UCC-CCE, Ghana
Excellent	-	-
Very good	8 (24%)	7 (20%)
Above Average	11 (33%)	3 (9%)
Average	14 (42%)	15 (42%)
Low	0 (0%)	9 (26%)
Poor	0 (0%)	1 (3%)

Table 4.23 showed the rating of e-learning adoption and utilisation. It was revealed that more ITSS (24%) from ODeL-KU had rated e-learning adoption and utilisation as very good as compared to their counterparts (20%) from CCE-UCC. Again, ODeL-KU participants (33%) rated e-learning adoption and utilisation as above average while only 9% of the respondents at CCE-UCC indicated same. Furthermore, in terms of average rating, both universities had highest and equal percentage of participants (42%). Generally, Table 4.23 revealed relatively higher e-learning uptake at ODeL-KU than CCE-UCC. This was buttressed by 26% of CCE-UCC participants rating e-learning adoption and utilisation as low and 3% rating it as poor while none of the participants from ODeL-KU indicated so.

Again, the information in Table 4.23 revealed that none of the universities rated e-learning adoption and utilization as excellent. When asked to give reason(s) for their rating, the majority of the participants from both universities stated the following reasons as major challenges they daily confront:

i. Students lack of knowledge about technology
ii. Frequent power outage
iii. Network access problem
iv. Ability to utilizing course application tools
v. Responding to increasing technical support demands from students
vi. Responding to increasing pedagogical support demands from lecturers
vii. Maintaining current technical infrastructure

viii. Maintaining a standard network/user platform

ix. Creating easy-to- use tools

The participants were asked (questionnaire item 8) to assess the effects that the challenges identified had on the rate of e-learning adoption and utilisation in their respective institutions. The findings are shown in Table 4.25.

Table 4.24

The Effects of the Challenges on E-learning Adoption and Utilisation

Effects	ODeL- KU	CCE-UCC
No effect	2 (6%)	0 (0%)
Mild effect	22 (67%)	13 (37%)
High effect	7 (21%)	22 (63%)
Devastating effect	2 (6%)	0 (0%)

Table 4.24 showed the extent to which the challenges confronting e-learning affect its adoption and utilisation in both universities. Sixty-three percent of the participants in ODeL-KU indicated that the aforementioned challenges have a mild effect on e-learning adoption and utilisation in KU. On the other hand, 63% of the respondents in CCE-UCC intimated that the challenges have affected e-learning adoption and utilisation highly in UCC.

Table 4.24, therefore, portrayed ODeL-KU ITSS having relatively more confidence in their e-learning implementation than CCE-UCC Information Technology Support Staff.

4.4.1 Information Technology Support Staff's Competency Level

The success of e-learning adoption and utilisation arguably depend largely on the level of ICT proficiency acquired by the supporting staff. To achieve optimum adoption and utilisation, the ITSS ought to maintain the e-learning system on daily bases. It is important, therefore, to determine the level of ICT skill they possess. This helps map out strategies to ensure that the ITSS are abreast with the current rapidly changing dynamics of technology. The part c of the questionnaire items ranging from 1 to 10 sought data from the participants about their level of basic ICT proficiency. From items 11 to 15, and 16 to 20, the questionnaire sought data about ITSS's proficiency in security administration and storage management respectively. Further, the items 21 to 25 and 26 to 30 on the questionnaire sought data, from the ITSS's proficiency level, regarding directory service administration and output management proficiency respectively. Finally, the questionnaire items from 31 to 35 elicited responses from the ITSS about their proficiency in the area of patch management. The findings are displayed in Table 4.25 through to Table 4.30.

Table 4.25

Distribution of Self-assessment (Basic Skills)

	ODeL- KU Kenya				CCE- UCC, Ghana			
Statements	None	Basic	Inter-diary	Adv.	None	Basic	Inter-diary	Adv.
Ms Powerpoint presentation	0 (0.0%)	9 (25.7%)	11 (31.4%)	15 (42.9%)	0 (0.0%)	2 (6.1%)	7 (21.2%)	24 (72.7%)
Ms Excel	0 (0.0%)	2 (6.1%)	6 (18.2%)	25 (75.8%)	2 (5.7%)	7 (20.0%)	11 (31.4%)	15 (42.9%)
MS Word Processing	0 (0.0%)	2 (6.1%)	5 (15.2%)	26 (78.8%)	0 (0.0%)	7 (20.0%)	8 (22.9%)	20 (57.1%)
Ms Access	0 (0.0%)	3 (9.1%)	13 (39.4%)	17 (51.5%)	4 (11.4%)	10 (28.6%)	12 (34.3%)	9 (25.7%)
Desktop-publishing	1 (3.0%)	7 (21.2%)	11 (33.3%)	14 (42.4%)	12 (34.3%)	16 (45.7%)	7 (20.0%)	0 (0.0%)
Check simple connections.	0 (0.0%)	0 (0.0%)	2 (6.1%)	31 (93.9%)	0 (0.0%)	3 (8.6%)	8 (22.9%)	24 (68.6%)
Internet usage	0 (0.0%)	2 (6.1%)	0 (0.0%)	31 (93.9%)	0 (0.0%)	3 (8.6%)	6 (17.1%)	26 (74.3%)
Website Designing	1 (3.0%)	12 (36.4%)	6 (18.2%)	14 (42.4%)	7 (20.0%)	16 (45.7%)	10 (28.6%)	2 (5.7%)
Clear printer jams	0 (0.0%)	2 (6.1%)	3 (9.1%)	28 (84.8%)	0 (0.0%)	9 (25.7%)	6 (17.1%)	20 (57.1%)
Transfer images to a computer	0 (0.0%)	5 (15.2%)	2 (6.1%)	26 (78.8%)	0 (0.0%)	1 (2.9%)	4 (11.4%)	30 (85.7%)
Use a digital cameras / videos	0 (0.0%)	2 (6.1%)	3 (9.1%)	28 (84.8%)	0 (0.0%)	3 (8.6%)	11 (31.4%)	21 (60.0%)
Overall self-assessment	0 (0.0%)	0 (0.0%)	8 (24.2%)	25 (75.8%)	0 (0.0%)	1 (2.9%)	15 (42.9%)	19 (54.3%)

Table 4.25 showed the profile of the basic ICT skills acquired by the ITSS. The overall self-assessment scores (aggregated and recorded) revealed that there are more participants (42.9%) at CCE-UCC assessing themselves as having intermediate basic ICT skills than ODeL-KU (24.2%). On the other hand, Table 4.25 also showed the self-assessment level of ODeL-KU participants as having an advanced basic ICT Skill (75.8%). Besides the assessment of the basic ICT skills of the ITSS, the study further explored information system management skills which are essential for full uptake of e-

learning in both universities. The areas covered under this aspect are system administration management, storage management, directory services management, output management and patch management.

Table 4.26

Distribution of Self-assessment (System Administration Skills)

	ODeL- KU Kenya				CCE- UCC, Ghana			
Statements	None	Basic	Inter-diary	Adv.	None	Basic	Inter-diary	Adv.
Add, delete and change user accounts.	0 (0.0%)	2 (6.1%)	3 (9.1%)	28 (84.8%)	0 (0.0%)	3 (8.6%)	11 (31.4%)	21 (60.0%)
Ensure that passwords conform to the institution's policy.	3 (9.1%)	0 (0.0%)	12 (36.4%)	18 (54.5%)	2 (5.7%)	7 (20.0%)	12 (34.3%)	14 (40.0%)
Maintain Network physical Security.	3 (9.1%)	3 (9.1%)	18 (54.5%)	9 (27.3%)	2 (5.7%)	11 (31.4)%	9 (25.7%)	13 (37.1%)
Check that encrypted file systems follow standard.	3 (9.1%)	5 (15.2%)	13 (39.4%)	12 (36.4%)	0 (0.0%)	13 (37.1%)	13 (37.1%)	9 (25.7%)
Maintain up-to-date antivirus	0 (0.0%)	0 (0.0%)	5 (15.2%)	28 (84.8%)	2 (5.7%)	3 (8.6%)	9 (25.7%)	21 (60.0%)
Overall self-Assessment	0 (0.0%)	0 (0.0%)	9 27.3%	20 72.7	0 (0.0%)	4 (11.4%)	11 (31.4%)	20 (57.1%)

Table 4.26 showed the details of system administration skills needed and acquired by the ITSS. The overall (aggregated and recoded) self-assessment score indicated that participants at ODeL-KU rated themselves higher (72%) in terms of advanced skills in system administration than CCE-UCC (57%). However, 31% CCE-UCC participants rated themselves as having intermediary skills of system administration as against 27% of ODeL-KU participants.

Table 4.27

Distribution of Self-assessment (Storage Management Skills)

	ODeL- KU Kenya				CCE- UCC, Ghana			
Statements	None	Basic	Inter-diary	Adv.	None	Basic	Interme-diary	Adv.
Installing and troubleshooting.	3 (9.1%)	8 (24.2%)	18 (54.5%)	4 (12.1%)	3 (8.6%)	13 (37.1%)	10 (28.6%)	9 (25.7%)
Make ICT resources accessible.	3 (9.1%)	10 (30.3%)	13 (39.4%)	7 (21.2%)	2 (5.7%)	19 (54.3%)	9 (25.7%)	5 (14.3%)
Changing configurations	3 (9.1%)	16 (48.5%)	14 (42.4%)	0 (0.0%)	2 (5.7%)	16 (45.7%)	13 (37.1%)	4 (11.4%)
Managing and monitoring DNS.	3 (9.1%)	14 (42.4%)	14 (42.4%)	2 (6.1%)	3 (8.6%)	16 (45.7%)	11 (31.4%)	5 (14.3%)
Optimizing security solutions.	3 (9.1%)	16 (48.5%)	9 (27.3%)	5 (15.2%)	2 (5.7%)	20 (57.1%)	8 (22.9%)	5 (14.3%)
Overall self-Assessment	3 9.1%	8 24.2%	15 45.5%	7 21.2%	0 (0.0%)	18 51.4%	10 28.6%	7 20.0%

The results in Table 4.27 show the skill level of participants in the area of data storage management. Five items were aggregated and recoded and the results revealed 9% of ODeL-KU participants have no skill about data storage management. Furthermore 15% of ODeL-KU participants assessed themselves as having basic skill as against 25.7% of CCE-UCC. In terms of intermediary skills of storage management, 24% of ODeL-KU as compared with 37% of CCE-UCC participants rated themselves so. Finally, while about 52% of ODeL-KU participants rated themselves as having advanced skill in storage management, only 37% of CCE-UCC participants indicated same.

Table 4.28

Distribution of Self-assessment (Directory Services Management Skills)

	ODeL- KU Kenya				CCE- UCC, Ghana			
Statements	None	Basic	Inter-diary	Adv.	None	Basic	Interme-diary	Adv.
Maintaining network primary storage	3 (9.1%)	8 (24.2%)	8 (24.2%)	14 (42.4%)	2 (5.7%)	12 (34.3%)	9 (25.7%)	12 (34.3%)
Maintaining network secondary storage	3 (9.4%)	5 (15.6%)	18 (56.2%)	6 (18.8%)	2 (5.9%)	11 (32.4%)	7 (20.6%)	14 (41.2%)
Maintaining network tertiary storage	3 (9.1%)	5 (15.2%)	18 (54.5%)	7 (21.2%)	5 (14.3%)	10 (28.6%)	13 (37.1%)	7 (20.0%)
Tracking and maintaining data resources.	3 (9.1%)	5 (15.2%)	18 (54.5%)	7 (21.2%)	8 (22.9%)	8 (22.9%)	8 (22.9%)	11 (31.4%)
Selecting and maintaining storage media	3 (9.1%)	7 (21.2%)	11 (33.3%)	12 (36.4%)	3 (8.6%)	11 (31.4%)	9 (25.7%)	12 (34.3%)
Overall self-Assessment	3 9.1%	5 15.2%	8 24.2%	17 51.5%	0 (0.0%)	9 25.7%	13 37.1%	13 37.1%

The items captured in Table 4.28 depict the major skills needed to perform directory services management. Regarding this skill, 9% of the participants of ODeL-KU have no skill. Furthermore, 15% of ODeL-KU participants indicated having basic skills. With regards to participants who assessed themselves as having intermediary and advanced skills at ODeL-KU 24% and 51% indicated so respectively. On the part of CCE-UCC, with the basic, intermediary and advanced skills in performing directory service management, the participants indicated 26% and 37% and 37% respectively.

The results in Table 4.28 therefore show that ODeL-KU ITSS are more advanced when it comes to directory service management skills.

Table 4.29

Distribution of Self-assessment (Output Management Skills)

	ODeL- KU Kenya				CCE- UCC, Ghana			
Statements	None	Basic	Inter-Diary	Adv.	None	Basic	Inter-diary	Adv.
SQL vulnerability.	5 (14.3%)	11 (16.2%)	10 (30.3%)	7 (20.2%)	7 (20.0%)	12 (34.3%)	7 (20.0%)	9 (25.7%)
Security updates.	8 (24.2%)	14 (42.4%)	8 (24.2%)	3 (9.1%)	3 (8.6%)	17 (48.6%)	8 (22.9%)	7 (20.0%)
Vulnerability check.	8 (24.2%)	13 (39.4%)	12 (36.4%)	0 (0.0%)	3 (8.6%)	14 (40.0%)	13 (37.1%)	5 (14.3%)
Internet vulnerability.	8 (24.2%)	15 (45.5%)	10 (30.3%)	0 (0.0%)	3 (8.6%)	14 (40.0%)	13 (37.1%)	5 (14.3%)
Overall self-Assessment	8 24.2%	10 30.3%	12 36.4%	3 9.1%	0 (0.0%)	15 42.9%	12 34.3%	8 22.9%

Table 4.29 contained the major skills ITSS should acquire under output management. The data in Table 4.29 reveal that 24% of ODeL-KU ITSS do not have any skill in this direction. The analysis further showed that with regards to basic skills, ODeL-KU ITSS indicated 30% while about 36% of indicated having intermediary skills. Again, the composite results showed 9% of ITSS at ODeL-KU assessed themselves as having advanced skills. Table 4.29 revealed that 43%, 34.3% and about23% of the CCE-UCC respondents assessed themselves as acquired basic, intermediary and advanced skills in output management respectively.

Table 4.30
Distribution of Self-assessment (Patch Management Skills)

	ODeL- KU Kenya				CCE- UCC, Ghana			
Statements	None	Basic	Interme-diary	Adv.	None	Basic	Interme-diary	Adv.
Disable networked devices.	3 (4.4%)	8 (24.2%)	12 (36.4%)	10 (30.3%)	0 (0.0%)	10 (28.6%)	10 (28.6%)	15 (42.9%)
Jobs distribution	3 (9.1%)	10 (30.3%)	17 (51.5%)	3 (9.1%)	1 (2.9%)	8 (22.9%)	15 (42.9%)	11 (31.4%)
customized communications	8 (24.2%)	11 (33.3%)	9 (27.3%)	5 (15.2%)	6 (17.1%)	9 (25.7%)	11 (31.4%)	9 (25.7%)
Document-level integrity	8 (24.2%)	13 (39.4%)	7 (21.2%)	5 (15.2%)	3 (8.6%)	14 (40.0%)	9 (25.7%)	9 (25.7%)
Multiple format communications channels	8 (24.2%)	13 (39.4%)	10 (30.3%)	2 (6.1%)	7 (20.0%)	12 (34.3%)	9 (25.7%)	7 (20.0%)
Overall self-Assessment	3 9.1%	7 21.2%	18 54.5%	5 15.2%	0 (0.0%)	9 25.7%	17 48.6%	9 25.7%

Table 4.30 provided an overview of skills needed for patch management. The composite result revealed that 9% of ODeL-KU ITSS do not have skills in patch management. Only 21% indicated having basic skills in patch management. In terms of intermediate and advanced skills in patch management, 54% and 15% respectively indicated having such skills.

Regarding CCE-UCC ITSS who reported having basic and intermediary patch management skills were 26% and 49% respectively. Only (26%) ITSS of CCE-UCC reportedly have an advanced skill in patch management. To determine statistically significant difference between the two universities, a null hypothesis was formulated.

4.4.1.1 There is no Statistically Significant Difference between UCC and KU in terms of ICT skills acquired by ITSS

Six null specific hypotheses were drawn from the afore-stated hypothesis. These are:

a. H_0: there is no statistically significant difference between UCC and KU in terms of basic ICT skill acquired by ITSS
b. H_0: there is no statistically significant difference between UCC and KU in terms of system security administration skills of ITSS
c. H_0: there is no statistically significant difference between UCC and KU in terms of storage management skills
d. H_0: there is no statistically significant difference between UCC and KU in terms of directory services management
e. H_0: there is no statistically significant difference between UCC and KU in terms of output management skills
f. H_0: there is no statistically significant difference between UCC and KU in terms of patch management skills.

In order to statistically test the differences between ODeL-KU and CCE-UCC, the means and standard deviations of the independent variables as described in Table 4.31 were analysed.

Table 4: 31

Comparison of Information Technology Support Staff in terms of ICT Skill Acquisition

Factors	Institution	N	Mean	Std. Deviation	Std. Error Mean
Basic ICT Skill	CCE-UCC	35	3.51	.562	.095
	ODeL- KU	33	3.76	.435	.076
Security Administration	CCE-UCC	35	3.46	.701	.118
	ODeL-KU	33	3.73	.452	.079
Storage Management	CCE-UCC	35	3.11	.796	.135
	ODeL- KU	33	3.18	1.014	.177
Directory Services Administration	CCE-UCC	35	2.69	.796	.135
	ODeL- KU	33	2.79	.893	.155
Output Management	CCE-UCC	35	3.00	.728	.123
	ODeL-KU	33	2.76	.830	.145
Patch Management	CCE-UCC	35	2.80	.797	.135
	ODeL-KU	33	2.30	.951	.166

Table 4.31 shows a comparative descriptive analysis of the composite ICT proficiency acquired by the ITSS of both institutions.

To determine whether there is any statistically significant difference between the two institutions, an independent sample t-test was conducted to test the six specific hypotheses afore-stated. The independent sample t-test was used specifically to test whether the mean scores of the two institutions were similar or otherwise at the alpha level 0.05. The pattern of dispersion as measured by comparing estimates of group variances are shown in tables 4.31 and 4.32.

Table 4.32

Test of Significant Differences in the level of ICT Skill Acquisition

	Levene's test for equality of variances			t-test for Equality of Means					95% Confidence Interval of the Difference	
Factors		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Basic ICT Skill	Equal variances assumed	10.967	.002	-1.987	66	.051	-.243	.122	-.488	.001
	Equal variances not assumed			-2.002	63.642	.050	-.243	.122	-.486	.000
Security Administration	Equal variances assumed	12.287	.001	-1.876	66	.065	-.270	.144	-.558	.017
	Equal variances not assumed			-1.900	58.548	.062	-.270	.142	-.555	.014
Storage Management	Equal variances assumed	2.421	.124	-.306	66	.760	-.068	.220	-.508	.372
	Equal variances not assumed			-.304	60.698	.762	-.068	.222	-.511	.376
Directory Service Administration	Equal variances assumed	.000	.987	-.499	66	.620	-.102	.205	-.511	.307
	Equal variances not assumed			-.497	64.066	.621	-.102	.206	-.513	.309
Output Management	Equal variances assumed	1.043	.311	1.282	66	.204	.242	.189	-.135	.620
	Equal variances not assumed			1.277	63.690	.206	.242	.190	-.137	.622
Patch Management	Equal variances assumed	1.550	.218	2.340	66	.022	.497	.212	.073	.921
	Equal variances not assumed			2.328	62.573	.023	.497	.214	.070	.924

Table 4.32 illustrated the results of the t-test for independent samples conducted on the various ICT skills needed for e-learning adoption and

utilisation in both universities. The equality of variance was not assumed for the dispersion of basic skills and security administration proficiency.

a. *H_0: there is no statistically significant difference between UCC and KU in terms of basic ICT skill acquired by ITSS*

As presented in Tables 4.31 and4.32, the study found a statistically significant difference in basic ICT skill acquisition, $t(63.63) = 0.003$, $p = 0.05$, between ODeL-KU participants, whose mean score is relatively higher, ($M = 3.76$, $SD = 0.435$) than CCE-UCC ($M = 3.51$, $SD = 0.562$). The test statistics therefore rejected the null hypothesis that there is no statistically significant difference between UCC and KU in terms of basic ICT skill acquired by ITSS.

b. *H_0: there is no statistically significant difference between UCC and KU in terms of system security administration skills of ITSS*

With regards to system security administration, as shown in Tables4.31 and 4.32, even though ODeL-KU recorded higher Mean, the results of the t-test for independent samples did not indicate any statistically significant difference $t(58.54) = -1.900$, $p = 0.62$, between ODeL-KU participants ($M = 3.73$, $SD = 0.452$) and CCE-UCC ($M = 3.46$, $SD = 0.701$). The test therefore failed to reject the null hypothesis that there is no statistically significant difference between UCC and KU in terms of system security administration skills of ITSS.

c. *H_0: there is no statistically significant difference between UCC and KU in terms of storage management skills*

Furthermore, Tables 4.31 and 4.32 show that the participants in ODeL-KU scored higher means (M = 3.18, SD = 1.014) than the participants in CCE-UCC, (M = 3.11, SD = 0.796) in the area of storage management skills. However, the test statistics demonstrated no statistically significance difference, $t(66) = 0.306$, $p = 0.760$, between ODeL-KU and CCE-UCC. The test therefore failed to reject the null hypothesis that there is no statistically significant difference between UCC and KU in terms of storage management skill.

d. *H_0: there is no statistically significant difference between UCC and KU in terms of directory services management*

In the area of directory service administration skill, as shown in Tables 4.32 and 4.33, the results indicated that ODeL-KU again shows higher skills than CCE-UCC. However, no statistically significant difference, $t(64.066) = 0.497$, $p = 0.621$, was found between the ITSS of ODeL-KU (M = 2.79, SD = 0.893) and the ITSS of CCE-UCC (M = 2.69, SD = 0.796). The test therefore failed to reject the null hypothesis that there is no statistically significant difference between UCC and KU in the area of directory service administration proficiency.

e. H_0: there is no statistically significant difference between UCC and KU in terms of output management skill

The independent sample t-test conducted on the variables, as displayed in Tables 4.31 and 4.32 show that CCE-UCC had competitive advantage over ODeL-KU in the area of output management. But no statistically significant difference was noted between the two institutions. Thus, $t(66) = 1.282$, $p = 0.206$ with CCE-UCC recording ($M = 3.00$ SD = 0.728) and ODeL-KU ($M = 2.76$, $SD = 0.830$). The test therefore failed to reject the null hypothesis that there is no statistically significant difference between UCC and KU in the area of output management skills.

f. H_0: there is no statistically significant difference between UCC and KU in terms of patch management skills

Finally, regarding the patch management skills in Tables 4.31 and 4.32, the test statistics established statistically significant difference between CCE-UCC ($M = 2.80$, $SD = 0.797$) and ODeL-KU ($M = 2.30$, $SD = 0.951$) with $t(66) = 2.340$, $p = 0.022$. This difference was attributed to the higher means scores demonstrated by CCE-UCC participants over their counterpart at ODeL-KU. The tests therefore reject the null hypothesis that there is no statistically significant difference between UCC and KU in the area of patch management skills.

Comparatively, the study established similarities between ODeL-KU and CCE-UCC in the areas of system administration, storage management, directory services administration and output management proficiency levels of

ITSS. On the contrary, differences were noted in the proficiency levels of ITSS of ODeL-KU and CCE-UCC in the areas of basic ICT literacy and patch management skills.

In sum, the two institutions demonstrated relatively higher proficiency in basic ICT literacy skills. However, the ICT skills of the ITSS in the area of information system management as measured by security administration, storage management, directory services administration, output management and patch management skills are relatively low. The implication of this finding can be seen in the low rate of e-learning adoption and utilisation being experienced in the two universities.

4.5 Lecturers' Perceived Preparedness to Use E-learning at University of Cape Coast, Ghana and Kenyatta University, Kenya

This section presents the findings of the lecturers' preparedness to use the e-learning platform at ODeL-KU and CCE-UCC. From assessment point of view, preparedness in this context relates to the following specific sub-objectives:

i. Find out lecturers' self-efficacy in using e-learning at UCC and KU,
ii. Ascertain how lecturers perceive the usefulness of e-learning at UCC and KU,
iii. Evaluate lecturers' attitude about e-learning that affects its utilisation at UCC and KU.

Responses on each independent variable were described using descriptive statistics such as frequencies and percentages. Mean scores and standard deviations were also calculated from the summated responses to the items forming each independent variable whilst inferential statistics dwelling on independent sample t-test were used to test the various hypotheses at the alpha level of 0.05.

Response rate

With the help of research assistants, a questionnaire (see appendix D) was randomly administered to 72 and 88 lectures at ODeL-KU and CCE-UCC respectively. The use of trained research assistants explains the 100% response rate obtained from both universities for the study.

4.5.1 Personal Data of Lecturers

The respondents' personal data captured were their sex and age.

4.5.1.1 Sex of respondents

Questionnaire item 1 sought data on the respondents' sex. The sex distribution of the respondents are presented in Table 4.33.

Table 4.33

Sex Distribution of the Respondents

Institutions	Male	Female	Total
CCE-UCC	42 (58%)	30 (42%)	72 (100%)
ODeL-KU	52 (59%)	36 (39%)	88 (100%)
Total	94 (59%)	66 (41%)	160 (100%)

Table 4.33 shows the sex distribution of the participants. Table 4.33 reveals that out of 72 (100%) of the respondents from CCE-UCC, 42(58%) were male whilst 30 (42%) were female. Similarly, ODeL-KU respondents recorded 52 (59%) male and 36 (39%) were female. This signifies that majority of respondents were male 94 (59%) whilst females were in the minority 66 (41%). This sample distribution was considered appropriate enough to measure the objectives and test the research hypotheses set for the study.

4.5.1.2 Age of Respondents

The questionnaire item 2 asked respondents about their age range**.** This is captured in Table 4.34.

Table 4.34

Age Distribution of the Respondents

Institution	20-29	30-39	40-49	50-59	60+	Total
CCE-UCC	6 (8.3%)	34 (47.2%)	21 (29.2%)	10 (13.9%)	1 (1.4%)	72 (100.0%)
ODeL- KU	7 (8.0%)	33 (37.5%)	31 (35.2%)	15(17.0%)	2 (2.3%)	88 (100.0%)

Table 4.34 displays the age distribution of the participants. The respondents' age distribution was concentrated between 30 to 49 years for both universities.

4.5.2 E-Learning Usage Training of Lecturers

Questionnaire item 3 was directed to whether the respondents have ever received any e-learning usage training. Their responses are presented in Table 4.35.

Table 4.35

Distribution of Lecturers who Received E-learning Usage

Institutions	Yes	No	Total
CCE-UCC, Ghana	52 (72.2%)	20 (27.8%)	72 (100.0%)
ODeL-KU, Kenya	70 (80.0%)	18 (20.0%)	88 (100.0%)

Table 4.35 shows distribution of lecturers who received any type of e-learning usage. From Table 4.35, 72.2% of respondents from CCE-UCC responded in the affirmative while 27.8% responded otherwise. ODeL-KU on the other hands, an overwhelming 80% of respondents responded 'YES'. Twenty per cent of respondents however responded 'NO'. Table 4.35 therefore shows that respondents' training on e-learning usage in ODeL-KU is higher than that of CCE-UCC.

4.5.2.1 Sources of Training for Lecturers

Item 4 of the questionnaire sought data on where the respondents received their training. Table 4.36 presents the results.

Table 4.36

Distribution of Place of Training

Institution	Self-Taught	Private Computer Training Centre	College or University
CCE, UCC, Ghana	20 (29.2%)	2 (2.8%)	30 (31.7)
ODeL, KU, Kenya	24 (28.4%)	18 (21.6%)	28 (31.8%)

Table 4.36 clearly shows that in CCE-UCC, 29.2% got their training through self-taught, 2.8% from Private Computer Training Centre and 31.7% from college or universities. Responses from ODeL-KU lecturers on the other hand,

indicate that 28.4% received their training through self-taught, 21.6% from Private Computer Training Centre and 31.8% from college or universities.

4.5.3 Lecturers' Level of Experience in the Use of e-Platform

Questionnaire item 5 sought data on their level of self-assessment regarding competence in e-learning usage. Table 4.37 depicts the outcome of the study.

Table 4.37

Lecturers' Present Level of Experience in the Use of E-learning System

Institutions	No Experience	Novice	Average	Expert
CCE-UCC	18 (25.0%)	8 (11.1%)	35 (48.6%)	11 (15.3%)
ODeL-KU,	9 (10.2%)	20 (22.7%)	51 (58.0%)	8 (9.1%)

Table 4.37 shows the distributions of lecturers' level of experience in both institutions. The data in Table 4.38revealed that 15% of the respondents at CCE-UCC claimed being expert in the use of e-platform whilst only 9% of their counterparts in ODeL-KU assessed themselves same. It is also revealed in Table 4.37 that majority of the lecturers from both institutions assessed themselves as having average experience in e-learning usage. With respect to the scales of 'Novice' and 'No Experience', whilst CCE-UCC received 11.1% and 25.0% of the respondent respectively, ODeL-KU had 22.7% and 10.2% respectively of the respondents. In summary, it is evidenced that ODeL-KU lecturers are more experienced than their CCE-UCC counterparts.

4.5.4 Number of Years Lecturers Spent in Using E-learning Platform

Item 6 of the questionnaire sought data from the respondents on the number of years they have spent on the e-learning platform. The outcome is shown in Table 4.38 with scale of "None, below a year, 1-2 years and 3-4 years".

Table 4.38
The Number of Years Spent Using the E-learning Platform

Institutions	None	below a year	1-2 years	3-4 Years
CCE-UCC,	22 (30.6%)	4 (5.6%)	26 (36.1%)	20 (27.8%)
ODeL-KU	15 (17.0%)	3 (3.4%)	39 (44.3%)	31 (35.2%)

In Table 4.38, in response to 'None' CCE-UCC recorded, 30.6% whilst ODeL-KU, 17.0%. On 'below average' CCE-UCC indicated, 5.6% whilst ODeL-KU, 3.4%. Responding to '1-2 years' 36.1% affirmed for CCE-UCC whilst ODeL-KU received 44.3%. With respect to '3-4years', CCE-UCC stated 27.8% whilst ODeL-KU recorded 35.2%. In sum, the data presented in 4.38 revealed that majority of the lecturers from both institutions spent between 1 and 2 years using the e-platform.

4. 5.5 Lecturers' Responses to their Self-Efficacy in E-learning Usage

Ten questionnaire items (see Part two of appendix D) were put forth to seek respondents view on their level of perceived self-efficacy. The aggregated outcome is shown in Table 4.39.

Table 4.39

Distribution of Self-efficacy Responses

I could complete the required tasks using the e-learning system if:	ODeL-KU	CCE-UCC
there was no one around to tell me what to do.	38 (43.2%)	45 (62.5%)
I had never used a 'learning tool' like it before	29 (33%)	33 (45.8%)
I had only the 'learning tool' manuals for reference.	38 (43.2%)	47 (65.3%)
I had seen someone else using it before	48 (54.5%)	33 (45.8%)
I could call someone for help if I got stuck	55 (62.5%)	47 (65.3%)
someone else had helped me get started.	45 (51.1%)	45 (62.5%)
I had a lot of time to complete the task for which the e-learning tool was provided.	47 (53.4%)	49 (68.1%)
I had just the built-in help facility for assistance.	57 (64.8%)	50 (69.4%)
I am hard press with time to meet deadline	33 (37.5%)	30 (41.7%)
I had used similar e-learning tool before	52 (59.1%)	55 (76.4%)
Average Score	44 (50.0%)	43 (60.0%)

Table 4.39 displays the data on self-efficacy level of the lecturers from both universities. Generally, Table 4.39 shows that out of the 88 total participants at ODeL-KU, 44 respondents, constituting an average score of 50.0% believe in their self-efficacy whilst in CCE-UCC, out of the total respondents of 72 participants, 43 respondents, recorded an average score of 60.0% self-efficacy. This indicates that CCE-UCC is ahead of ODeL-KU on issues of self-efficacy with a percentage point of 10.

4.5.6 Lecturers Responses to E-learning Preserved Usefulness

Respondent's perceived usefulness of e-learning was sought for with ten questionnaire items (See part three of appendix D).The responses are presented in Table 4.40

Table 4.40

Distribution of E-learning Perceived Usefulness

Statements	ODeL-KU	CCE-UCC
Using e-learning system will allow me to accomplish teaching tasks more quickly	76 (86.4%)	63 (87.5%)
Using e-learning system will make me feel professionally good	72 (81.8%)	60 (83.3%)
Using e-learning system will make it easier for me to organise course content faster	71 (80.7%)	61 (84.7%)
Using e-learning system will increase my efficiency in teaching	73 (83.0%)	59 (81.9%)
Using e-learning system will enhance my effectiveness in teaching	76 (86.4%)	60 (83.3%)
I will use e-learning system even if it takes too much time to prepare online content and activities	50 (56.8%)	42 (58.3%)
I will use the e-learning system even if the vision and strategy about e-learning are not clear in the institution.	26 (29.5%)	19 (26.4%)
I will use the e-learning system even if all the time spent with e-learning is not rewarded by the administration	47 (54.4%)	34 (47.2%)
Using e-learning system will help me to reach many distance learners anywhere and anytime	83 (94.3%)	64 (88.9%)
I always use the e-learning platform because I perceive it to be very useful	67 (76.1%)	50 (69.4%)
Average Score	64 (73.0%)	51 (71.0%)

Table 4.40 presents how the participants perceived the usefulness of e-learning. The Table shows that ODeL-KU scored relatively higher percentage score than its counterpart CCE-UCC with respect to e-learning perceived usefulness. Whilst ODeL-KU recorded 73.0% CCE-UCC had 71.0%.

4.5.7 Lecturers' Attitude towards E-learning Usage

The ten items on part four of appendix D sought data from the respondents about their attitude towards e-learning utilisation. The responses are given in Table 4.41

Table 4.41

Distribution of Lecturers' Attitude towards E-learning

Statements	ODeL-KU	CCE-UCC
Face to face teachings are more richer in interactions than Online interactions	73 (82.3%)	53 (73.6%)
Distributing modules and other course materials are more efficient than using the multimedia distribution channels	44 (50.0%)	32 (44.4%)
It is easy to use course content created online by other persons	57 (64.8%)	36 (50%)
E-learning system are designed for the younger generations	21 (23.9%)	18 (25%)
I feel ease when using e-learning system.	61 (69.3%)	55 (76.4%)
I use e-learning system because I have no concerns regarding public universities use of e-learning as a means of awarding degrees.	11 (12.5%)	31 (43.1%)
My job as a lecturers is motivating as l use e-learning system	55 (62.5%)	58 (80.6%)
I get a rising good feeling when I think of trying to use an e-learning system.	53 (60.2%)	49 (68.1%)
I wish to use e-learning exclusively to teach my students.	41 (46.6%)	28 (38.9%)
I have the right teaching skills to use e-learning system	59 (67.0%)	41 (56.9%)
Average score	48 (54.0%)	40 (56.0%)

Table 4.41 depicts the various items measuring the attitude of lectures towards e-learning. As shown in Table 4.41, on average, ODeL-KU recorded 54.0% level of attitude whilst CCE-UCC on the other hand got 55.7%. This is an indication that the latter is slightly ahead of the former when it comes to lecturers' attitude towards e-learning.

To compare and contrast between ODeL-KU and CCE-UCC in the area of the lecturers' preparedness to use e-learning, a null hypothesis was formulated:

4.5.8 There is no Statistically Significant Difference between UCC and KU in terms of Lecturers' Preparedness to Use E-learning.

In the context of preparedness, the aforementioned hypothesis was broken down into three specific folds:

a. $H_{0:}$ There is no statistically significant difference between UCC and KU in terms of lecturers' e-learning self-efficacy;

b. $H_{0:}$ There is no statistically significant difference between UCC and KU in terms of lecturers' perceived usefulness of e-learning,

c. H_0 There is no statistically significant difference between UCC and KU in terms of lecturers' attitude towards e-learning.

The mean scores and standard deviations of the variables were calculated and the results were captured in Table 4.42.

Table 4.42
Group Comparisons of Lecturers' Preparedness to Use E-platform

Factors	Institution	N	Mean (M)	Std. Deviation (SD)	Std. Error Mean
Self-efficacy	CCE-UCC	72	1.75	.436	.051
	ODeL-KU	88	1.53	.502	.053
Perceived usefulness	CCE- UCC	72	1.88	.316	.037
	ODeL-KU	88	1.89	.333	.035
Attitude towards e-learning	CCE-UCC	72	1.71	.458	.054
	ODeL-KU,	88	1.55	.501	.053

Table 4.42 shows the mean comparisons of lecturers' perceived preparedness to use e-platforms at ODeL-KU and CCE-UCC.

To determine if the differences identified in the descriptive tests in Table 4.42 are statistically significant, an independent sample t-test was conducted to test the hypotheses. The results are presented in Table 4.43.

Table 4.43

T-test Analysis of Lecturers' Preparedness to Use E-platform

Factors				t-test for Equality of Means				95% Confidence Interval of the Difference		
	Levene's test for equality of variances	F	Sig.	t	df	Sig. (2-tailed)	Mean Dif.	Std. Error Dif.	Lower bound	Upper bound
Self-efficacy	Equal variances assumed	27.083	.000	2.871	158	.005	.216	.075	.067	.364
	Equal variances not assumed			2.911	157.401	.004	.216	.074	.069	.362
Perceived usefulness	Equal variances assumed	.290	.591	.269	158	.789	.014	.052	-.088	.116
	Equal variances not assumed			.270	154.404	.788	.014	.051	-.088	.116
Attitude towards e-learning	Equal variances assumed	15.479	.000	2.127	158	.035	.163	.077	.012	.314
	Equal variances not assumed			2.146	156.034	.033	.163	.076	.013	.313

Table 4.43 shows the independence sample t-test conducted on the independent variables identified in the lecturers' preparedness.

a. H_0: *There is no statistically significant difference between UCC and KU in terms of lecturers' e-learning self-efficacy*

An independent samples t-test was conducted to compare UCC and KU in terms of lecturers' e-learning self-efficacy. As displayed in Table 4.43, there is a statistically significant difference, $t(157.4) = 2.911$, $p = 0.04$, in the scores

of which ODeL-KU registered higher means (*M* = 1.89, *SD* = 0.316) than CCE-UCC (*M* = 1.75, *SD* = 0.436).In reference to the null hypothesis, that there is no statistically significant difference between UCC and KU in terms of lecturers' e-learning self-efficacy, the study rejects this hypothesis.

b. H_0: *There is no statistically significant difference between UCC and KU in terms of lecturers' perceived usefulness of e-learning*

The independent sample t-test conducted to compare UCC and KU in terms of lecturers' perceived usefulness of e-learning established no statistically significant difference in the scores for CCE-UCC (*M* = 1.88, *SD* = 0.316) and ODeL-KU (*M* = 1.89, *SD* = 0.333),with *t*(158) = 2.69, *p* = 0.789. Even though ODeL-KU recorded higher mean than CCE-UCC, the test failed to reject null hypothesis.

c. H_0: *There is no statistically significant difference between UCC and KU in terms of lecturers' attitude towards e-learning*

In the area of attitudes towards e-learning, as shown in Table 4.43, the results of the t-test for independent sample registered CCE-UCC as having higher mean (*M* = 1.71, *SD* = 0.457) than ODeL-KU (*M* = 1.55, *SD* = 0.501) with *t* (156.034) = 2.146, *p* = 0.033. This analysis means that the test statistics failed to reject the null hypothesis that there is no statistically significant difference between CCE-UCC and ODeL-KU.

In conclusion, the study revealed that lecturers highly perceived the usefulness of e-learning in their respective universities. However, they seemed to have

indifferent perceived self-efficacy and attitude towards e-learning usage. The implication of these findings is that in both universities, even though lecturers understood the usefulness of e-learning, they were not fully prepared to use the e-platform. This could cause low rate of adoption and utilisation in both universities.

4.6 The Distance Learners' Perceived Preparedness to Use E-learning

This section, besides the demographic background of the participants, principally focused on three dimensions relating to the distance learners self-efficacy, perceived usefulness of e-learning and their attitude towards its use. Two hundred and twenty (220) and 252 questionnaires (See appendix F) were administered on the distance learners of ODeL-KU and CCE-UCC respectively. The response rate was 100%.

4.6.1 Demographic Profile of the Participants

From appendix F, questionnaire items 1 and 2 sought data on sex and age of the respondents.

Table 4.44

Sex Distribution of Participants

Institution	Male	Female	Total
ODeL-KU	115 (52.3%)	105 (47.7%)	220 (100.0%)
CCE-UCC	151 (59.9%)	101 (40.1%)	252 (100.0%)
Total	266 (56.4%)	206 (43.6%)	472 (100.0%)

Table 4.44 shows the gender distribution of the distance learners at both ODeL-KU and CCE-UCC. Table 4.44 indicates that the male respondents had

higher percentile representation than the female respondents in both ODeL-KU and CCE-UCC. There were 115 (52.3%) males as against 105 (47.7%) females representing ODeL-KU while 151 (59.9%) male respondents and 101 (40.1%) respondents represented CCE-UCC. The cumulative percentages also showed that in all, there were 266 (56.4%) male respondents compared to 206 (43.6%) female respondents. The age distribution of the distance learners was presented in Table 4.45

Table 4.45

Age Distribution of Respondents

Institution	20-29 years	30-39 years	40-49 years	50-59 years	Total
ODeL-KU	109 (49.5%)	70 (31.8%)	41 (18.6%)	0 (0.0%)	220 (100%)
CCE-UCC	69 (27.4%)	125 (49.6%)	41 (16.3%)	17 (6.7%)	252 (100%)

Table 4.45 shows the age distributions of the participants. The table shows that majority of the respondents from ODeL-KU were between the range of 20 and 29 years. Nearly the same number of percentage majority represented CCE-UCC but in the range of 30 and 39 years. Whiles Table 4.45 indicates that the oldest age range for ODeL-KU student-respondents did not exceed 40-49 years, approximately 7% of CCE-UCC distance learners were between 50-59 years. Studying the age distribution trends in Table 4.45, it is clearly evident that majority of distance learners in both institutions are between 20 and 39 years.

4.6.2 The Level of E-learning Usage Training given to Distance Learners

Items 3 and 4 on the questionnaire sought data on whether the respondents were given training on the use of the e-platform. This is presented in Table 4.46. As a follow-up to item 3, item 4 demands the respondents to indicate the place where they received their training.

Table 4.46

Have you ever received any type of E-learning Usage Training?

Institution	Yes	No	Total
ODeL-KU	96 (43.6%)	124 (56.4%)	220 (100%)
CCE-UCC	110 (43.7%)	142 (56.3%)	252 (100%)

Table 4.46 displays the number of respondents who received training on how to use e- platform in their respective institutions. The Table revealed that 124 (56.4%) of the respondents from ODeL-KU had never received e-learning usage training. Like ODeL-KU, majority of the CCE -UCC respondents representing 142 (56.3%) also indicated that they had never received e-learning usage training. Again, Table 4.46 gives a very close percentage margin of 96 (43.6%) and 110 (43.7%) respondents for both ODeL-KU and CCE-UCC respectively who have received a type of e-learning usage training. Further probing to find out where they received the training, majority of the respondents from both institutions indicated getting the training from their respective institutions.

4.6.3 Distance Learners' Proficiency in the Use of E-platform

Questionnaire item 5 asked the respondents to do self-assessment of their proficiency in the use of the e-platform. The result is captured in Table 4.47.

Table 4.47

The Present Level of Students' Proficiency in the Use of E-platform

Institution	No experience	Novice	Average	Expert
ODeL-KU	53 (24.1%)	50 (22.7%)	109 (49.5%)	8 (3.6%)
CCE-UCC	110 (43.7%)	55 (21.8%)	77 (30.6%)	10 (4.0%)
Total	163 (34.5%)	105 (22.2%)	186 (39.4%)	18 (3.8%)

Table 4.48 shows the self-assessed e-learning proficiency level of the distance students. Table 4.48 revealed that there were 53 (24.1%) and 110 (43.7%) respondents who have no experience at all in the use of e-learning system at ODeL-KU and CCE-UCC respectively. While 50 (22.7%) of the respondents from ODeL-KU and 55 (21.8%) from CCE-UCC said they were novices, 109 (49.5%) and 77 (30.6%) from ODeL-KU and CCE-UCC respectively held that their level in the use of e-learning system at their respective institutions were average. However, 8 (3.6%) and 10 (4.0%) respondents representing ODeL-KU and CCE-UCC respectively maintained that they were experts in the use of the e-platform in their institutions.

In summary, the information from this analysis suggests that the level of distance learners' proficiency in both universities is generally low. This phenomenon can be attributed to their perceived self-efficacy, usefulness of e-

learning and their attitude towards the use of e-learning. These variables were examined in part two, three and four of questionnaire (see appendix F).

4. 6.4 Distance Learners' Perceived Self-efficacy to Use E-learning

The 10 questionnaire items on part two of the appendix F sought data on the perceived self-efficacy level of the distance learners in ODeL-KU and CCE-UCC. The result is presented in Table 4.48

Table 4.48

Distribution of Distance Learners' Self-efficacy about E-learning

I could complete the required tasks using the e-learning system if:	ODeL-KU	CCE-UCC
there was no one around to tell me what to do.	91 (36.1%)	95 (45.2%)
I had never used an e-learning platform before	71 (28.2%)	74 (33.6%)
ɔnly the e-learning platform manuals for reference	135 (53.6%)	122 (55.5%)
I had seen someone else using it before	130 (51.6%)	119 (54.1%)
I could call someone for help if I got stuck	163 (64.7%)	143 (65.0%)
someone else had helped me get started	162 (64.3%)	149 (67.7%)
I had a lot of time to complete the task for which thee-learning tool was provided	158 (62.7%)	130 (59.1%)
I had just the built-in help facility for assistance.	149 (59.1%)	141 (64.1%)
I am hard press with time to meet deadline	87 (34.5%)	95 (43.2%)
I had used similar e-learning platform before	130 (51.6%)	141 (64.1%)
Total Cumulative frequency of self-efficacy	127(50.6%)	121 (55.2%)

Items in Table 4.48 measure distance learners' perceived self-efficacy about e-learning usage. The overview of self-assessed efficacy of distance learners revealed an average outlook. Of the total participants at ODeL-KU, cumulatively, 127 (51%) assessed themselves as having self-efficacy in the

use of e-platform. On the other hand, 121 (55%) of the total respondents at CCE-UCC also assessed themselves likewise.

4.6.5 Distance Learners' Perceived Usefulness of E-learning

The 10 items on the questionnaire (see part three of the appendix F) sought data on how the distance learners at ODeL-KU and CCE-UCC perceived the usefulness of e-learning in the delivery of learning experience. The result is shown in Table 4.49.

Table 4.49

Distribution of Distance Learners' Perceived Usefulness of E-learning

Statements	ODeL-KU	CCE-UCC
E-learning will improve my learning performance	194 (77%)	162 (73.6%)
E-learning will make it easier to access course content easily	198 (78.6%)	170 (77.3%)
I believe e-learning contents will be informative	186 (74.1%)	159 (72.3%)
I believe e-learning is a useful learning tool.	202 (80.2%)	171 (77.7%)
Using learning system will allow me to accomplish learning tasks more quickly	180 (71.7%)	147 (66.8%)
E-learning system will help me learn my subject anywhere and anytime	195 (77.4%)	157 (71.4%)
E-learning system will stimulate creativity in me	189 (75.0%)	173 (79.0%)
E-learning system will help me to work with other students	181 (71.8%)	164 (74.5%)
Learning through e-learning will save time.	190 (75.4%)	156 (70.9%)
The use of e-learning will create more interaction between me and my tutors	162 (64.3%)	157 (71.4%)
Average cumulative frequency of perceived e-learning usefulness	188 (75%)	162 (73%)

Table 4.49 captured items in relation to distance learners' perceived usefulness of e-learning. The total cumulative frequency suggested 188 (75%) out of the total participants at ODeL-KU perceived that e-learning is very useful for

them. In the same vein, 162 (73%) of the participants at CCE-UCC affirmed the usefulness of e-learning.

4.6.6 Distance Learners' Attitude towards E-learning Usage

The 10 items on the questionnaire (part four of the appendix F) sought data on distance learners' attitudes towards the use of e-learning. Table 4.50 Table shows the results.

Table 4.50

Distribution of Distance Learners' Attitude towards E-learning Usage

Statements	ODeL-KU	CCE-UCC
I have positive feeling toward e-learning usage	162 (64.3%)	158 (71.8%)
Studying through e-learning is a good idea	179 (71.0%)	168 (76.4%)
The challenge of learning about e-learning tools is exciting and enjoyable.	143 (56.7%)	130 (59.1%)
Lecturers should use e-learning system to disseminate class information and assignments to students	131 (52.0%)	134 (60.9%)
I always want to use the e-learning-system because I know its importance	149 (59.1%)	128 (58.2%)
Knowing how to use e-learning is a worthwhile skill	182 (72.2%)	158 (71.8%)
E-learning usage will provide better access to the Tutors	154 (61.1%)	144 (65.5%)
The use of e-learning will help provide a better learning experience.	171 (67.9%)	145 (65.9%)
Learning about e-learning tools will not be boring.	158 (62.7%)	162 (73.6%)
The use of e-learning will increase my motivation for the course.	173 (68.7%)	153 (69.5%)
Average cumulative frequency of attitude towards e-learning	160 (64%)	148 (67%)

Items in Table 4.50 display attitudinal dispositions of the participants. The average cumulative frequency of ODeL-KU showed that 160 (64%) out of the total participants have positive attitude towards e-learning. Similarly, 148

(67%) out the total respondents at CCE-UCC also displayed a favourable attitude toward e-learning utilisation.

4.6.7 There is no Statistically Significant Difference between UCC and KU in Terms of Distance Learners' Preparedness to Use E-learning.

The perceived distance learners' preparedness in the context of this study refers to the following three independent variables: Distance learners' perceived self-efficacy, perceived usefulness and attitude towards the use of e-learning. These three variables constitute the specific null hypotheses formulated below:

a. H_0: There is no statistically significant difference between UCC and KU in terms of distance learners' e-learning self-efficacy;

b. H_0: There is no statistically significant difference between UCC and KU in terms of distance learners' perceived usefulness of e-learning,

c. H_0: There is no statistically significant difference between UCC and KU in terms of distance learners' attitudes towards e-learning usage.

To compare these variables, the mean scores (*M*) and standard deviation (*SD*) tests were conducted on the data. This was captured in Table 4.51.

Table 4.51

Group statistics: Comparison of factors influencing distance learners' e-learning usage

Factors	Institutions	N	Mean	Std. Deviation	Std. Error Mean
Self-efficacy	ODeL-KU	220	3.54	.883	.060
	CCE-UCC	252	3.60	.955	.060
Perceived usefulness	ODeL-KU	220	4.06	1.007	.068
	CCE-UCC	250	4.26	.865	.055
Attitude	ODeL-KU	220	3.93	1.081	.073
	CCE-UCC	252	4.01	.877	.055

Table 4.51 shows a comparison of factors influencing distance learners' e-learning usage at both UCC and KU. The factors identified in Table 4.51 are: self-efficacy, perceived usefulness and attitude towards e-learning.

To describe the differences or similarities between ODeL-KU and CCE-UCC in terms of the identified variables in Table 4.51, an independent sample t-test was conducted at alpha level of 0.05 to test the aforementioned hypotheses. Table 4.52 presents the results.

Table 4.52

T-test Analysis of ODeL-KU and CCE-UCC Distance Students' Preparedness to Use E-platform

	Levene's test for equality of variances			t-test for Equality of Means					95% Confidence Interval of the Difference	
Factors		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif.	Std. Error Dif.	Lower	Upper
self-efficacy	Equal variances assumed	.287	.592	-.639	470	.523	-.054	.085	-.221	.113
	Equal variances not assumed			-.642	468.434	.521	-.054	.085	-.221	.112
Perceived usefulness	Equal variances assumed	.726	.395	-2.327	470	.120	-.201	.086	-.371	-.031
	Equal variances not assumed			-2.304	434.389	.122	-.201	.087	-.372	-.030
Attitude	Equal variances assumed	14.102	.000	-.888	470	.375	-.080	.090	-.257	.097
	Equal variances not assumed			-.876	421.464	.382	-.080	.091	-.260	.100

Table 4.53 shows the analysis of statistically significant differences between ODeL-KU and CCE-UCC regarding the distance learners' preparedness to use e-learning. In exception of attitudes towards e-learning, the Table shows that equal variances were assumed for self-efficacy and perceived usefulness variables.

a. H_0: *There is no statistically significant difference between UCC and KU in terms of distance learners' e-learning self-efficacy*

A look at the mean scores obtained, in the area of self-efficacy, by both universities, Tables4.51 revealed that CCE-UCC had a comparative advantage (*M*=3.60 *SD*=0.955) over ODeL-KU (*M*=3.54, *SD*=0.883). However, the results shown in Table 4.52 indicated that there is no statistically significant

difference between the two institutions. Thus, $t(470) = -.639$, $p = 0.52$. The test statistics therefore failed to reject the null hypothesis that there is no statistically significant difference between UCC and KU in terms of distance learners' e-learning self-efficacy.

b. H_0: *There is no statistically significant difference between UCC and KU in terms of distance learners' perceived usefulness of e-learning*

In the same vein, Table 4.51 shows CCE-UCC as having comparative edge ($M = 4.26$, $SD = 0.865$) over ODeL-KU ($M = 4.06$, $SD = 1.007$) regarding perceived e-learning usefulness. Notably, with the condition, $t(470) = -2.327$, $p = 0.12$, Table 4.52revealed that there is no statistically significant differences between CCE-UCC and ODeL-KU. This implies that the test statistics did not establish any statistically significant difference between ODeL-KU and CCE-UCC and failed to reject the null hypothesis. Thus, the t-test failed to reject the null hypothesis

c. *H_0: There is no statistically significant difference between UCC and KU in terms of distance learners' attitudes towards e-learning usage*

Lastly, with regards to attitude of distance learners towards e-learning usage, the data captured in Table 4.52 suggests that the assumption of homogeneity of variances was violated. Therefore, equal variance not assumed. The independent sample t-test displayed in Table 4.52 shows no statistically significant difference between UCC and KU. Thus, $t(421) = -.876$, $p = 0.382$.

The group statistics showed in Table 4.52 however, depicted that CCE-UCC had comparative advantage (M = 4.01, SD = 0.877) over ODeL-KU (M = 3.93, SD = 1.081).The test statistics, conversely, failed to reject the null hypothesis that in the area of attitude towards e-learning usage, there is no statistically significant difference between UCC and KU.

In conclusion, analysis of learners' preparedness, taking into consideration their perceived self-efficacy, usefulness of e-learning and attitude towards e-learning usage, both institutions have displayed generally similar dispositions.

4.7 Chapter Summary

The essence of this chapter was to bring out the major challenges, causative factors and other human diversities undermining smooth implementation of e-learning in Kenyatta University, Kenya and university of Cape Coast, Ghana. The findings revealed that indeed the rate of e-learning adoption and utilisation is low in the two Universities. This is attributed to the prevailing technological inadequacies, administrative lapses, low level of ICT expertise in the area of information system management, inappropriate mix of personality traits of those who take e-learning implementation decisions, lack of commitment and negative attitudinal dispositions of top administrators, lecturers. On the part of the distance students, the study identified low self-efficacy in the two universities.

CHAPTER FIVE

DISCUSSION OF THE MAIN FINDINGS

5.1 Introduction

The focus of this chapter is to present a summary of the main findings of the study and discuss them with respect to other relevant studies. The discussion of the results is done in line with the research objectives**.**

5.2 The Major Challenges Facing E-learning Adoption

Based on the findings of this study, the major challenges widely cited by the top managements in both universities centred on (1) individual characteristics (2) technological challenges (3) institutional factors and (4) energy related problems. These challenges are identical to some of the barriers identified by Grunewald (2002). Grunewald identified…"insufficient or obsolete hardware and software, inadequate facilities and support services, lack of information about good practice, underestimation of the difficulties, inadequate training and professional development, and the time trade-off not being worth it" (p. 36).

5.3 Individual Characteristics

The study found negative attitude among the lecturers especially at Kenyatta University and lack of commitment to e-learning adoption among the top administration of University of Cape Coast as obstacles to the full realization

of e-learning adoption and utilisation. The survey results from the lecturers shared a similar view with the focus group discussion. Thus, about half of the respondents (Lecturers, 55%) showed negative disposition in the two universities. Likewise, this study found low level of motivation negatively impacting on the effective use of the e-learning platform in Kenyatta University.

These findings confirmed a study conducted by Bostjan, Marjan, Maja and Gregor (2011). Bostjan *et al* revealed that the actual use of Moodle depends on two main factors: behavioural intentions and attitudes toward using Moodle. Woodrow, 1992 (cited in Sife, Lwoga, and Sanga, 2007, p. 7) indicated, "Awareness goes along with attitude and positive attitude towards ICTs is widely recognized as a necessary condition for the effective implementation….developing countries still lack sufficient awareness of ICTs and e-learning". Thorpe 2007 (cited in Mapuva 2009) buttressed that leadership and management are seen as key to effective e-learning implementation. Mapuva further asserted that "Lack of leadership among people in senior positions throughout the education System (principals, finance officers, learning directors and local authority officers) can be considered one of the most important barriers to effective e-learning implementation" (p.67).

Furthermore, Andersson and Gronlund (2009) observed that teachers generally are more motivated and committed when they feel supported and encouraged by the administrators. Egu, Wuju and Chionye (2011) found that the Lecturers

leave their jobs because of lack of incentive for the job, poor salary structure, late or non-payment of lecturer's salaries and allowances. Related to this, Howgego (2012) found that 55.6% of teaching and education professionals work unpaid overtime. On average, they put in an extra 9.6 hours a week. Across all working groups, 21% do unpaid overtime and work an extra 7.2 hours a week. In relation to the attitudes of the lecturers, Sambrook (2003) conducted a research in North Wales and found that 12 per cent were using e-learning, 28 per cent were eager to do so; the remaining 60 per cent did not express a preference for introducing e- learning.

5.4 Technological Challenges

Based on the analysis, the study found that in both universities, technological challenges prevail. Evidently, majority (77%) of the respondents in the University of Cape Coast, Ghana, reported technological inadequacies as a major challenge. Qualitative analysis of Kenyatta University also confirmed what was observed in the university of Cape Coast, Ghana. The most notable challenges identified include low internet connectivity, low level of access to personal computers, intermittent virus attacks, data insecurity and frequent power outages.

These findings support Steiner, Tirivayi, Jensen and Gakio, (2005). Steiner, et al found that an average African university has bandwidth capacity equivalent to a broadband residential connection available in Europe, pays 50 times more for their bandwidth than their educational counterparts in the rest of the world, and fails to monitor, let alone manage, the existing bandwidth. As a result, the

little bandwidth that is available becomes even less useful for research and education purposes. Likewise, Weber (2008) found that about 20-25% of computers worldwide are at risk because their owners are unwilling, or unable, to adequately secure their systems.

In yet another study, Kumar and Dutta (2011) showed that Moodle is defenceless to password prediction and username prediction. Kumar and Dutta illustrated this by indicating that the hijackers achieve this by sending several requests to the Moodle server with the blank cookie field so that the login failure count is reorganized to zero. When the cookie field is blank in the request and with the username prediction; a number of usernames are sent with an arbitrary password. The response from Moodle will take longer with a valid username than with an invalid one, and this would be used to differentiate between valid and invalid usernames.

5.5 Institutional Challenges

This study found the majority of the participants, particularly in UCC (83%) held that unavailability of funding impacts negatively on the implementation of e-learning. Similarly, it was indicated that fifty five per cent (55%) at UCC felt that quality assurance policies do not align well with effective implementation of e-learning. On the contrary, majority of the participants in both universities held a view that technical support services are available to efficiently support e-learning.

Taking into consideration quality assurance issues in the Universities, Farrell, and Shafika (2007), found that historically and theoretically, the purpose of

policy in educational environments has been to guide the adoption process yet innovation typically begins in the absence of any guiding policy. This finding, again, relates well to Oliver (2005) who observed that there is currently a quality agenda running among educational institutions worldwide and within higher education in particular. It is a prominent and mainstream activity that seeks to ensure that there is accountability in the ways in which institutions go about their daily work.

On the other hand, Bates and Sangrà (2011) argued that quality assurance in open and distance learning can be a contentious issue. According to Bates and Sangrà, some contended that it should be judged by the same criteria and methods as face-to-face education while others claimed that it is so different in its organization, enrolments and operations that conventional quality assurance mechanisms cannot apply. Some advocated the use of specific guidelines and standards for e-learning; others believed that, regardless of the technology, the basic principles of quality teaching and learning should apply Newton (2003) stressed that effective strategies is necessary to support technology-based teaching and learning initiatives.

Focusing on funding as a precursor to e-learning implementation, Fresen (2011) conducted a study on factors influencing lecturer uptake of e-learning and found that technology is not a financial priority within schools or departments. Schneberger and Jost (1994) found that educational technology is not being applied to the degree that has been expected for at least three reasons: teacher resistance, bureaucratic inertia, and lack of funding. This

finding is inconsistent with the Wanjala, Khaemba, and Mukwa (2011) who reported that teachers often need technical assistance as well as pedagogical support. Technology support personnel for assisting teachers are limited in most schools in Bungoma County, Kenya.

In the same vein, Ajadi, Salawu, and Adeoye (2008) also reported, in their study on e-learning and Distance Education in Nigeria, that there are few technical staff at NOUN to maintain the current system. They concluded that lack of, or inadequate trained personnel are a challenge to the use of ICT in most Nigerian higher institutions.

5.6 Energy Related Problems

The study found that both universities suffer from intermittent power outage disrupting administrative and academic work of the universities. This finding is consistent with the findings of Tim (2008). Tim found that among the many problems facing those involved in delivering e-learning, the availability of electricity is often mentioned as being of particular importance, especially in rural areas. Yusuf (2006) cited that several cities and rural areas in Nigeria are yet to have electricity or have fluctuations in the supply of electricity reduced. In the same vein, Ford (2007) reported that Kenya has approximately 19, 890 primary schools, many of which are in rural areas. Of those, only 15% have electricity.

5.7 Perceived E-learning Attributes Influencing E-learning Adoption

The study found that UCC and KU normally consider e-learning attributes such as (1) relative advantage (2) compatibility (3) complexity (4) trailability and (4) observability. The percentage scores were found to be high in the cases of relative advantage (KU, 83%, UCC, 77), compatibility (KU, 88%, UCC 63%), Trialibility (KU, 75%, UCC, 87%), Observability (KU, 75%, UCC 70%) compared to complexity (KU, 58%, UCC 43%).

On examination of the relative strengths of the associations between the individual e-learning attributes and adoption intention, His-peng (2005 found that perceived relative advantage and compatibility can explain much of the variation in adoption intention. Janardhanam, Ritika, and Suresh (2011) also conducted a research entitled: "Adoption of New Technology in B-school: An Analytical Study of Bangalore". Janardhanam, Ritika, and Suresh found an average mean of the entire respondent being more than 3 except in case of complexity where it was 2.6899. With this, they concluded that most of the respondents believe that the introduction of new technology in B-schools was compatible to the existing systems and has got many relative advantages. "In general, innovations that are perceived by receivers as having greater relative advantage, compatibility, trialability, observability, and less complexity will be adopted more rapidly than other innovations" (Rogers (1983, p.16). Furthermore, in their study, Martins, Steil, and Todesco (2004) also discovered that trialability was the most significant variable towards influencing the adoption of the internet as a teaching tool.

5.8 Managerial Personality Traits Affecting E-learning Adoption

Based on the criterion reference point of technology adoption, the study found that both Universities did not have the right mix of the decision-making body for e-learning adoption and utilisation. This was evident by a shortfall of early majority in UCC (22% out of 34%) and UK (23% out of 34%) and late majority (UCC 24% out of 34% and KU, 16% out of 34%). There were also excess managerial personality traits in the area of innovator (UCC 18% instead of 2.5% and KU 26% instead of 2.5%) and then, early adopters (UCC 21%% instead of 13.5% and KU 24% instead of 13.5%). This inappropriate constitution of e-learning decision-makers in both universities could be considered as a factor accounting for the low rate of e-learning adoption and utilisation.

These findings are consistent with Mapuva (2009). According to Mapuva, "Institutional leaders are a determinant factor, given their decision-making roles, which could either make-or-break the e-learning projects by either facilitating or impeding its implementation within their institutions" (p. 3). In comparison, a similar study was conducted by Hall and Elliott (2003) on diffusion of technology into the teaching process titled: Strategies to encourage faculty members to embrace the laptop environment. Hall and Elliott identified characteristics of five groups of faculty members based on their willingness to use laptops. The results showed that the innovators were the first 3% of all faculty members who used new instructional technology. This category tend to be the campus "techies" who are intrigued by new hardware or software and are able to learn the new technology on their own.

Early adopters represented the next 10% of faculty members to use an innovation. This category is usually viewed as visionaries or opinion leaders who combine their competence and desire in integrating new technologies into the classroom and teaching process.

The early majority comprised 35% of those who were ready to use instructional technology. This group was receptive to the technology but only after it has been shown to enhance teaching and student learning. The next 35% were the late majority, who were sceptical and had to be convinced or even coerced to use new technology in the classroom. The final 17% respondents were the laggards who had no interest in using new technology in the classroom and may express opposition to its implementation.

5.9 The Level of Basic ICT Literacy of Information Technology Support Staff

The study found that (24%) of Information Technology Support Staff at KU assessed themselves as not having advanced skills in the area of basic ICT applications as against 46% staff in UCC who also felt same. This finding was closely linked to Nanayakkara and Whiddett (2007). Nanayakkara and Whiddett studied a model of user acceptance of e-learning technologies: a case study of a Polytechnic in New Zealand and found 60% of the staff indicated they felt they lacked the basic knowledge and skills.

5.10 The level of System Security Administration Skills of Information Technology Support Staff

The study found that the majority of the participants (72%) at ODeL-KU rated themselves highly in terms of advanced skills in system administration than in CCE-UCC (57%). In the area of system administration skill, the study found no statistically significant difference (p = 0.62) between Kenyatta university, Kenya and University of Cape Coast, Ghana. This study found that the ITSS at the two institutions have relatively higher skill in terms of system security administration skills.

In his contribution to the subject matter, Cavanaugh (2012) observed that the expectations are always high when it comes to the performance of the system administrator. Cavanaugh indicated that the goal of any system administrator is to make sure the network infrastructure is secure, stable and prepared to fight off any attack, paving the way for uninterrupted business. Stay connected to appropriate security bulletins with updates from vendors, user groups, and other trusted sources. Keep machines physically secure by protecting the system console and encouraging users to log off when they are not in use. Cavanaugh concluded that possessing these skills can help turn an average system administrator into an extraordinary network hero.

5.11 The Level of Storage Management Skills and E-learning Implementation

The study found that about 48% of ODeL-KU and majority (63%) of CCE-UCC participants rated themselves as not having advanced skills in storage

management. However, the study found no statistically significant difference ($p = 0.76$) between the two institutions as far as storage management skills are concerned. In the area of storage management skills, the study found that the ITSS at the two universities have relatively low skill.

The explosion of data and its criticality dependency on digital information are leading to larger and more complex information storage environments that are increasingly challenging to manage. Egan and Marino (2012) indicated that poorly designed and managed storage infrastructure can put the entire organization at risk in the case of catastrophic failure. A robust storage infrastructure requires highly reliable equipment as well as a strong team of experts to manage efficiently.

Egan and Marino (2012) further listed some of the key challenges organizations and or IT/storage managers face as follows: managing storage growth, designing, deploying and managing storage in a virtualized server environment, designing, deploying, and managing backups, recovery, and archive solutions, storage consolidation, designing, deploying, and managing storage in a cloud computing environment convincing higher management to adopt cloud, managing external cloud service provider and lack of skilled storage professionals. Furthermore, Egan and Marino found approximately 42% of the managers believing that they have the least professionals capable of working with virtualized and cloud environment.

5.12 The Level of Directory Services Management Skills of Information Technology Support Staff

The study found that the majority of the respondents (79%, ODeL-KU and 80% CCE-UCC) did not have advanced skill in directory services management. Further, the study established no statistically significant difference (p = 0.62) between Kenyatta University, Kenya and University of Cape Coast, Ghana. The ITSS in the two universities recorded very low skill level in the area of directory services administration.

BECTA (2006) indicated that the goal of Directory Services Administration is to make the school's network resources easy to find and access. Thus, the directory is a central database where all objects and users are managed. Network managers use directories to manage user accounts and network resources. In their study on a framework for ICT Technical Support Operations Management (FITSOM), BECTA found that one of the less developed skills in FITSOM is the skill of directory services management.

5.13 The Level of Output Management Skills of Information Technology Support Staff

The study found that 85% and 84% of the participants from both ODeL-KU and CCE-UCC respectively felt they did not acquire advanced skills in output management. In this regards, the study found statistically significant difference (p = 0.20) between Kenyatta University, Kenya and University of Cape Coast, Ghana. The ITSS in both Universities have very low skill in the area of output management. BECTA (2006) indicated that the goal of output

management is to manage printed output in line with the institution's requirements. Thus, print and output management functions must ensure that any sensitive printed material is properly secured.

The nature of the human resources needed to run an electronic records programme has been much debated by the archival profession ever since it became clear that computers were transforming the way organizations do business. Forum (2002) underscored that managing electronic records should be a team effort with a specialist unit providing a focal point to manage specialized repository facilities and to carry out specific processing procedures. Some of the core competencies for output management outlined by the European Commission's DLM Forum include record management and archival, legal, organizational, methodological, information technology, system design competences.

The forum emphatically concluded that no training programme could cover all these different aspects completely. Furthermore, the skills on the list are very demanding and can probably only be reached at a very advanced level. These assertions confirmed why a few of the respondents from both institutions could assess themselves as having output management skill.

5.14 The Level of Patch Management Skill of Information Technology Support Staff

The study found that as many as 91% of the respondents in ODeL-KU and 78% at CCE-UCC indicated not having advanced skill in patch management.

Even though both universities recorded very low skills in patch management, the study found a statistically significant difference (p = 0.022) between the two institutions, in that the ITSS in University of Cape Coast possessed more such skill skills than those in Kenyatta University.

In relation to these findings, the National Institute of Standards and Technology Special Report (2005) indicated that the task of keeping up with reports of vulnerabilities and releases of patches has become very burdensome for organization due to lack of personnel having the requisite competencies. Therefore, the report recommended that organizations should create a patch and vulnerability group (PVG) to facilitate the identification and distribution of patches within the organization. The report further indicated that at times, most network managers and technicians have used their experience and knowledge to put in place activities to keep the network as available and reliable as possible. However, they do not always carry out some of the essential activities, which leave the institutions vulnerable to network failures, poor performance and attacks by hackers.

5.15 Lecturers' Level of Pedagogical Proficiency in the Use of e-Platform

The study found that majority of the lecturers (91%, ODeL-KU and 85%, CCE-UCC) did not assess themselves as having expert proficiency in the use of e-platform. However, the study found that the bulk of the lecturers (58%, ODeL-KU and 48%, CCE-UCC) rated themselves as having average skill in e-learning platform usage. In his contribution to the subject, Butcher (2003)

discovered that the major constraint of most African countries is lack of adequate local expertise and low computer literacy rate among user groups. On his part, Jensen (2000) also opined that perhaps the greatest problem is that the brain drain and generally low level of education and literacy amongst the population has created scarcity of skills and expertise at all levels; from policy making down to the end-user.

5.16 Lecturers' E-Learning Usage Experience

The study found that in KU 36% of the lecturers who were trained never used the e-platform for teaching and learning. In the case of UCC 21% of the lecturers also claimed alike. This finding reflected the views of Bower (2001). Bower argued that academics are specialists in their own particular discipline and do not necessarily embrace upcoming technologies to enhance and expand their teaching practice. Lecturers tend to view technology with scepticism, particularly in the light of various waves of technology initiatives, which may have failed to deliver on their potential.

5.17 Lecturers' Perceived Self-efficacy to Use e-Platform

The study found that 50.0% of ODeL-KU lecturers believe in their self-efficacy, whilst in CCE-UCC, 60.0% of the lecturers appraised themselves alike. The study found statistically significant difference ($p = 0.04$) between UCC and KU in terms of lecturers' e-learning self-efficacy. This study, therefore, showed that lecturers at CCE-UCC have a competitive perceptual edge over ODeL-KU in the area of self-efficacy.

According to Hayashe, Chen, Ryan, and Wu, J. (2004), computer self-efficacy is not concerned with what one has done in the past, but rather with judgments of what could be done in the future. It encompasses judgments of the capability to apply those skills to broader and more complex tasks. Heslin and Klehe (2006) indicated that a strong sense of self-efficacy enhances one's accomplishment. Liaw, Huang and Chen (2007) found that teachers' computer self-efficacy influences their use of ICT in teaching and learning.

5.18 The Level of how Lecturers Perceive the Usefulness of E-learning

The study found that the majority of ODeL-KU lecturers (73%) and CCE-UCC, (71%) perceived e-learning as useful. In this regards, the study did not find any statistically significant difference (p = 0.789) between Kenyatta university and university of Cape Coast.

This finding is consistent with other research findings. Jayasingh (2009) conducted a study on an empirical analysis of consumer behavioural intention toward mobile coupons in Malaysia and found that perceived usefulness had significant positive effects on Mobile Coupons usage and accounted for 66.5% of the variance in behavioural intention. Furthermore, Venkatesh, (2000) writing on the determinants of perceived ease of use: integrating control, intrinsic motivation, and emotion into the technology acceptance model, observed that perceived usefulness has demonstrated itself to be the most consistent and salient factor in determining the user intention over time.

5.19 The Level of Distance Students' Preparedness to Use e-Platform

The study found that the majority of the distance learners (56%) from each of the two universities never received any formal training in e-learning usage. Corroborated with this finding was the study of Zhang, Xiaoshuan, Yanqing, Fu and Wang (2010) who found that most of the subjects (68.3%) did not have e-learning experience before. This finding is also consistent with Mohammad (2012). Mohammad conducted a study in University of Granada and found that lack of understanding regarding the e-learning platform prompts a lower use of it and an insufficient exploitation of its possibilities, result in a negative attitude towards e-learning.

Also, this finding is consistent with other research findings. For instance, Hong, Lai, and Holton (2003) conducted research on students' satisfaction and perceived learning with a Web-based and found that some students faced difficulties with the web-based learning environment. They further revealed that the students found the web-based course to be a new learning experience and felt that they needed more guidance and time to adapt to the learning environment. Again, Poon, Low, and Yong (2004) studied web-based learning environments at several local universities in Malaysia and found that their students were not fully comfortable with e-learning.

5.20 Distance Learners' Perceived Self-Efficacy to Use e-Platform

The study found 51% of Kenyatta University and 55% of University of Cape Coast distance learners having positive self-efficacy in the use of their e-platform. With self-efficacy in view, the study found no statistically

significant difference (p = 0.52) between University of Cape Coast and Kenyatta University. Self-efficacy has been revealed by the literature to have a critical role in terms of its effect on adoption of e-learning.

On the issues of ICT usage self-efficacy, Vijayasarathy (2004) conducted a research on predicting consumer intentions to use on-line shopping and found that the computer self-efficacy have a positive effect on the behavioural intention to use systems as the more experience one gains online; the more important are the concerns of control over personal information. Moreover, the individuals' confidence in their computer-related knowledge and skills and abilities can influence perception on the ease or difficulty of carrying out a specific task using a new technology and how useful that new technology will be for the individual.

5.21 The Level of how Distance Students Perceive the Usefulness of E-learning

The study found that 75% of the total participants at ODeL-KU perceived that e-learning is very useful. Further, seventy-three per cent of the participants at CCE-UCC also affirmed the usefulness of e-learning. These findings are indicative that e-learning is likely to succeed in both universities because close to a third of the learners demonstrated positive perception of the usefulness of e-learning. The study did not establish any statistically significant difference (p = 0.12) between University of Cape Coast and Kenyatta University in this area of perceived usefulness of e-learning.

Past findings were in line with the results of the present finding. Information Systems researchers such as Chin, Todd (1995) and Doll, Hendrickson, Deng (1998), found that perceived usefulness have a positive effect in predicting the individual's behavioural intention to use any system. In the research of Sullivan (2002), college students who were participants in the study generally showed positive perceptions of learning outcomes and the learning environment of online courses and wished that the same or similar online materials and activities were available in other courses.

5.22 Distance Learners' Attitude towards E-learning

The study found that 64% and 67% from KU and UCC respectively have a positive attitude towards e-learning. Regarding the attitude of distance learners in Kenyatta university and university of Cape Coast, the study found no statistically significant difference between them ($p = 0.382$). Research findings have shown that attitude toward technology is a very important factor that needs to be considered seriously in the implementation and integration of technology in educational processes. Selim (2005) asserted that students' behaviours and attitudes toward e-learning are critical success factors for online learning. Again, in their contribution to the subject matter, Sanders and Morrison-Shetlar (2002) also cited the importance of student attitudes toward technology as a significant determining factor in the educational benefits of online learning.

5.23 Chapter Summary

The findings of this study clearly showed that indeed e-learning adoption and utilisation in the two institutions is besieged with challenges. These challenges were clearly identified to include technological, individual characteristics involving the disposition of the decision-makers and the users' preparedness. These challenges were viewed within the broader spectrum of the existing related literature which largely confirmed the findings of this study.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter covered the summary of the key findings, conclusions, recommendations as well as suggestions for future research.

6.2 Summary of the Main Findings

The researcher analysed the factors influencing adoption and utilisation of e-learning at Kenyatta University, Kenya and -University of Cape Coast, Ghana. These findings were based on the opinions expressed by the directors, Lecturers, Distance students and Information Technology Support Staff of ODeL-KU and CCE-UCC. The following are the summary of the main findings:

a. The study found negative attitude among the lecturers at Kenyatta University and lack of commitment to e-learning adoption among the top administration of UCC as the major obstacles to the full realization of e-learning adoption and utilisation in the two universities;
b. The study found that both universities experience low internet connectivity. This situation frustrates staff and students using the e-platform;
c. The study found a high incidence of computer virus attacking the systems of both universities. Besides the virus attack, the study further found

intermittent attempts by unscrupulous individuals attempting to hijack the e-learning platform;

d. The study found that both universities have ICT strategic plan policy document but failed to develop a comprehensive e-learning policy document that spells out clearly the framework of e-learning adoption and utilisation;
e. The study found that delay in paying allowances to lecturers and other staff engaged by ODeL-KU results in low motivation to use e-platform;
f. The study found that both universities suffer from intermittent power outage disrupting administrative and academic work of the universities;
g. The study found that e-learning attributes such as relative advantage, compatibility, complexity, trailability and observability determine the rate of e-learning adoption at the two universities;
h. The study found that whilst ODeL-KU top management placed more emphasis on compatibility attributes, CCE-UCC top managements' concerns was trialability attributes. This variation can be attributed to the fact that ODeL-KU e-learning adoption and utilisation indicators generally seemed to be more favourable than in CCE-UCC;
i. The study found statistically significant difference between ODeL-KU and CCE-UCC in terms of relative advantage *(p* = 009), compatibility *(p* = 0.001) as factors influencing e-learning adopting;
j. The study found no statistically significant differences between ODeL-KU and CCE-UCC in the area of e-learning complexity ($p = 0.101$), trialability ($p = 0.394$) and observability ($p = 0.635$) attributes influencing e-learning adoption;

k. The study found that both Universities did not have the right mix of decision-making body for e-learning adoption and utilisation. Thus, there were many innovators against few early and late majority adopter attributes;

l. The study found that apart from the late majority adopter personality attributes (p = 0.02) and the laggards (p = 0.03), the study established no statistically significant differences between ODeL-KU and CCE-UCC in terms of innovators *(*p = 0.47), early adopters *(*p = 0.77*)* and early majority *(*p = 0.76) personality attributes;

m. The study found that ODeL-KU rated availability of electronic technology infrastructure supporting e-learning adoption at KU approximately four-times (91%) than in CCE-UCC (23%);

n. The study found that source of funding and its allocation for e-learning are more reliable at ODeL-KU (71%) than in CCE-UCC (20%);

o. The study found that quality assurance issues concerning e-learning adoption and utilisation are given prominent attention in ODeL-KU (88%) and in CCE-UCC (45%);

p. The study did not establish statistically significant difference between CCE-UCC and ODeL-KU in the area quality assurance policies (p = 0.672).

q. The study established statistically significant difference between UCC and KU in terms of available of electronic technology infrastructure (p = 0.000) and funding (p = 0.000) and technical support services (p = 0.002);

r. The study found that the ITSS in both institutions have some level of basic ICT training to implement e-learning;

s. The study found that the ITSS in the two universities have generally low proficiency in the area information system management;

t. The study noted statistically significant difference between UCC and KU in terms of basic ICT literacy skills (*p = 0.051*) and patch management skills *(p = 0.022);*

u. The study found no statistically significant difference between UCC and KU regarding system security administration skills (*p = 0.620*),storage management skills (*p = 0.76*), directory services management *(p = 0.621)* and output management skills (*p* = 0.206*);*

v. The study found that majority of the lecturers (72% and 80% from CCE-UCC and ODeL-KU respectively) received e-learning training However, in KU 36% of the lecturers who were trained never used the e-platform for teaching and learning. In the case of UCC, 21% of the lecturers also claimed same;

w. The study found that 50% of ODeL-KU lecturers believe in their self-efficacy whilst in CCE-UCC, 60% of the lecturers appraised themselves same;

x. The study found approximately a third of staff (KU, 73% and UCC, 71%) from both universities highly perceived the usefulness of e-learning in the delivery of distance learning;

y. The found fourty-six per cent of the lecturers from KU and 44% from UCC have negative attitudes towards e-learning;

z. The study found that apart from perceived usefulness of e-learning (*p* = 0.789), the noted statistically significant difference between UCC and KU

in the area of lecturers' e-learning self-efficacy (p = 0.005) *and* attitude towards e-learning (p = 0.035);

aa. The study found that more than half of the distance learners 56% from each of the institutions never received any formal e-learning usage training or experience;

bb. The study found that about half of the distance learners from both universities (51% from KU and 55%, UCC) believe in their self-efficacy to use the e-platform;

cc. The study found approximately a third (75% and 73% from KU and UCC respectively) of distance learners from both universities have high perception of the usefulness of e-learning;

dd. The study found that more than half of the distance learners (64% and 67% from KU and UCC respectively) have positive attitude towards e-learning,

ee. The study found no statistically significant difference between the distance learners of University of Cape Coast, Ghana and Kenyatta university, Kenya in terms of their self-efficacy (p = 0.52*)*, perceived usefulness of e-learning *(*p = 0.12*)* and their attitudes towards e-learning (p = 0.38).

6.3 Implications of this Study

Adopting and utilising e-learning in higher education, in Africa, has become a complex policy agenda for many universities. The reason being that e-learning operates within the dimensions of human idiosyncrasies and technological dynamics that are changing at amazing rapidity. One dimensional research study into these environments that regulate the operationalization of e-learning would not be deemed comprehensive enough and thereby resulting in

knowledge gaps. This study, therefore, brought into the fore a broader perspective of the e-learning environment. This was achieved, on one hand, by assessing the decision-makers' personality traits and e-learning attributes that influence its adoption.

On the other hand, the users' attributes including their self-efficacy, perceived usefulness of e-learning and their attitudes towards usage were also assessed. Besides, this study was done in a university in Ghana, West Africa and another university in Kenya, East Africa. This study has, therefore, in a way; enhanced understanding of broader implications of cross-cultural and regional dimensions to the study of e-learning adoption and utilisation in the context of Africa. Therefore, even though this study was done strictly within the two aforementioned universities, generalisation of the findings and the recommendations may be applicable to other universities in Africa.

6.4 Conclusions

This study highlighted the key factors that influence e-learning adoption and utilisation in Kenyatta University and university of Cape Coast, This study was motivated by the fact that these two universities established distance learning programmes traversing a ten-year period but their efforts in adopting and utilising e-learning for distance education delivery is not yielding the expected results. A few studies were done in this direction, but their findings cannot be generalised to include the adoption and utilisation of e-learning in the two universities under study. Against this background, drawing from the theory of reasoned action and diffusion of innovation theory, this study

employed descriptive research design utilising mixed methodologies to comparatively assess the factors militating the smooth implementation of e-learning in the two universities.

The surveyed results clearly indicated that e-learning implementation in both universities is quite low especially in UCC. The directors acknowledged that e-learning adoption and utilisation are not as effective as they wished it could be. The directors pointed out negative attitudinal issues, exhibited by some of the lecturers, university administrators as well as e-learning board members, towards e-learning implementation in their respective universities. Other challenges acknowledged by the directors were centred on institutional issues and technological inadequacy.

Indeed, the findings from the perspectives of the top management, ITSS, lecturers and distance learners, pointed out clearly the factors influencing e-learning adoption and utilisation in Kenyatta University and University of Cape Coast. It was revealed that in taking e-learning adoption decisions, the priority of the top management of KU is compatibility attributes while UCC top management normally considers trialability attributes of e-learning. Furthermore, significant diversity in the personality traits of the top management was also noted as contributing factors limiting adoption rate of e-learning in the two universities. It is now possible to conclude that a mismatch of aforementioned factors as illustrated in the theoretical framework resulted in the slow rate of adoption and utilisation of e-learning at ODeL-KU and CCE-UCC.

Several other factors were identified, in this study, to explain the limited adoption of e-learning in the two universities. Firstly, the study established that the ITSS do not have required proficiency in the area of information management systems. Secondly, the study revealed that even though interest and perceived usefulness of e-learning among the lecturers and distance learners are high, their self-efficacy and attitudes especially within the lecturers left much to be desired.

6.5 Recommendations

Based on the findings of this study, the following recommendations were put forward with the view of implementing successful e-learning adoption and utilisation in the universities:

6.5.1 Recommendations Related to E-learning Policies

There is the need for University of Cape Coast and Kenyatta University to review the quality assurance policies to accommodate the contemporary quality enhancement issues.

6.5.2 Recommendations Related to Attitudinal Change

University of Cape Coast and Kenyatta University should organize periodic seminars, short courses, and training workshops. These courses should be tailored to the specific needs of their lecturers, distance learners, the ITSS and the members of the e-learning management boards. Besides, Television and Radio talk shows and related documentaries should be done with the view of

sensitizing the public, especially qualified applicants, about the relative importance of e-learning as an alternative conduit to accessing higher education. The expertise of psychologists and ICT technocrats can be sought to help change the mind-set of people who are sceptical about the effectiveness of e-learning. Also, motivational techniques such as prompt payment of allowances, immediate feedback and other such reward systems should be instituted to recognize and encourage individuals, especially lecturers and any distance students, who demonstrate extra interest in using e-learning.

6.5.3 Recommendations Related to Funding

Kenyatta University, as well as the University of Cape Coast should make a deliberate effort at increasing funds for e-learning projects. Such funds would go towards helping the university to acquire hardware and software e-learning infrastructure. This study recommends that funding of e-learning programme must be diversified to include external sources. These external sources may include the Non-Governmental Organisations (NGO's), agencies and other multi-lateral co-operations. University of Cape Coast should tap into the resources of the commission in charge of levies from the mobile telecom companies to advance the course of e-learning adoption and utilisation.

6.5.4 Recommendations Related to Internet Connectivity

The governments should prioritize installations of fibre optic cables to augment the existing ICT infrastructures in Kenyatta University and the University of Cape Coast.

6.5. 5 Recommendations Related to Board Membership

The study recommends that both the Kenyatta University and the University of Cape Coast should reconstitute the board membership to include more personnel with early adopter and early majority personality traits. The reconstituted body should include personnel who have adequate experience in e-learning implementation. This arrangement is meant to accelerate the pace of e-learning adoption in the two universities.

6.6 Suggestions for Further Research

The findings, coupled with the limitations of this study, as well as the reviewed literature, have given rise to a direction of potential future research. A comparative study can be carried out on the adoption and utilisation of e-learning in other universities particularly in the South and North of Africa.

Lastly, yet important, it appears from the reviewed literature that empirical studies do not adequately addressed issues related to effects of cybercrime on e-learning. Cyber-crime phenomenon is an emerging trend which poses a lot of concerns to e-platform administrators. It will, therefore, be useful to conduct further research in this area.

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APPENDIX A

FOCUS GROUP DISCUSSION GUIDE FOR THE DIRECTORS

Introduction

I am a PhD student conducting a research on e-learning adoption and utilization: a comparison of Kenyatta University, Kenya and University of Cape Coast, Ghana. Of particular interest in this study is to determine the status and nature of e-learning being adopted in your institution. I also want to identify factors affecting e-learning adoption and utilization drive for teaching and learning purposes.

The discussion guide

A. The major challenges influencing e-learning adoption and utilisation at Centre for Continuing Education –University of Cape Coast, Ghana and Kenyatta University, Kenya

a. Individual characteristics
b. Technological Challenges
c. Institutional Factors
d. Energy related problems

APPENDIX B
QUESTIONNAIRE FOR THE TOP MANAGEMENT:
PART ONE: Perceived E-Learning Attributes

Please select (√) the most appropriate response. Response Key:

SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree.

#	Statements	SD	D	U	A	SA
1	E-learning enables lecturers to provide faster feedback to distance learners than face to face teaching and learning					
2	e-learning improves distance learners' performance better than face teaching and learning					
3	E-learning improves institution's administrative effectiveness and efficiency.					
4	E-learning enables distance learners to interact with their lecturers more frequently than face to face teaching and learning					
5	My institution opted for e-learning based on the relative advantages it has over face to face teaching and learning					
6	I opted for e-learning because it fits well with the existing ICT infrastructure of my institution					
7	I opted for e-learning because it fits well with the administrative structure and strategies of my institution					
8	I opted for e-learning because it fits well into the lecturers' mode of teaching in my institution					
9	I opted for e-learning because it fits well into the learning style of distance learners of my institution					
10	I opted for e-learning because it is compatible with all aspects of distance education programme delivery of my institution.					
11	I cannot opt for e-learning for my institution if lecturers find it difficult to use it					
12	I cannot opt for e-learning for my institution if distance learners find it difficult to use it					
13	I opted for e-learning for my institution because Information Technology Support Staff finds it easy to maintain it.					
14	I opted for e-learning for my institution because l understand how to use it					
15	I opted for e-learning for my institution because it is easy to troubleshoot					

SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree.

#	Statements	SD	D	U	A	SA
16	My decision to opt for adopting e-learning is based on the opportunity to run a trial version.					
17	My decision to opt for adopting e-learning is based on being part of its development and pilot testing.					
18	My decision to opt for adopting e-learning is based on the opportunity given to my lecturers to try it out for a reasonable period					
19	My decision to opt for adopting e-learning is based on the opportunity given to the learners to try it for a reasonable period					
20	I opted for e-learning for my institution because its usage is demonstrated to me.					
21	I opted for e-learning for my institution because the benefits of using it are apparent to me					
22	I opted for e-learning for my institution because the lecturers observe its functionality and recommended its adoption					
23	I opted for e-learning for my institution because I have seen other universities adopting it.					
24	I opted for e-learning for my institution because the distance learners observe its functionalities and recommended its adoption					
25	I opted for e-learning for my institution because the ITSS observes its functionalities and recommended its adoption					

#	Statements	SD	D	U	A	SA
16	It is better to fall too far behind and adopt the best e-learning solution than to rash for it					
17	I always insist that my institution adopt a thoroughly proven innovation					
18	I am unwilling to risk scarce resources.					
19	I am sceptical and cautious about e-learning					
20	I opted for adopting an e-learning solution due to peer pressure.					
21	I am reluctant to make e-learning decision because it always brings changes in the administrative set-up of the institution					
22	I can only adopt e-learning if I cannot avoid its adoption					
23	I am least well-informed about e-learning					
24	The traditional ways of teaching and learning are better than e-learning					
25	I am pessimistic about e-learning; it failed to work well in some other institutions.					

PART TWO: Managerial Attributes

Please select the most appropriate response that indicates the level of your agreement or disagreement with each statement.

Response Key:

SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree.

#	Statements	SD	D	U	A	SA
1	I have the ability to cope with a high degree of uncertainty while taking e-learning adoption decision					
2	I am eager to adopt e-learning solutions which are not well proven					
3	I can withstand financial loss as a result of adopting unsuitable e-learning system					
4	I have the ability to quickly understand complex technical issues about e-learning.					
5	I am daring in taking e-learning decisions					
6	I am interested in e-learning solutions for my institution					
7	I want to see e-learning worked in other institutions before adopting it					
8	I serve as a role model for other members of the society					
9	I want my institution to be seen as a leader in e-learning adoption					
10	My opinions are respected by other peers in the e-learning committee					
11	I always insist on buying e-learning products from well-established e-learning developers					
12	I always insist on improvement without inconvenience					
13	I deliberately take some time before adopting a new idea.					
14	I seldomly hold positions of leadership					
15	I hold the view that innovations need to be affordable					

PART THREE: E-Learning Institutional Attributes

Please select the most appropriate response that indicates the level of your agreement or disagreement with each statement.

Response Key:

SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree.

#	Statements	SD	D	U	A	SA
1	The quality of the electronic technology infrastructure of this University is adequate for e-learning programme adoption in my institution.					
2	Sources of e-learning project funding are reliable					
3	Allocation of financial resources for e-learning in this University is sufficient for e-learning programme adoption of my institution.					
4	The Quality Assurance Policies of this University specifically related to e-learning adoption are relevant					
5	The Quality Assurance Policies of this University specifically related to e-learning adoption are up to date					
6	The Quality Assurance Policies of this University specifically related to e-learning adoption are documented and known by the stakeholders of my institution					
7	The Quality Assurance Policies of this University do not hinder e-learning adoption agenda of my institution.					
8	The technical support for e-learning adoption in my institution is up to date					
9	The technical support requirements for e-learning adoption in my institution are well documented					
10	The technical support for e-learning adoption in my institution does not hinder e-learning adoption					

APPENDIX C

QUESTIONNAIRE FOR INFORMATION TECHNOLOGY SUPPORT STAFF

Survey Objective:
The objective of this survey is to identify factors affecting e-learning adoption and utilisation at the Institute of Open and Distance e-Learning, Kenyatta University, Kenya and Centre for Continuing Education, University of Cape Coast, Ghana.
Instructions:
Please do not identify yourself on this survey. All individual responses will remain confidential. Only the aggregate results will be reported.
Thank you for taking time to provide responses to this survey.

PART A

Please supply the following information regarding your experiences and background.

1. Your Sex: ___Male ___Female. (Please tick √ one)
2. Your age:20 to 29___30 to 39___40 to 49___50 to 59___60 and above__ (Please tick √ one)
3. Highest qualification
   ___ PhD
   ___ Masters
   ___ First Degree
   ___ Diplomas
   ___Others (Please state the Professional Certificates acquired:
   ……
4. State your responsibilities.
   ……
   ……..
   ……
   ……
   …….

5a. Have you ever received any type of technical or further training in e-learning programme?
   ___ Yes ___ No

5b. (If "yes" to 5a), where did you receive your training (check √ all that apply)___ Self-taught ___ Private Computer Training Centre
   ___College or University ___ others……

6. How many months/years have you spent working on the e-learning platform in this University? _____

7a. How do you rate the level of e-learning adoption and utilisation patronage at your institution?
   ___Poor ___Low___Average, ___Above Average ___
   Very good___ Excellent

7b. Give reason for your choice……..…..
   ……
   ……

8. What are the main challenges you face while maintaining e-learning system for your institution?

……..……

……..

……

……

……

……

9. To what extent do the challenges identified, in Question eight above, affect e-learning adoption and utilisation in your institution? (Please, tick √ one) (a). No effect (b). Mild effect (c). High effect (d). devastating effect

PART B: Information Communication Technology Skills

a) How would you rate your skills in the following computer related areas?

Please tick (√) in the appropriate box

#	Statements	None	Basic	Inter-mediate	Proficient
1	Ms Word processing				
2	Ms Excel				
3	Ms Power point Presentation designs				
4	Ms Access (Database Management)				
5	Desktop-publishing using authorware applications				
6	Website designing using HTML, Dreamweaver, FrontPage etc				
7	Internet usage eg. Surfing, emailing charting etc				
8	**Basic hardware troubleshooting for example**	-	-	-	-
8a	*Check simple connections (e.g. ensure cables are correctly plugged into the appropriate pots				
8b	*Clear printer jams,				
8c	*Change printer cartridges				
9	**Video /Digital cameras eg.**	-	-	-	-
9a	Use a digital cameras to create images				
9b	Transfer images to a computer				
9c	Editing images and video				
10	Overall self-assessment (Basic ICT Skills)				
-	**Advanced Information System (IS) management Skills**	-	-	-	-
-	**Security administration**	-	-	-	-
11	Add, delete and change user accounts.				
12	Ensure that passwords conform to the institution's policy				
13	Check that encrypted file systems follow the required institutional standard				
14	Maintain Network physical Security				
15	Maintain up-to-date antivirus/spyware software etc				
-	**Storage Management**	-	-	-	-
16	Maintaining network primary storage				

17	Maintaining network secondary storage				
18	Maintaining network tertiary storage				
19	Tracking and maintaining data resources.				
20	selecting and maintaining storage media				
-	**Directory Services Administration:**	-	-	-	-
21	make the organisation's network resources easy to find and access				
22	Installing, configuring, and troubleshooting Active Directory				
23	Managing, monitoring, and troubleshooting DNS for Active Directory				
24	Monitoring, optimizing, and troubleshooting Active Directory security solutions				
25	Change and Configuration Management				
-	**Output management**	-	-	-	-
26	disable networked devices				
27	Enable jobs to run wherever and whenever needed				
28	Block certain users from accessing resources (document-level integrity)				
29	Enable more personalized customer communications				
30	Deliver communications in multiple formats over multiple channels				
-	**Patch Management**	-	-	-	-
31	Perform window vulnerability check (Checking for weak passwords)				
32	Internet Information Services vulnerability				
33	Checking for SQL vulnerability				
34	Checking for security updates				
35	Overall self-assessment in IS management skills				

APPENDIX D
PERCEPTION QUESTIONNAIRE FOR LECTURERS

The objective of this survey is to identify and assess lecturers' preparedness towards the e-learning system usage at the Institute of Open and Distance e-Learning Kenyatta University, Kenya and Centre for Continuing Education, University of Cape Coast, Ghana.

Instructions:

Please do not identify yourself on this survey. All individual responses will remain confidential. Only the aggregate results will be reported.

This survey consists of four parts. The first part will ask you for demographic information. The remaining parts will require you to provide your perceptions and attitude regarding e-learning usage at your institution.

Thank you for taking time to provide answers to this survey.

PART ONE

Please supply the following information regarding your experiences and background.

1. Your Sex (please tick √ one)
   ___Male
   ___Female

2. Your age (please tick √ one)
   ___20 to 29 ___30 to 39 ___40 to 49 ___50 to 59 ___60 and above

3. Have you ever received any type of e-learning usage training?
   ___ Yes
   ___No

4. (If "yes" for 3 above), where did you receive your training (check all that apply)___ Self-taught ___ Private Computer Training Centre ___ College or University ____ other

5. What is your present level of experience in the use of e-learning system at your institution? Please check (√) only one response.

   ___Non-user

   ___Novice

   ___Average

   ___Expert

6. How many years have you spent using the e-learning platform in this university? _____

PART TWO: E-Learning Self-Efficacy

Please tick (√) the response option that best describes how you perceive your skills in using e-learning system in your institution.

Response Key:
SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree

#	**Statements**	**SD**	**D**	**U**	**A**	**SA**
-	I could complete the required tasks using the e-learning system if:	-	-	-	-	-
1	there was no one around to tell me what to do.					
2	I had never used a 'learning tool' like it before					
3	I had only the 'learning tool' manuals for reference.					
4	I had seen someone else using it before					
5	I could call someone for help if I got stuck					
6	someone else had helped me get started.					
7	I had a lot of time to complete the task for which the e-learning tool was provided.					
8	I had just the built-in help facility for assistance					
9	I am hard press with time to meet deadline					
10	I had used similar 'learning tool' like this one before					

PART THREE: E-Learning Perceived Usefulness: Lecturers

Please tick (√) the response option that best describes how you perceive the usefulness of e-learning

Response Key:

SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree

#	**Statements**	**SD**	**D**	**U**	**A**	**SA**
1	Using e-learning system will allow me to accomplish teaching tasks more quickly					
2	Using e-learning system will make me feel professionally good					
3	Using e-learning system will make it easier for me to organise course content faster					
4	Using e-learning system will increase my efficiency in teaching					
5	Using e-learning system will enhance my effectiveness in teaching					
6	I will use e-learning system even if it takes too much time to prepare online content and activities					
7	I will use the e-learning system even if the vision and strategy about e-learning are not clear in the institution.					
8	I will use the e-learning system even if all the time spent with e-learning is not rewarded by the administration					
9	Using e-learning system will help me to reach many distance learners anywhere and anytime					
10	I always use the e-learning platform because I perceive it to be very useful					

PART FOUR: Lecturers' Attitude towards E-learning System

Please tick (√) the response option that best describes how your attitude affects e-learning utilisation in your institution.

Response Key:

SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree

#	**Statements**	**SD**	**D**	**U**	**A**	**SA**
1	Face to face teachings are more richer in interactions than Online interactions					
2	Distributing modules and other course materials are more efficient than using the multimedia distribution channels					
3	It is easy to use course content created online by other persons					
4	E-learning system are designed for the younger generations					
5	I feel ease when using e-learning system.					
6	I use e-learning system because I have no concerns regarding public universities use of e-learning as a means of awarding degrees.					
7	My job as a lecturers is motivating as l use e-learning system					
8	I get a rising good feeling when I think of trying to use an e-learning system.					
9	I wish to use e-learning exclusively to teach my students.					
10	I have the right teaching skills to use e-learning system					

APPENDIX E

PERCEPTION QUESTIONNAIRE FOR DISTANCE LEARNERS.

Survey Objective:
The objective of this survey is to identify and examine factors affecting distance learners' self-efficacy, perception and attitudes towards the e-learning system at the Institute of Open and Distance e-Learning Kenyatta University, Kenya and Centre for Continuing Education, University of Cape Coast, Ghana.

Instructions:
Please do not identify yourself on this survey. All individual responses will remain confidential. Only the aggregate results will be reported**.**

This survey consists of four parts. The first part will ask you for demographic information. The remaining parts will require you to provide your perceptions and opinions regarding e-learning usage at your institution.

Thank you for taking time to provide answers to this survey.

PART ONE

Please supply the following information regarding your experiences and background.

1. Your sex: (Please tick √ one)
   ___Male
   ___Female

2. Your age: 20 to 29 ___ 30 to 39___ 40 to 49___ 50 to 59___
   60 and above___

3. Have you ever received any type of e-learning usage training?
   Yes ___No___
4. (If "yes" to 3 above), where did you receive your training (check all that apply) Self-taught ___ Private Computer Training Centre___
   College or University ____ other_____
5. What is your present level of experience in the use of e-learning?
   (Please check √ only one response).
   ___Non-user
   ___Novice
   ___Average
   ___Expert

PART TWO
E-LEARNERS' SELF-EFFICACY

Please tick (√) the response option that best describes how you perceive your ability in using e-learning system at your institution.

Response Key:
SD = Strongly Disagree, **D** = Disagree, **U** = Undecided, **A** = Agree, **SA** = Strongly Agree

1#	**Statements**	**SD**	**D**	**U**	**A**	**SA**
-	I could complete the required tasks using the e-learning system if:	-	-	-	-	-
1	there was no one around to tell me what to do.					
2	I had never used a 'learning tool' like it before					
3	I had only the 'learning tool' manuals for reference.					
4	I had seen someone else using it before					
5	I could call someone for help if I got stuck					
6	someone else had helped me get started.					
7	I had a lot of time to complete the task for which the e-learning tool was provided.					
8	I had just the built-in help facility for assistance.					
9	I am hard press with time to meet deadline					
10	I had used similar 'learning tool' like this one before					

PART THREE
E-LEARNING PERCEIVED USEFULNESS: DISTANCE LEARNERS

Please tick (√) the response option that best describes how you perceive the usefulness of the e-learning system at your institution.

Response Key:
SD = Strongly Disagree, **D** = Disagree, **U** = Undecided, **A** = Agree, **SA** = Strongly Agree

#	**Statements**	**SD**	**D**	**U**	**A**	**SA**
1	E-learning improves my learning performance					
2	E-learning makes it easier to access course content easily					
3	I believe e-learning contents are informative					
4	I believe e-learning is a useful learning tool.					
5	Using learning system allows me to accomplish learning tasks more quickly					
6	E-learning system helps me learn my subject anywhere and anytime					
7	E-learning system stimulates creativity in me					
8	E-learning system helps me to work with other students					
9	Learning through e-learning saves time.					
10	The use of e-mail creates more interaction between me and my lecturers					

PART FOUR
DISTANCE LEARNERS' ATTITUDES TOWARDS E-LEARNING

Please tick (√) the response option that best describes your candid feelings about the e-learning system at your institution.

Response Key:

SD = Strongly Disagree, **D** = Disagree, **U** = Undecided, **A** = Agree, **SA** = Strongly Agree

#	**Statements**	**SD**	**D**	**U**	**A**	**SA**
1	I have positive feeling toward e-learning usage					
2	Studying through e-learning is a good idea					
3	The challenge of learning about e-learning tools is exciting and enjoyable.					
4	Lecturers should use e-learning system to disseminate class information and assignments to students					
5	I always want to use the e-learning-system because I know its importance					
6	Knowing how to use e-learning is a worthwhile skill					
7	E-learning usage provides better access to the lecturers					
8	The use of e-learning helps provide a better learning experience.					
9	Learning about e-learning tools is not boring.					
10	The use of e-learning increases my motivation for the course.					

Thank you.