DETERMINANTS OF ADOPTION OF E-LEARNING IN KENYAN PUBLIC UNIVERSITIES: A CASE OF JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

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ABSTRACT

Higher education institutions in developing economies are at different stages of adopting ICT for education. For institutions that are in the early stages of the adoption of eLearning there is no clear strategy or framework to implement a working eLearning model. This study set out to understand the models that are appropriate for faculty heads to adopt and influence the implementation of eLearning. The objectives of this research were to determine the participation of stakeholders, evaluate the availability of financial resources, to establish the status of ICT installations at the university to facilitate lecturers and to examine the institutions structure for lecturers and students on the adoption of eLearning at Jomo Kenyatta University of Agriculture and Technology (JKUAT). The study covered a public university in Kenya with specific focus on the faculty staff at three JKUAT campuses in Nairobi. The study also reviewed the literature on the subject on different and similar context to explain the significance of the study. There were four theories that explained the various influences of the determinants on the adoption of eLearning. The relation of variables of the research was outlined and the key indicators for the study highlighted. A sample of 100 staff and stakeholders were selected and used for the study using simple random sampling procedure that made 10% of the total population. A structured questionnaire was used to gather data on faculty lecturers, students and technical staff to which distinct variables measuring the stakeholder's participation, financial allocation by the institution, ICT infrastructure capacity and level of the institution support to determine their influence on eLearning adoption. The data collected was processed and analyzed using SPSS statistical package version 21. The analysis showed that stakeholder participation had the highest Pearson correlation coefficient (.666) whereas financial resources, ICT infrastructure and organization structure had the positive (Pearson correlation coefficient =.543; .658 and .504) influence on adoption of e-learning. The most significant influence was identified to be the stakeholder's participation and financial resources. The study recommends that the stakeholder capacity building effort should be emphasized to improve expertise and an increase in financial resource for ICT investments is critical for success of ELearning adoption.

INTRODUCTION

This chapter explored the background of eLearning, defined the concept and highlighted the practice of eLearning for both the global and local perspective. The chapter defines the problem that the study intended to answer and describes the objectives, scope, limitations and significance of the study.

Background of the Study

The rapid change and advancement of Information Communications Technology (ICT) has the capacity to affect the quality and efficiency of university education throughout the world. The ease with which lecturers and students can gather information over the internet on virtually any topic has the potential to transform instructional content. Bligh (2000) defines lectures as a continuous exposition by a speaker who wants the audience to learn something.

The approach of using technology to deliver courses to students in universities is commonly known as eLearning. (Benson, 2002; Carline, 2004; Conrad, 2002) define eLearning as access to learning materials and content via the use of technology. The definition however has conflicting views from various authors, Ellis (2004) disagrees with authors like Nichols (2003) who define e-Learning as strictly being accessible using technological tools that are web-based, web-distributed, or web-capable. The belief that e-Learning not only covers content and instructional methods delivered via CD-ROM, the internet or an intranet (Benson et al., 2002; Clark, 2002) but also includes audio and videotape, TV broadcast and interactive TV is the one held by Ellis.

One aspect that is not disputed is that the use of technology for learning. This technology is packaged into applications in the market such as Moodle, Blackboard and WebCT. Many of these applications used for eLearning need to be customized to suite different models that universities require. For the purposes of this study, e-learning is defined as learning that involves a web-based component, enabling collaboration and access to content that extends beyond the classroom.

Global Perspective of ELearning

In developed nations eLearning has become a part of education system and the presence of lecturer is becoming less significant as ICT continues to provide solutions to deliver services. According to Docebo (2014) the global aggregate growth rate for eLearning is 7.6% but several world regions appear to have significantly higher growth rates, the highest growth rate is in Asia at 17.3%, followed by Eastern Europe, Africa, and Latin America at 16.9%, 15.2%, and 14.6%, respectively. The use of ICT in the education sector will be a dominant trend over the next decade.

Since eLearning allows students to study anytime-anywhere, basic education and up skilling becomes more available to more people. ELearning has become a norm in the United States; a recent study indicated that 6.7 Million university students enrolled for at least one online course to account for 32% of the students in higher education, Babson Survey Research Group (2013). This is driven by internet availability, cheaper computers, and young population who have embraced the internet and smart phones. In this region, it's the students who are demanding eLearning and universities are also adopting eLearning as a cost reduction measure.

This study highlighted the influence of the faculty and students have on the adoption of eLearning, according Bichsel (2013) who conducted a survey in the United States on the state of eLearning in higher education indicated that there is reluctance among some faculty to learn new technology or teach online courses, this is a reflection of the concern that eLearning is changing what it means to be a lecturer. Less than one-third of faculty chief academic officers think online instruction is legitimate and technological know-how of faculty staff is a primary concern. In Europe a body known as European University Association carried out a study that indicates eLearning is implemented by the vast majority (96%) of universities that is 238 out of 245 institutions EUA (2014). Over 40% of institutions involve less than 25% of their students

in e-learning due to decentralized eLearning while centralized model institutions have 50% of the students on eLearning. The region has a body known as European Distance and E-Learning Network (EDEN) that assists its 200 members with collaboration for eLearning.

The Kenyan Perspective on ELearning

Universities in developing countries such as Kenya are used to teaching by the means of lecturers physically present in front of the class to deliver their lectures to students. The concept of physical presence learning environment accounts for the largest group of students in most universities in developing nations according to Kashorda and Waema (2014), 78 per cent have enrolled for physical class lecture courses. The concept of eLearning is emerging in most universities but it has not fully been adopted to have significant number of student enrolled in the eLearning program. Information Communication Technology has a great potential to create bigger opportunities, improve service delivery and access to education.

The use of ICT has made it possible for universities to develop eLearning centers to deliver their programs, however its impact is not significant in Kenyan universities. According to e-readiness survey Kashorda et al (2014) about 73 per cent of university students preferred blended courses compared to only 14.9 per cent who choose online-only courses. Only 11 per cent of the students reported that all or nearly all courses they took were blended while about 78 per cent say that only a few or none of the courses were mixed. JKUAT total enrollment in year 2012-2013 stood at 28,990 according to KNBS (2013) statistics. According to Kashorda et al. (2014), this translates to approximately 2,000 students having enrolled for eLearning; however this has not been empirically determined.

The market for students in Kenya willing to enroll to eLearning is available but universities have failed to capitalize on this, according to e-readiness survey Kashorda et al. (2014) the study indicates that 30 Kenyan public universities have a student enrolment of 423,664 which accounts for 80% of students in Kenya. The highest numbers of users with access to computer are at the age group of between 20 to 24 years which is 18.2% of 3,481,259 translating to 626,626 according to CCK National ICT Survey (2010). The survey has also highlighted that 14.3% (89,607) use computers at their homes, 30% (187,987) use computers at the cybercafé while 23.2 % (144,123) use the computers at the education centers. According to Kashorda et al. (2014), 30 universities have 16,174 student lab computers available while there over 200,000 students have laptops. Despite the statistics on the students there is little or no survey to examine the influence of lectures. This study examined how university lecturers interact with technology for learning, and to evaluate the support that has been provided by the learning institution to the lecturers. Have they been involved in the adoption of e-learning and what roles do lecturers play in operationalization of eLearning Lecturers are key players in the education system and require full support to gain knowledge and skills in the utilization of ICT and eLearning as mode of education delivery.

ELearning Overview of JKUAT

JKUAT is a public university near Nairobi, Kenya. It is situated in Juja, 36 kilometers northeast of Nairobi, along the Nairobi-Thika Superhighway. The University was started in 1981 as Jomo Kenyatta College of Agriculture and Technology (JKCAT). It was started as a Middle Level College by the Government of Kenya with the generous assistance from the Japanese Government. Plans for the establishment of JKCAT started in 1977. It was finally established as a University through the JKUAT Act, 1994 and inaugurated on 7[th]December 1994.It offers courses in Technology, Engineering, Science, Architecture and Building sciences. The university has a strong research interest in the areas of biotechnology and engineering.

According to Kihoro (2014), the effort to implement eLearning at JKUAT dated back to 2006 but the implementation started in 2013 when the top management pushed the adoption process by providing for establishment of School of Open,

Distance and eLearning to spearhead implementation of distance learning programs and justifying digitization incentives for lecturers. The university has had a long journey in the implementation of the JKUAT eLearning program. The report also states that a successful KENET funded MLearning project was run between September 2011 and April 2012. The new office embarked on content development process for the eLearning implementation to have the program fully implemented. The report noted that the Innovative e-content packaging and management was key to the reported success. The ODeL programs that were more business related were advertised and the first batch of 43 students admitted in May 2013. Distance eLearners mainly postgraduate students now are 450 in JKUAT. About 1,000first year students which are equivalent to about 20 classes reported in May2013 at the main campus were required to take the unit SZL 2111 HIV/AIDS online according to the report.

Kihoro (2014) also indicates that in September to December semester of 2013, about 5000 students all first yearswho are equivalent to about 100 classes took HIV/AIDS unit online and currently, 3 units are on offer online. He further goes to state that the eLearning program reduced the cost of teaching the unit from about 20% ($20 per student) of the fees to less than 5% (about $5 per student) due to its large scale implementation.

Statement of the Problem

The success of most institutions of higher learning throughout the world, including public universities, lies in the adoption of e-learning on which the institutions spends millions to establish infrastructure to improve their performance according to Netswera (2005). This study sought to establish the determinants influencing adoption of e-learning at the Universities. JKUAT commenced an eLearning program with 19 courses available online but the program has recorded low subscriptions. According to an e-readiness survey by Kashorda et al. (2014), 11% of the students had taken a few blended courses (online and face to face) in the 2012/2013 academic year. This was despite over 75% of the students reporting that they preferred blended courses. The report attributes the low enrollment to lack of capacity to teach both blended courses and develop content for eLearning.

The report further states that 24% of the faculty lecturers had taught a few online courses and up to 40.5% had taught a few blended courses. This demonstrates that there is a need to transform the teaching and learning process through the use of ICT and this can only be driven by top management, with the support of ICT directors through adoption of ICT strategies for eLearning. It would also require substantial development of faculty capacity as well as eLearning content due to its labor-intensiveness. Lecturers who are involved in eLearning activity would require reduction in the teaching hour's to develop this content for the students to have access to them.

Despite the foregoing, there is a dearth of research on adoption of e-learning in public universities in the Kenyan context. As such it is important for public universities in Kenya to know why there is low adoption of e-learning in their institutions. This study therefore, sought to establish the determinants influencing adoption of e-learning in Kenyan public universities. However, to come up with the determinants, the study seeks to examine; the influence of top management support on adoption of e-learning; how stakeholders participation contributes to adoption of e-learning; whether ICT Infrastructure assist in adoption of e-learning and the influence of institutions infrastructure that can help Kenyan public universities to adopt e-learning in the institutions.

Objectives of the Study

General Objective

The purpose of this study was to establish the determinants of adoption of e-learning in Kenyan Public Universities.

Specific Objectives

The specific objectives of this study were to:

I. Determine the influence of the stakeholders' participation on the

adoption of e-learning in Kenyan Public Universities.

II. Establish the influence of financial resources on the adoption of e-learning in Kenyan Public Universities.

III. Find out the influence of ICT infrastructure on the adoption of e-learning in Kenyan Public Universities.

IV. Examine the influence of the organization structure on the adoption of e-learning in Kenyan Public Universities.

Scope of the Study

The study was carried out in the four JKUAT campuses in Nairobi area. These study areas were considered due to the accessibility to the researcher and time limit. The specific focus campuses were Nairobi CBD Campus, Karen Campus, Westlands and Juja Main Campus. The study equally limited itself to variables which included: stakeholder participation, financial resource allocation, ICT infrastructure and organization infrastructure.

Limitation of the Study

The study examined a technical subject and most of the respondents were not experts in the field of eLearning; the possibility of a low response rate was addressed by use of simplified terms on the research instrument. It was anticipated that contacting the respondents could be difficult given that they are scattered in the 4 campuses across Nairobi. This was however mitigated by use of an online questionnaire to collect data. The study had also anticipated resistance by staff to participate in the research due to other duties and fear of victimization. This was curtailed by giving the respondents ample time to respond to the questionnaire and use of an introductory letter from the National Council of Science and Technology providing the necessary assurances to the key respondents.

LITERATURE REVIEW

Introduction

This chapter reviews literature studies on eLearning in developed nations and Africa. The purpose of this literature review is to establish to what extent various scholars have explored in the area of eLearning and discuss their findings and recommendations. The different scholar's literature was helpful in developing the overview of what eLearning is about in different scenarios. The research has reviewed theories on learning that seek to explain the concept of eLearning and adoption of technology.

Theoretical Review

Theories and models have been developed to explain aspect of adoption of technology, they try to predict and help understand the phenomena of exiting challenges. According to Karen Glanz (2009). A theory is a set of interrelated concepts, definitions, and propositions that explains or predicts events or situations by specifying relations among variables. A theoretical framework consists of concept, definitions and assumptions that are used to for a particular study (Torraco, 2011). This study has reviewed the Stakeholder Theory, Technology Acceptance Model, Resource Dependence Theory and Institutional Theory.

Stakeholder Theory

Freeman (2004), identifies and models the groups which are stakeholders of a corporation, and both describes and recommends methods by which management can give due regard to the interests of those groups. Agle et al (2008) argue that the theory has multiple distinct aspects that are mutually supportive: descriptive, instrumental, and normative. The descriptive approach is used in research to describe and explain the characteristics and behaviors of firms, including how companies are managed, how the board of directors considers corporate constituencies, the way managers think about managing, and the nature of the firm itself in the implementation of projects. The central idea is that an organization's success is dependent on how well it manages the relationships with key stakeholders such as customers, employees, suppliers, communities, financiers, and others that can affect the realization of its purpose (Freeman & Phillips, 2002).Patton (2008) emphases that the

stakeholder models entails all people with legitimate interest to participate in an enterprise do so to gain benefits. Michell et al (2008) state that the exercise of stakeholder power is triggered by conditions that are manifest in the other two attributes of the relationship i.e. legitimacy and urgency. Power gains importance when it is legitimate and exercised through a sense of urgency. Highly important and powerful stakeholders are located where power, legitimacy and urgency intersect (Freeman & Phillips, 2002) The overall purpose of stakeholder theory is to enable the managers to understand stakeholders and strategically manage them (Patton,2008).

The theory emphasizes the significance of the relationship between the stakeholder participation and the adoption of e-learning. The success or failure of the e-learning adoption will be influenced greatly by the participation of various stakeholders which may include the students benefiting from the project and even the project team, (Beach, 2009) Thus, the researcher seeks to establish whether there exist stakeholder involvement in implementation of E-learning for the success and sustainability of the projects. The above theory facilitated the first research objective; to determine influence of stakeholder participation on the adoption of E-learning in the Kenya Public universities.

The Resource Dependence Theory

Resource dependence theory (RDT) by Jeffrey Pfeffer and Gerald R. Salancik (1970) is the study of how the external resources of organizations affect the behavior of the organization. The theory's fundamental assumption is that organizations are not self-sufficient, but depend on resources provided by their environments to achieve organizational goals. Resource dependence theory has implications regarding the optimal divisional structure of organizations, recruitment of board members and employees, production strategies, contract structure, external organizational links, and many other aspects of organizational strategy. There are three core ideas of the theory: social context matters; organizations have strategies to enhance their

autonomy and pursue interests; and power (not just rationality or efficiency) is important for understanding internal and external actions of organizations. The second idea of the theory concerns this study for the organization interest in pursuing ELearning. Has the university developed a strategy to access resources to achieve the Elearning adoption. The above theory facilitated the understanding of the second research objective; establish the influence of financial resources on the adoption of e-learning in Kenyan Public Universities

The Technology Acceptance Model

Technology acceptance model (TAM) is one of the most widely used behavioral models developed by (Davis, Bagozzi, &Warshaw, 1989). This model seeks to explain the independent variable on ICT service and devices. The model was specifically developed to predict individual adoption and use of new information technology or information systems Davis et al. (1989).In the perspective of the lecturer at JKUAT, what does eLearning mean to his day to day activities, it will require a lot of time to learn and develop courses for the student. The system may require the lecturer to get new tools for use to deliver content. TAM uses two technology acceptance measures, ease of use (EOU) and perceived usefulness (PU) which will illustrate and explain the lecturer views on eLearning. Is the technology easy to use and is it useful to the lecturer. According to Davis et al. (1989) the central idea underlying TAM is that it is EOU and PU, not attitude that ultimately determine a person's behavioral intention to use IT.PU refers to the extent to which a prospective user believes that using a specific IT will improve his or her job performance, while EOU refers to the extent to which a user expects the use of a specific IT to be relatively free of effort Davis et al. (1989). Because effort is a finite resource that a person may allocate to the various activities for which he or she is responsible Radner & Rothschild (1975), TAM posits that, all else being equal, an application that is perceived to be easier to use than another is more likely to be accepted by the user. In TAM, PU is seen as being directly impacted

by EOU, with intention to use serving as a mediator of actual system use Davis et al. (1989). Find out the influence of ICT infrastructure on the adoption of e-learning in Kenyan Public Universities

Institutional Theory

Institutional theory was developed by William Richard Scott and it emphasizes that institutional environments are crucial in shaping organizational structure and actions (Scott & Christensen 1995; Scott 2001). This theory addresses the independent variable on organization support and structure in the conceptual framework. According to the institutional theory, organizational decisions are not driven purely by rational goals of efficiency, but also by social and cultural factors and concerns for legitimacy. Institutions are transported by cultures, structures, and routines and operate at multiple levels. The theory claims that firms become more similar due to isomorphic pressures and pressures for legitimacy (Dimaggio & Powell 1983). This means that organization will be driven by competitor to adopt similar strategies to stay relevant and be competitive. This means that firms in the same field tend to become homologous over time, as competitive and customer pressures motivate them to copy industry leaders. This theory also relates to Universities which are likely to be induced to adopt and use eLearning by other universities that are external isomorphic pressures. The theory also explains mimetic pressures are observed when firms adopt a practice or innovation imitating competitors (Soares & Palma, 2008). Coercive pressures are a set of formal orin formal forces exerted on universities by other universities upon which the former universities depend. Normative pressures come from dyadic relationships where companies share some information, rules, and norms. Sharing these norms through relational channels amongst members of a network facilitates consensus, which, in turn, increases the strength of these norms and their potential influence on organizational behavior (Powell &DiMaggio 1991).The above theory facilitated understanding of the fourth research objective;

Examine the influence of the organization structure on the adoption of e-learning in Kenyan Public Universities.

Conceptual Framework

Mugenda (2008) defines conceptual framework as a concise description of the phenomenon under study accompanied by a graphical or visual depiction of the variables of the study. According to Young (2009), conceptual framework is a diagrammatical representation that shows the relationship between dependent variable and independent variables. In the study, the conceptual framework looked at the relationship between influences of lecturers on e-learning and adoption of eLearning in JKUAT University.
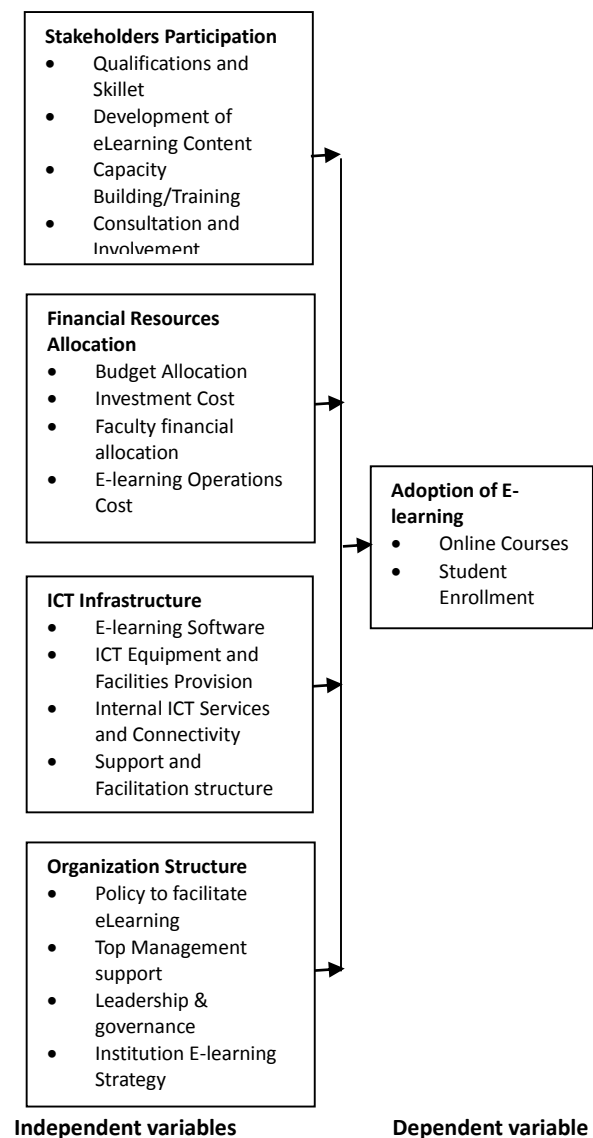

Stakeholders Participation
- Qualifications and Skillet
- Development of eLearning Content
- Capacity Building/Training
- Consultation and Involvement

Financial Resources Allocation
- Budget Allocation
- Investment Cost
- Faculty financial allocation
- E-learning Operations Cost

ICT Infrastructure
- E-learning Software
- ICT Equipment and Facilities Provision
- Internal ICT Services and Connectivity
- Support and Facilitation structure

Organization Structure
- Policy to facilitate eLearning
- Top Management support
- Leadership & governance
- Institution E-learning Strategy

Adoption of E-learning
- Online Courses
- Student Enrollment

Independent variables   Dependent variable

Figure 2.3: Conceptual Framework

Stakeholder Participation

For an organization to be truly effective, every single part of it, each department, each activity and each person and each level must work properly together, because every person and every activity affects and in turn is affected by others (Murambi, 2005). Central to this is the notion of the internal customer "every part of an organization contributes to external customer satisfaction by satisfying its own internal customers" (Heijden et al, 2003). From emanating perspective this internal customer notion is also well accepted Panayiotou et al, (2004) has led to the concept of internal marketing (Beamon, 2008). However, the application of notion of the e-learning adoption strategy to e-procurement is relatively new. The impact of e-learning on an organization process and routines has concentrated primarily on the internal alignment characteristics of systems and practices within IT/IS strategy (Venkatraman, 2001). The relevance of stakeholder theory is demonstrated by its standing as the "dominant discourse" in organization theory (Pesqueux & Damak-Ayadi, 2005), and by its application across a range of management disciplines. Its key proposition is that sustainable organizational success in large part depends on systematic consideration of the needs and goals of salient stakeholders (Fraser & Zarkada-Fraser, 2003).

The lecturer plays a key role in the delivery of education in any higher education institution. The participation of the students and lecturers plays a key role in the design of technology-based environments for learning purposes (Maor, 2003). The participation of lectures shall be measured by the capacity and training offered on eLearning, by the level of involvement in development of ELearning the day to day activities, the qualification and skill sets. The same measure shall be replicated across all stakeholders of ELearning.

The first indicator examined the number of times the stakeholder have used program to deliver and use course content. The lecturer and student will also be evaluated to determine what level of interest they has on the solution by reviewing the number of courses they have used institution of higher learning. The second indicator evaluated the frequency in which the lecture and student had requested for improvements of the solutions to increase his or her productivity in the delivery of coursework. This was illustrated by his or her commitment in improving the solution. The third indicator examined the level responsibility the lecturer has vis a vis the coursework schedule at the University. This was illustrated by the level of participation of the lectures at the university (Fraser & Zarkada-Fraser, 2003).

Financial Resources Allocation

Financial resources allocations mean that any meaningful project success to be realized, resources must be availed. These financial resources include finances in human capital resource, motor vehicles, computers, managerial resources and time (Gwadoya, 2011). With proper allocation and utilization of these financial resources; there will be efficiency and effectiveness in performance and thus increased output. This will make the projects to be easily monitored, reports and feedback given on time. The time reporting, is necessary interventions that should be done to save e-learning projects in institutions from collapsing (Gichuki, 2012).

According to Gasper (2009), availability and adequacy of financial resources play a key role in the formulation and implementation of e-learning practices in any project. The financing process, such as raising and maintaining adequate funds for project activities, is clearly of critical importance to the progress of a project. Jack & Samuel (2006) states that adequate funding need to be devoted to implementation of M&E practices for example in e-learning for its potential to be realized in a project. Insufficient financing is a major factor in poor maintenance which, in turn, is often cited as a reason for project failure (Jack and Samuel, 2006).

ICT Infrastructure and Applications

The study examined the level of support and infrastructure provided to facilitate the lectures for eLearning. It is necessary to ascertain the

broad needs of potential users of on-line to ensure the precision of assigning the needed resources (Calverley & Shephard, 2003). The key items to be measured are the number and type of equipment and infrastructure that are provided to the lecturer and the level of support provide by the ICT department or ELearning Units on eLearning services to lecturers.

The first indicator was to determine what the lecture provided for as computer equipment and accessories to use for the eLearning solution. This was illustrated by the commitment of the institution in facilitating the lecturer. The indicator also illustrated the percentage of lecturer provide with necessary facilities to deliver the content on the eLearning solution platform.

The second indicator was to evaluate the structure that has been provided to support the lecture for eLearning. This will be measured by the number of specialized personnel who have been deployed to support the lecturer. It will be measured by the number of facilities that have been installed to support the eLearning solution. What percentage of ICT infrastructure is dedicated to the eLearning.

Organization Structure

According to APM (2005), it states that governance of organization management concerns those areas of corporate governance that are specifically related to organization activities. Effective governance of organization management ensures that an organization's project portfolio is aligned to the organization's objectives, is delivered efficiently, and is sustainable. Governance of organization management also supports the means by which the corporate board and other major project stakeholders are provided with timely, relevant and reliable information.

Ross (2009) describes four principles of effective organization structure: Ensure a single point of accountability for the success of the organization. This ensures clarity of leadership, plus clarity and timeliness of decision making; Service delivery ownership determines project ownership. This places the business at the heart of project delivery; Ensure separation of stakeholder management and project decision-making activities. This will prevent decision-making forums from becoming clogged with stakeholders; Ensure separation of organization governance and organizational governance structures. This will reduce the number of project decision layers, since the project decision path will not follow the organizational line of command.

According to Juran and Gryna (2008), they also observed that top management must communicate inventory management to the entire organization to create awareness, interest, desire and action. They should provide the vision of where the organization is going with its quality efforts and create a cultural change within the organization. Muffato and Panizzolo (2005), noted that top management should demonstrate commitment to institution management by; Becoming the first set of recipients of training in the philosophies and methods of e-learning, imparting training to others, establishing customer satisfaction as their basic policy and determining the long term goals and establishing e-learning vision for the future and personally communicating about quality practices in the organization.

This study aims to illustrate the capacity of faculty staff and management of JKUAT to support the eLearning program for adoption of eLearning The indicator for this variable are the relevant policies in place to support the eLearning solution, the amount of money investment to facilitate the eLearning program constitutes of what percentage in the overall budget. The study will also examine the number of staff dedicated to the eLearning program, is there a specific unit or units constituted to manage the eLearning program.

Empirical Review

Mulwa and Kyalo (2013) conducted a study to examine extent to which attitude of principals, teachers and students towards the adoption of e-learning influence the readiness to adopt e-Learning in secondary schools. The study established that Principals' attitude towards e-Learning does not have significant influence on the secondary schools' readiness to adopt e-Learning. The study also It discovered through their findings

that the attitude of Teachers' towards the adoption of e-Learning does not have a significant influence on readiness to adopt e-Learning in secondary schools. The study further established that Students' attitude towards the adoption of e-Learning had an insignificant influence on the readiness to adopt e-Learning in secondary schools. Mulwa et. al (2013) concluded that that the attitude held by Principals, Teachers and Students towards eLearning has no significant influence on readiness to adopt e-Learning in Secondary Schools in Kitui District.

Anderson and Grönlund (2009) presented a critical review of research on challenges for e-learning with a particular focus on developing countries. The comprehensive literature review included 60 papers on e-learning challenges and was undertaken for the purpose of understanding how to implement e-learning in developing countries. The study established that hierarchical teaching methods in many developing countries have to develop into a pedagogy that is more oriented towards students' activities, self-learning and motivation. This was noted as a step change as it has changed inherited roles on part of students as well as teachers. This change necessitated a focus on individuals' activities and perceptions, and how the changes to education brought about by e-learning affect, and are affected by, these. The major contribution of the study was to develop a comprehensive conceptual framework on challenges for e-learning in developing countries so as to provide other researchers with a check-list of factors that should be addressed when designing a project. It also contributed to research for guidance on both focus and in outcomes. (Andersson et al 2009) provided a comprehensive conceptual framework that helps understand which factors are currently under-researched and should be given more focus. ELearning according to Andersson et al. (2009) is a system that for it to be best designed there needs to be a balance between all important factors. Research can help not only by further researching individual factors but also, and in particular, by understanding combinations of factors. There is no single best

eLearning design; all the factors in the framework must be taken into consideration.

According to Kashorda et al. (2014) 73% students' preferred blended learning but only 11% of students in the academic year 2012-2013 had taken all or nearly all courses in blended mode, which means that most of the courses were not yet blended. This illustrates that the opportunity for growth in the industry is available and the universities need to capitalize on this. This also has established that the students are ready to engage in eLearning however the universities are not ready for them. The university needs to develop the capacity of faculty that will fit into a larger eLearning framework to be able to adapt to the needs of the students. The survey further states that the faculty should also be facilitated to teach in blended or fully online mode and the drivers for this change be the head of higher education institutions who will set clear targets for percentage of courses to be taught online or in blended learning mode.

Critique of Existing Literature

Studies on eLearning in Kenya have focused benefits and constraints to use of ICT by universities. There are few studies on eLearning readiness in the context of personnel at the University. One of the most comprehensive studies on e-readiness in higher education in Kenya was done by Kenya Education Network 2013, which focused on e-readiness in higher learning institutions. However the study did not highlight details of staff's influence on eLearning, the percentage of students who are using eLearning was not indicated in the report. The report recommends universities to develop strategies to improve the uptake of students for eLearning. They survey also reported that there are few studies done on other sub-systems such as middle level colleges, primary schools and secondary schools. This study will seek to examine e-learning readiness at higher education institutions in the subject matter of lecturers and their influence at JKUAT.

According to Tarus, Gichoya and Muumbo (2015) Lack of technical skills on e-learning and e-content

development by the teaching staff and lack of interest and commitment among the teaching staff to use e-learning are some of the challenges facing the eLearning programs. This literature has emphasized the key focus of this study as some of the challenges that face eLearning at universities in Kenya; however it has failed to illustrate what percentage this factor contributes to the challenges. The study should have indicated the influence of these key areas to determine the ratio of influence it has on eLearning. The study concludes that successful implementation of e-learning can easily be achieved if these impediments can be addressed but has not recommended model or approaches to implement eLearning in all-inclusive design that considers all factors.

RESEARCH METHODOLOGY
Introduction
This chapter presents and provides description of the research methodology that was used to carry out the study. It was guided by the research objectives as in chapter one. The methodology of this study covered research design, target population, sampling procedure, the sampling size, data collection instruments, data collection procedures, data analysis and interpretation of data.

Research Design
The study adopted descriptive survey research design in order to provide a framework to examine current conditions, trends and status of events. Descriptive research design is more investigative and focuses on a particular variable factor. It is analytical and often singles out a variable factor or individual subject and goes into details of describing them. The design provides for evidence of the existing situation and identifies standards or norms to compare with the present conditions in order to plan the next step (Good, 1992). The function of this research design is to ensure that the evidence obtained enables us to answer the research question as clear as possibleAccording to Cooper & Schindler (2003), such a study is

concerned with finding out who, what, when, where and how of the relevant phenomena.

Target Population
The target population is the group of individuals or object having characteristic that can be observed and measured Mugenda&Mugenda (2003). The target population comprised all the 21,000 students in the four JKUAT campuses in Nairobi area (JKUAT Records, 2015)

Table 3.1: Target Population

Campus	Population	Percentage
Karen	3,500	16.66%
Central business District	2,000	9.50%
Westlands	3,500	16.66%
Juja	12,000	56.12%
Total	**21,000**	**100**

Source: (JKUAT Records, 2015)

Sample Size and Technique
Bryman & Bell (2003), define a sample size as a representation of a total population enumerated for analysis. Gall & Borg (2008) defines a sample as a carefully selected subgroup that represents the whole population in terms of characteristics. The sample size depends on what one wants to know, the purpose of the inquiry, what is at stake, what will be useful, what will have credibility and what can be done with available time and resources (Sekaran, 2003). Owing to practical difficulties with responses from large survey groups, a meaningful survey sample size had to be determined. An appropriate sample size was calculated. A representative sample size with known confidence and risk levels was selected, based on the work of Yamane (1967) formula. An appropriate response rate (sample size) was determined. The formula used by Yamane (1967)

is illustrated in as shown below;

$$n = \frac{N}{1 + N(e)^2}$$

Where n= sample size

N=Target population

 e= Proportion of the study

According to Sekaran, (2003) a sample size of 10% of the target population is large enough so long as it allows for reliable data analysis and allows testing for significance of differences between estimates.At the time of research there were 21000 students in the four campuses in Nairobi area.Therefore, the targeted population of the study was (N = 21000). A 95% confidence level is deemed acceptable and thus statistically z = 2. Placing information in the above formula at a 95% confidence level and an error limit of 10% resulted in:

$$n = \frac{21{,}000}{1 + 4{,}835\,(0.10)^2}$$

= 100 responses

One hundred responses were deemed to be the lowest acceptable number of responses to maintain a 95% confidence level and a 10% error level.

Sampling techniques refers to the technique or procedure the researcher would adopt in selecting items for the sample (Kothari, 2009). The study used proportionate sampling to get the sample sizes for the different campuses. The researcher used purposive sampling to select the participants for each department. Expert judgment and knowledge of roles in the different campuses was used to select participants that are a representative of the population.

Table 3.2: Sample size Distribution

Campus	Population(N)	Sample Size
Karen	3,500	16
Central business District	2,000	10
Westlands	3,500	16
Juja	12,000	58
Total	**21,000**	100

Source: JKUAT (2014)

Data Collection Instrument

The study used self-administered and online questionnaires as the primary tool for data collection. The self-administered questionnaires were through drop and pick-later method. Young, (2009) points out that, questionnaires are appropriate for studies since they collect information that is not directly observable as they inquire about feelings, motivations, attitudes, accomplishments as well as experiences of individuals. He further opines that questionnaires have the added advantage of being less costly and using less time as instruments of data collection. They ease the respondents' burden by giving them the time to think through their responses (Monsen& Horn, 2008). For the self-administered questionnaires there was the advantage of seeking clarification where questionswere not clear.

The questionnaire was semi-structured with closed-ended and Likert questions. Closed and Likert questions determine answers and typically collect quantitative data. The background information questions were used provide qualitative data. For the closed-ended questions, a five-point Likert Scale was used. Closed ended questions were included because they are easier to administer and to analyze.

The questionnaire contained 7 sections. Section A captured information on the demographic characteristics and profiles of the respondents such as gender and age. Section B contained questions relating to educational background. Section C to section F contained questions relating to the variables of the study: stakeholder

participation, financial resources, ICT infrastructure and adoption of eLearning respectively. Finally section G dealt with ELearning related details.

Pilot Testing of the Instrument

According to Bordens & Abbott (2008), pilot study is as a small-scale version of the study used to establish procedures, materials and parameters to be used in the full study. According to Cooper and Schindler (2010), pilot test is conducted to detect weaknesses in design and instrumentation and to provide proxy data for selection of a probability sample. Pilot study is an activity that assists the researcher in determining if there are flaws, limitations, or other weaknesses within the interview design and allows him or her to make the necessary revisions prior to the implementation of the study (Bridget &Lewan, 2005).

The pilot study involved pre-testing the questionnaires on 26 respondents of sample population. It is supported by (Neumann, 2006) who recommends that a pilot test of 10% of the sample size can be used. The respondents were conveniently selected since statistical conditions were not necessary in the pilot study. The results of the pilot test were not included in the actual study.

Validity of Research Instrument

Validity of a research instrument is the degree to which an instrument measures what it is supposed to measure (Kothari, 2004). Content validity will be used. This type of validity measured the degree to which data collected using a particular instrument represented a specific domain of indicators or content of a particular concept (Mugenda and Mugenda, 1999). According to Cooper and Schindler (2006), the researcher may choose to do it alone or may use a panel of experts to judge how well the instrument meets standards. To ensure the content validity of the research instrument, the questions were structured as per the objectives of the study using simple language free from jargon that made it easy to be understood by the respondents. In addition, the opinion of experts in the field of study especially the supervisors were sought and the content validity formula by Amin (2005) used. The formula is; Content Validity Index (CVI) = (No. of judges declaring item valid) / (Total no. of items). Amin (2005), recommends that instruments used in research should have CVI of about 0.78 or higher and three or more experts could be considered evidence of good content validity. Correctionswere made accordingly.

Reliability of Research Instrument

Reliability is the extent to which a research instrument yields findings that are consistent each time it is administered to same subjects (Mugenda and Mugenda, 2003).The measurement of reliability provides consistency in the measurement variables(Kumar,2000)). Internal consistency reliability is the most commonly used psychometric measure assessing survey instruments and scales (Zhang, 2000). Cronbach alpha is the basic formula for determining the reliability based on internal consistency (Kim & Cha, 2002). Reliability is increased by including many similar items on a measure, by testing a diverse sample of individuals and by using uniform testing procedures. In order to test the reliability of the instrument, internal consistency techniques was applied using Cronbach's Alpha. The alpha value ranges between 0 and 1 with reliability increasing with the increase in value. Coefficient of 0.6-0.7 indicates acceptable reliability and 0.8 or higher indicate good reliability (Mugenda, 2008).This study adopted a reliability threshold of 0.7 as recommended by Gupta (2010).

Data Analysis and Presentations

Kothari (2004) defines data analysis as a mechanism for reducing and organizing data to produce findings that require interpretation by the researcher. Data analysis entails editing, coding and tabulation of data collected into manageable summaries (Kumar, 2000). The data collected was quantitative and qualitative. Once the questionnaires were received they were coded according to each variable of the study to ensure accuracy during analysis and edited for

completeness and consistency. Quantitative data was analyzed by employing descriptive statistics and inferential analysis using statistical package for social science (SPSS) version 21 and excel. This technique gives simple summaries about the data and presents quantitative descriptions in a manageable form, (Orodho,2003). Together with simple graphics analysis, descriptive statistics form the basis of virtually every quantitative analysis to data, (Kothari, 2005). The findings were also presented using tables, charts and graphs for further analysis and to facilitate comparison. This generated quantitative reports through tabulations, percentages, and measure of central tendency. Descriptive statistics such as measures of central tendency and dispersion along with percentages were used to organize and summarize numerical data whose results were presented in tables, pie charts, column and bar graphs for easy interpretation of the findings (Zhang, 2000).

The study also adopted inferential statistical analysis. The tests of significance used was multiple regression analysis expected to yield the coefficient of determination (R^2), t – tests, z – tests and p – values. The choice of this technique was guided by the variables, sample size and the research design and multiple regression model and ANOVA at 5% level of significance and 95% level of confidence to establish the strength and direction of the relationship between the independent variables. Advantages associated with multiple regression analysis are that this process offers a more accurate explanation of the dependent variable in that more variables are included in the analysis, and that the effect of a particular independent variable is made more certain, since the possibility of distorting influences from other independent variables is removed (Kothari,2004).

Adoption of E-learning was regressed against four variables namely stakeholders participation, Institution structure, ICT infrastructure and Financial resource allocation. The equation was expressed as follows: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$, where, Y= Adoption of E-learning; β_0=

Constant (coefficient of intercept), X_1= Stakeholders participation; X_2= Financial Resource allocation; X_3= ICT Infrastructure; X_4= Institution structure; ε = error term; $\beta_1...\beta_4$= regression coefficient of four variables.

DATA ANALYSIS, RESULTS AND DISCUSSION
Introduction
The main objective of this study was to explore the determinants influencing adoption of E-learning in Kenyan public universities. The primary data was gathered from the questionnaire as the research instrument. For this purpose, the various statistical analysis tools and multiple regression analysis have been employed to determinants that make contributions adoption of E-learning in Kenyan public Universities. This chapter, therefore, provides analysis, presentation, interpretation and discussion of the findings from the data collected for the study.

Response Rate
Table 4.1: Response rate

Response	Frequency	Percentage
Responded	64	64
Not Responded	36	36
Total	**100**	**100**

The study targeted a sample size of 100 respondents from which 64 filled in and returned the questionnaires with a response rate of 64% while 36respondents did not return or returned partially filled questionnaires translating to 36 %. According to Mugenda and Mugenda (2003), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. Based on the assertion, the response rate was considered to be good. This high response rate can be attributed to the data collection procedures, where the researcher pre-notified the potential respondents and applied the drop and pick method where the questionnaires were picked at a later date to allow the respondents ample time to fill the questionnaires. The response rate was therefore

adequate for the study to make relevant conclusions based on the responses.

Reliability Analysis

A pilot study was carried out to determine reliability of the questionnaires. The findings are as shown in table 4.2

Table 4.2: Reliability analysis

Variable	Number of valid items	Cronbach's alpha
Stakeholders Participation	9	0.9843
Financial Resources Allocation	8	0.8856
ICT Infrastructure	7	0.8777
Organizational Structure	8	0.8426
Adoption of E-Learning	5	0.8654

Table 4.2 reveals that stakeholders participation had the highest reliability (α= 0.9843) followed by Financial resources allocation (α=0.8856), ICT Infrastructure (α=0.8777), Organizational structure (α=0.8426) and adoption of e-learning (α=0.8426).This illustrates that data collection instrument was reliable for data collection as the Cronbach's alpha values exceeded the prescribed threshold of 0.78.

Validity Analysis

The content validity formula by Amin (2005) was used in this study. Results tabulated in Table 4.3 illustrate that all the four variables were valid as their CVI values exceeded the prescribed threshold of 0.78 and validity of test yielded an average index score of 80.02%. The instrument was thus deemed reliable.

Table 4.3: Content Validity Index

Variable	Fraction	Comment
Stakeholders Participation	0.8900	Accepted
Financial Resources Allocation	0.7895	Accepted
ICT Infrastructure	0.7686	Accepted
Organizational Structure	0.8586	Accepted
Adoption of E-Learning	0.8002	Accepted

Demographic Information

Demographic information provides data regarding research participants and is necessary for the determination of whether the individuals in a particular study are a representative sample of the target population and testing appropriateness of the respondent in answering the questions for generalization purposes. The background information comprised of the gender, age and highest level of education.

Gender of Respondents

Table 4.4: Gender of Respondents

Gender	Frequency	Percentage
Female	30	46.88
Male	34	53.12
Total	**64**	**100**

Table 4.4demonstratesthat majority of the respondents were maleat 53.12% whereas 46.88% of the respondent were females, this is an indication that both genders were well represented in this study and thus the finding of the study did not suffer from gender bias. According to Shaw & Carter (2007), organizations with gender balance were motivated to perform better towards organization goal as women and men compete favorably to deliver on their assignments.

Age Distribution of the Respondents

The study went further to establish the distribution age of the respondents.

Table 4.5: Age Distribution of the Respondents

Years	Frequency	Percentage
18 - 30	14	20.90
31 - 40	22	37.30
41 – 50	18	26.87
Above 50	10	14.93
Total	**64**	**100**

From the findings in Table 4.5 the highest percentage of the respondents 37.30% (22) were of 31- 40 years of age, 26.87% (18) were 41- 50 years, 20.90%(14) were of 18- 30 years and 14.93% (10) were above 50 years of age.This implies that respondents were well distributed in terms of their age and study did not suffer from age bias all through the study. The findings of the study are supported by Haugh and Kitson, (2007) who observed that age is associated with experience and responsibility at work place.

Respondents'Level of Formal Education
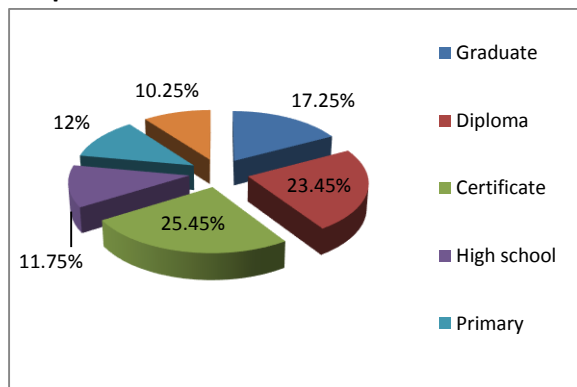
Figure 4.1: Respondents' Level of Formal Education

The study sought to establish the respondents' level of education. From the results in Figure 4.1 most of the respondents (25.45%) have acquired certificate level of education, 23.45% of the respondents have acquired diploma, 17.25% bachelors, and 11.75% had high school education, 12% cited to have acquired primary level of education and 10.25% have no formal education but have hands on skills. This infers that most of the respondents were literate and thus they were

in a position to answer all the questions in this study with ease. Lazer, et al., (2004) associated the education level of students with findings that, those with higher levels of education are more successful because higher education provides them knowledge and modern managerial skills, making them more conscious of the reality of the problem. Thishelped the students to provide adequate, valid and consistent information of a given problem under study.

Respondents' Area of Study
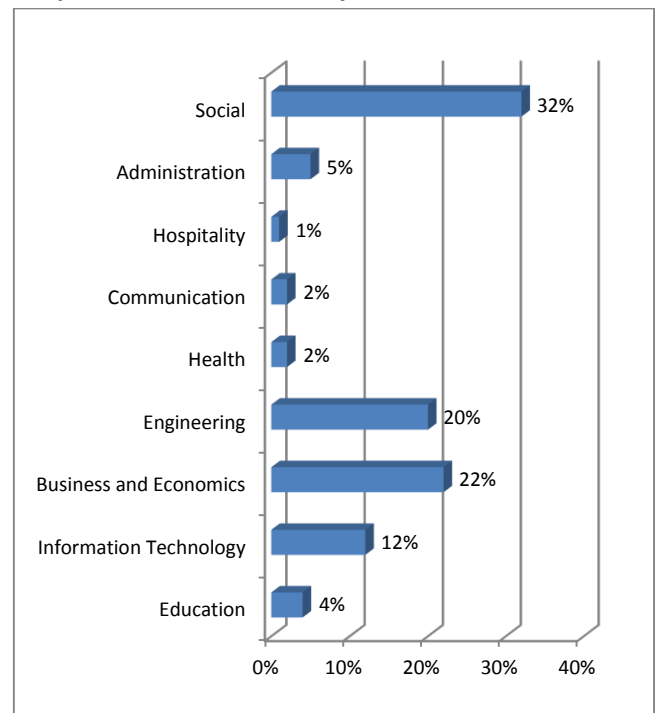
Figure 4.2: Respondents' Area of Study

The study sought to establish the respondents' area of study at the university. From the results in Figure 4.2 show that most of the majority of the respondents (32%) had were studying social sciences, 22% indicated Business and Economics, 20% on Engineering, 12% stated information technology, 5% on administration, 2% stated communication and health whereas 1% indicated hospitality. This can be deduced that majority of the respondents were studying social sciences using E-learning areas of study offered by the university. The findings are in agreement with Tetty et al., (2012) observation that the students' area of study influences the adoption of e-learning courses online especially for social sciences. This meant that they would invest time and effort to make sure they succeed by registering social

sciences online unlike applied sciences. It may also imply that area of study is important in adoption for E-learning in the university. E-learning would ordinarily thrive under such circumstances where the university offers more of social sciences courses online.

Stakeholder Participation
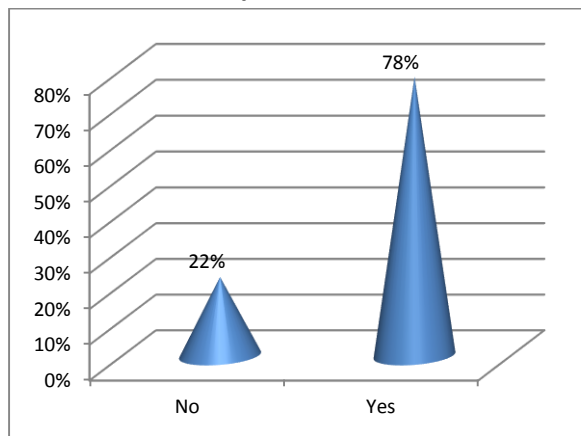
Figure 4.3: Influence of Stakeholder Participation on Adoption of E-learning

The research sought to find out influence of stakeholder participation on adoption of E-learning in the university. Figure 4.3 show that majority of the respondents (78%) indicated stakeholders' participation influenced adoption of E-learning at the university whereas 22% indicated it did not. This implies stakeholder participation is an important factor which determines adoption of E-learning in the university. The impact of e-learning adoption on an institution of higher learning process and routines has concentrated primarily on the internal alignment characteristics of systems and practices within IT/IS strategy influenced by the stakeholders' participation (Venkatraman, 2001).

Major Stakeholders Influencing Adoption of E-Learning
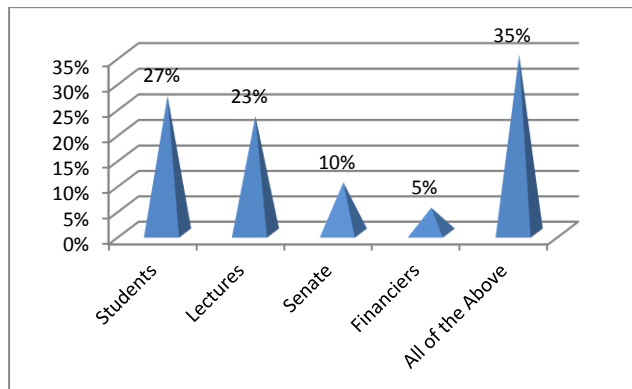
Figure 4.4: Major Stakeholders Influencing Adoption of E- Learning

Figure 4.4 illustrates majority of the respondents (35%) stated that students, lecturers, senate and financiers influenced adoption of E-learning at the university, 27% indicated students, 23% stated lecturers, 10% senate and 5% financiers. It can thus be deduced that that students, lecturers, senate and financiers critically influenced adoption of E-learning at the university. They are the major stakeholders who play a key role in the delivery of education in any higher education institution. The participation of the students and lecturers plays a key role in the design of technology-based environments for learning purposes (Maor, 2003).

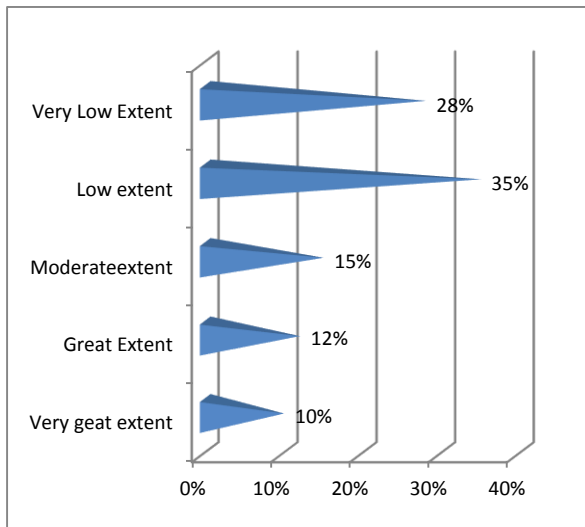**Extent of Stakeholders Participation Influencing Adoption of E-Learning**
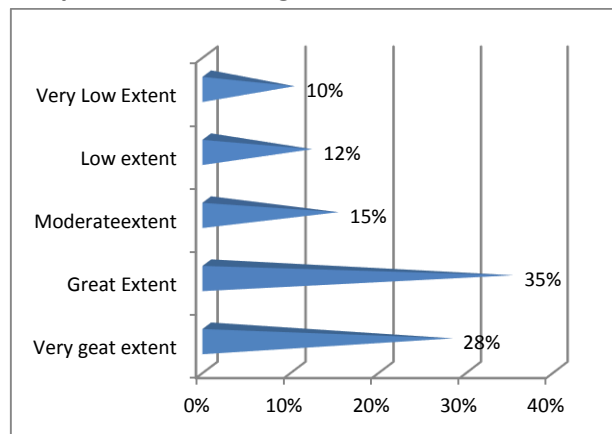
Figure 4.5: Extent of Stakeholders participation influence adoption of E- Learning

Figure 4.5 illustrates the extent of which stakeholders participation influences adoption of E-learning in the university and it shows that majority of the respondents (35%) stated stakeholder participation influenced adoption of E-learning at the university to a great extent, 28% indicated to a very great extent, 15% to a moderate extent, 10% to a low extent and 12% to a very low extent. This implies that stakeholder participation influenced adoption of E-learning at the university to a great extent. The findings of the study corroborates with the findings of Mulwa and Kyalo (2013) who observed that the extent to which the attitude of principals, teachers and students have towards the adoption of e-learning influences the readiness to adopt e-Learning in

learning institutions.

Stakeholders Participation in Capacity Building Influence on Adoption of E-Learning

Figure 4.6: Extent of Stakeholders participation in capacity building on E-Learning adoption

The findings from Figure 4.6 reveals that majority of the respondents (35%) stated stakeholder participation in capacity building on e-learning adoption was to a low extent, 28% of the respondents stated to a very low extent, 15% to a moderate extent, 12% to a great extent and 10% to a very great extent. This can be deduced that stakeholder participation in capacity building was low thus affecting adoption of E-learning at the university. The study results are in agreement with literature review by (Fraser &Zarkada-Fraser, 2003) who stated that stakeholders' involvement in capacity building in the use of E-learning enhances adoption of E-learning in the university.

University Implementation Strategy on Adoption of E- Learning
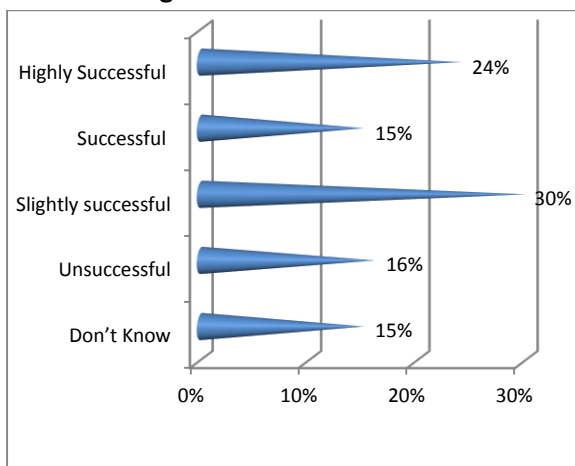
Figure 4.7 University Implementation Strategy on Adoption of E- Learning

The study sought to find out the university's implementation strategy has facilitated adoption of E-learning in the university. From the results in Figure 4.7, majority of the respondents (30%) stated implementation strategy on e-learning adoption was slightly successful, 24% of the respondents stated it was highly successful, 16% stated it was unsuccessful and 15% indicated they didn't know. This implies that implementation strategy affected adoption of E-learning at the university to a great extent. The impact of e-learning adoption on an institution of higher learning process and routines has concentrated primarily on the internal alignment characteristics of systems and practices within IT/IS strategy influenced by the stakeholders' participation (Venkatraman, 2001).

Stakeholders Consultation on Adoption of E-Learning Programs
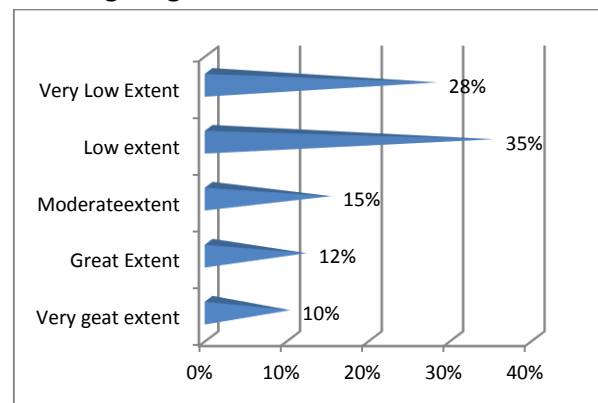

Figure 4.8 Stakeholders Consultation on Adoption of E- Learning program

From the results in Figure 4.8 , majority of the respondents (35%) stated that to a low extent stakeholders were consulted on e-learning adoption, 28% of the respondents stated that to a very low extent stakeholders were consulted on adoption of ELearning , 15% to a moderate extent, 12% to a great extent and 10% to a very great extent. An aggregate of 63% of the stakeholders feel that to a low extent consultations were done on the adoption of ELearning and thus affecting adoption of E-learning at the university. Ally (2004) argued that in order to promote higher-order thinking through technology-based learning

environments, stakeholders consultation which promote learners to make connections with new information to old, acquire meaningful knowledge, and employ metacognitive thinking skills are required within the eLearning environment. This requires an analysis of the stakeholder consultation the learning context and the learners' specific learning needs. They may be required to learn a set of principles within a discipline area and integrate previously learned knowledge with new knowledge by employing techniques such as advanced organizers, worked-out examples, and elaborative questions (Dabbagh, 2005).

Financial Resources
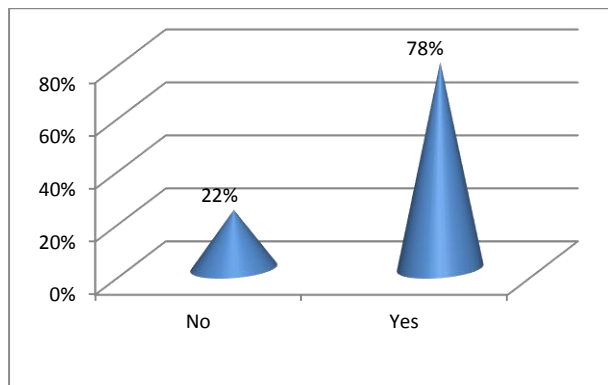
Figure 4.9 Influence of financial resources on adoption of E-learning

From the study findings as shown in Figure 4.9, majority of the respondents (78%) indicated financial resources influenced adoption of E-learning at the university whereas 22% indicated it did not. This implies financial resource is an important factor which determines adoption of E-learning in the university. With proper allocation and utilization of these financial resources; there will be efficiency and effectiveness in performance and thus increased output. According to Tetty (2013), availability and adequacy of financial resources plays a key role in the formulation and implementation of e-learning practices in an institution. The financing process, such as raising and maintaining adequate funds for E-learning project activities, is clearly of critical importance to the progress of a project. Jack & Samuel (2006) states that adequate funding need to be devoted to implementation of E-learning practices for its potential to be realized in a university.

Extent of Financial Resources Influence on Adoption of E- Learning
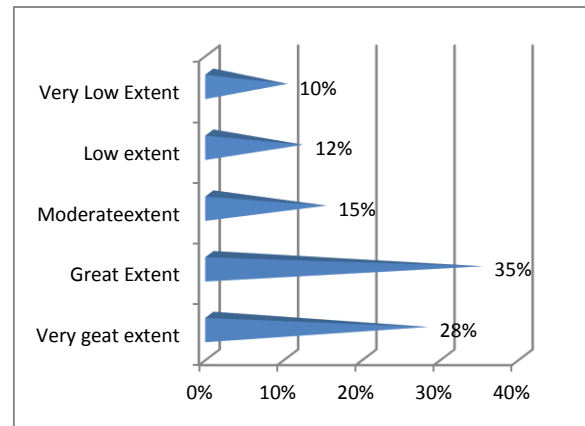
Figure 4.10: Extent of Financial Resources Influence on Adoption of E- Learning

From the results in Figure 4.10, majority of the respondents (35%) stated financial resources influenced adoption of E-learning at the university to a great extent, 28% indicated to a very great extent, 15% to a moderate extent, 10% to a low extent and 12% to a very low extent. It can be deduced that a financial resource was an important factor which influenced adoption of E-learning at the university. The findings of the study are in agreement with literature review by Gwadoya (2011) who observed that financial resources influences adoption of E-learning positively.

**Extent of University Investment in Adoption of E- Learning**
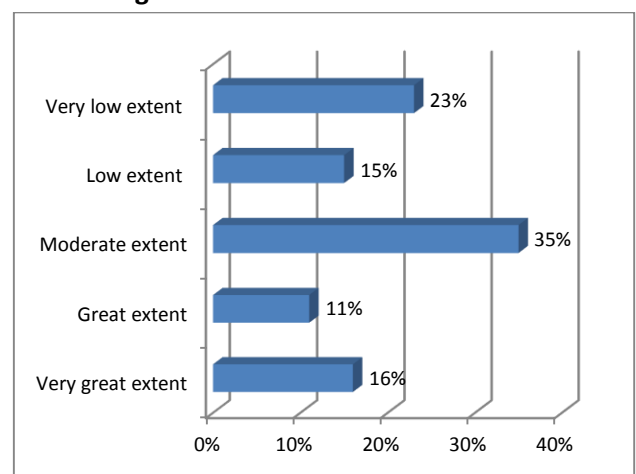
Figure 4.11: Extent of University Investment

in Adoption of E- Learning

Figure 4.11 illustrates that majority of the respondents (35%) stated that the university invested in E-learning at to a moderate extent, 23% indicated to a very low extent, 15% to a low extent, 11% to a great extent and 16% to a very great extent. It can be inferred that the university has not invested enough in e-learning and thus financial investment has affected the success of e-learning at the university. Andersson et al (2009,) provided a comprehensive conceptual framework that helps understand which financial factors are currently under-researched and should be given more focus for E-learning investment.

Operation Costs of E- Learning Programs
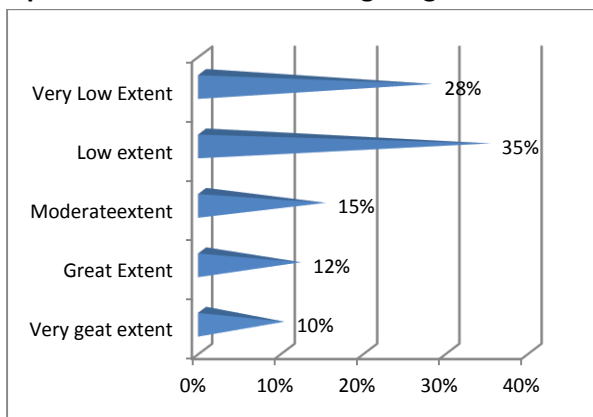
Figure 4.12: Operation costs of adoption of E-Learning program

The study sought to establish whether the operations costs determined adoption of e-learning at the university. The findings as shown in Figure 4.12 reveal that majority of the respondents (35%) cited operation costs affected e-learning adoption to a low extent, 28% of the respondents stated to a very low extent, 15% to a moderate extent, 12% to a great extent and 10% to a very great extent. This infers that operation cost was low thus influencing adoption of E-learning at the university. The finding of the study concur with the findings of Tifow (2012) that operation costs of E-learning determines the adoption of E-learning in the university. This means that if the operation costs are high, the university would find it difficult to run it effectively thus affecting its adoption.

ICT Infrastructure
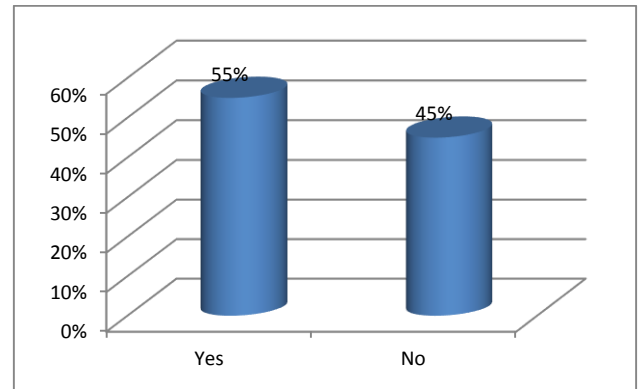
Figure 4.13: Influence of ICT Infrastructure on Adoption of E- Learning

The study sought to find out influence of ICT infrastructure on adoption of E-learning in the university. The findings were as shown in figure 4.13. Majority of the respondents (55%) indicated ICT infrastructure influenced adoption of E-learning at the university whereas 45% posited that it did not affect it. This infers ICT infrastructure is an important factor which determines adoption of E-learning in the university. The study results concurs with literature review by Calverley & Shephard (2003) who state that E-learning in the university is influenced by the availability of ICT infrastructure whereby the key items to be measured are the number and type of equipment and infrastructure that are provided to the lecturer and the level of support provided by the ICT department or E-learning Units on eLearning services to lecturers and students.
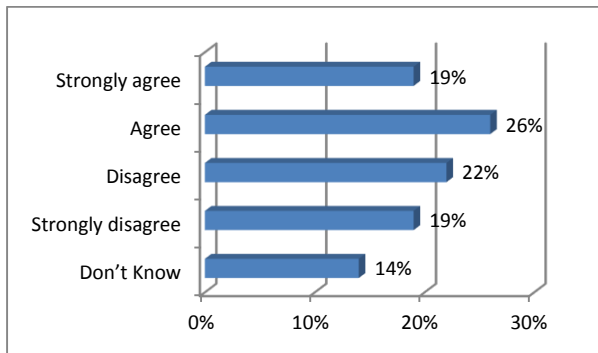
Learning Software for ELearning Programs
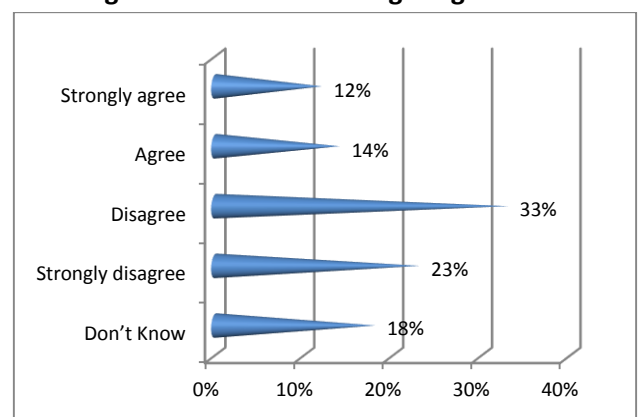
Figure 4.14: Learning Software for ELearning

Programs

From the results in Figure 4.14, majority of the respondents (33%) indicated that they disagreed that they were provided with learning software for e-learning programs, 23% strongly disagreed, 18% didn't know about the learning software, 14% and 12% agreed and strongly agreed that they were provided with learning software for eLearning. This implies that adoption of ELearning at the university was low as the respondents were not provided with the learning software to access e-learning programs of the university. The study results are in agreement with literature review by Calverley & Shephard (2003) who observed that E-learning in the university is influenced by the availability of the learning software to enable lecturers and students being supported to facilitate ELearning.

Ease of Use of ELearning Software Programs

Figure 4.15 Ease of Use of ELearning Software Programs

The study sought to establish the learning software usage for e-learning at the university. The study findings in figure 4.15 reveals that majority of the respondents (26%) indicated that they agreed that learning software was easy to use, 22% strongly disagreed and 14% didn't know how to use it. This infers learning software provided was not easy to use thus affecting access to e-learning programs of the university. According to Eduviews (2009), he observed that capacity building on E-learning programs is necessary to the lecture for eLearning. This will be measured by the number of specialized personnel who have been deployed to support the lecturer and students. It will be measured by the number of software programs that have been installed to

support the E-learning solution.

Support of ICT Services or ICT Support Services?
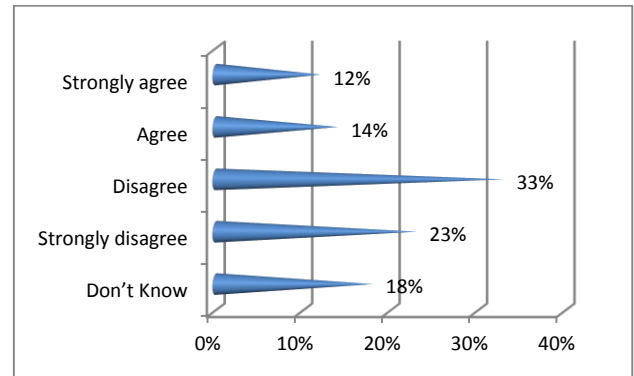
Figure 4.16 Support of ICT Services

The study sought to find out if the University supports ICT services. The results are as shown in Figure 4.16. According to the results majority of the respondents (33%) indicated that they disagreed there was sufficient ICT services support at the university, 23% strongly disagreed and 18% didn't know, 14% and 12% agreed and strongly agreed respectively that there was sufficient support of ICT services at the university. This implies there was no sufficient support of ICT services thus affecting access and adoption of e-learning programs for the university. This infers ICT infrastructure is an important factor which determines adoption of E-learning in the university. The study results concurs with literature review by Calverley & Shephard (2003) who state that E-learning in the university is influenced by the availability of the ICT infrastructure whereby the key items to be measured are the number and type of equipment and infrastructure that are provided to the lecturer and the level of support provide by the ICT department or E-learning Units on eLearning services to lecturers and students

Methods of Accessing ELearning Programs
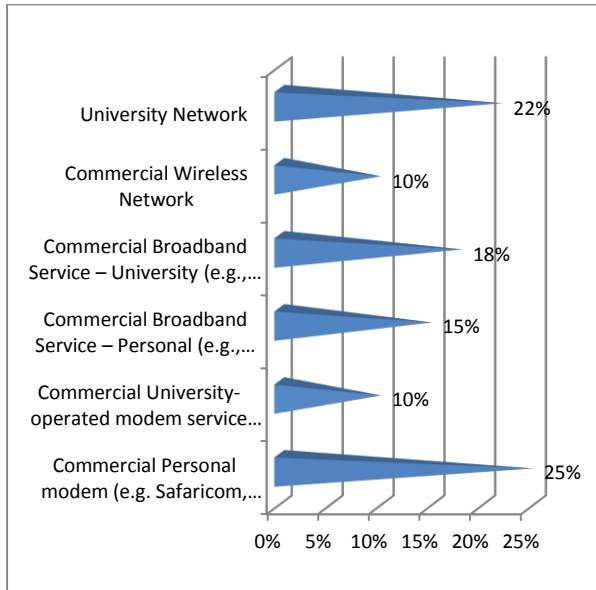
Figure 4.17: Methods of Accessing ELearning Programs

According to the results in Figure 4.17, majority of the respondents (25%) indicated that they used commercial modem to access E-learning programs of the university, 22% used university network, 10% indicated that they used commercial University-operated modem and commercial network, 15% cited commercial broad band service- personal and 18% stated commercial broadband service-University. According to Ediviews (2009), methods of accessing E-learning programs influence adoption of E-learning positively.

Tasks and Duties Assigned for the ELearning Device
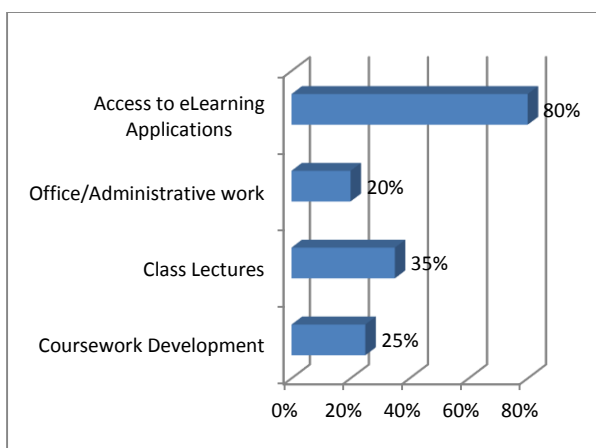
Figure 4.18: Tasks and Duties Assigned for the

ELearning Device

The study sought to find out respondent's tasks and duties assigned for e-learning programs of the university. From figure 4.18, majority of the respondents (80%) indicated that they used the device to access ELearning applications, 20% used it for office/ administrative work, 35% class lectures and 25% coursework development. Theaccess e-learning applications task is used for the e-learning device. This can be deduced that access to e-learning device applications is commonly used in the university. According to Kashorda et al. (2014) the e-learning tasks and duties assigned influence online courses usage by the students and lectures.

Elements Relating to ICT Infrastructure

Table 4.6: Elements Relating to ICT Infrastructure

Concerns					No concern	Mean	Std deviation
Inadequate access to ICT services on campus	2	2	8	27	15	4.10	0.32
Slow or inadequate network access	3	6	4	26	15	3.95	0.36
My technical skill level in troubleshooting my computer	3	6	4	26	15	3.95	0.36
Computer viruses, worms, or Trojan horses	3	6	4	26	15	3.95	0.36
The age of my computer hardware and software	3	6	4	26	15	3.95	0.36

The study sought to establish the extent to which respondents agreed with the statements relating to concerns regarding ICT infrastructure. A scale of 1-5 was used. The scores "Major concern" and "Great Concern" were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale (1 ≤ Disagree≤ 2.5). The scores of 'Neutral'

were represented by a score equivalent to 2.6 to 3.5 on the Likert scale (2.6 ≤ Neutral ≤ 3.5). The score of "Small concern" and "No concern" were represented by a mean score equivalent to 3.6 to 5.0 on the Likert Scale (3.6 ≤ Agree ≤ 5.0). The results were presented in mean and standard deviation. The mean was generated from SPSS version 21 and is as illustrated in Table 4.6. From the research findings, majority of the employees agreed that; Inadequate access to ICT services on campus as shown by a mean of 4.10, Slow or inadequate network access as shown by a mean of 3.95, My technical skill level in troubleshooting my computer as shown by a mean of 4.25. Computer viruses, worms, or Trojan horses as shown by mean of 3.85 and the age of my computer hardware and software as shown by mean of 3.65 influenced adoption of ELearning. The study results concurs with literature review by Calverley & Shephard (2003) who states that E-learning in the university is influenced by the availability of the ICT infrastructure and human resource capacity whereby the key items to be measured are the number and type of equipment and infrastructure that are provided to the lecturer and the level of support provide by the ICT department or E-learning Units on eLearning services to lecturers and students.
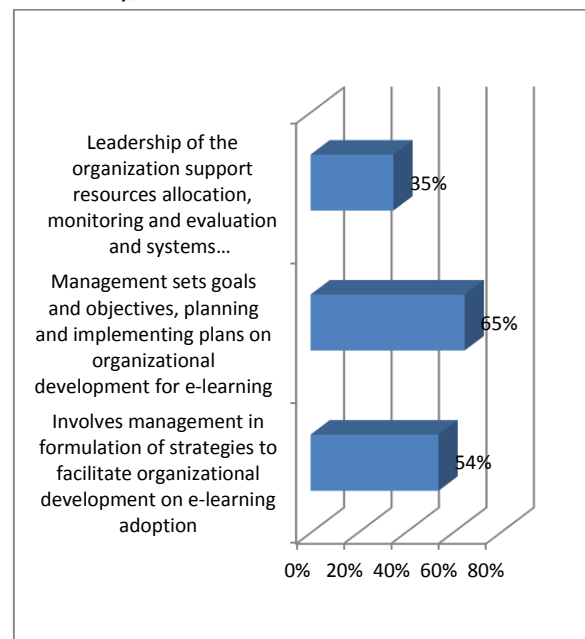
Organization Structure
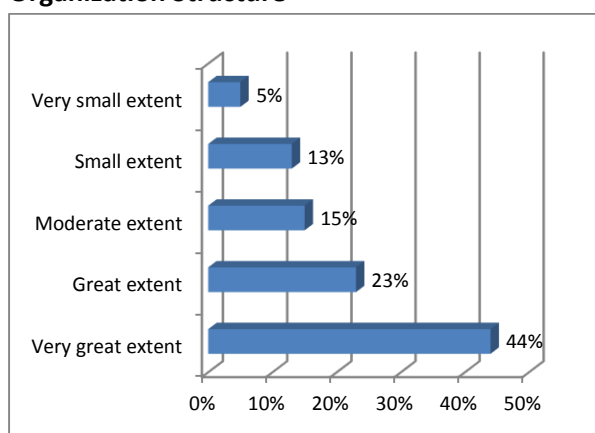
Figure 4.19: Extent of Governance Structures Influence on Adoption of ELearning

The study sought to establish the influence of organizational structure on adoption of ELearning in the university. From the study results in Figure 4.19, most of the respondents

(44%) stated that governance structures influenced adoption of ELearning in the university to a great extent, 23% to a very great extent, 15% to a moderate extent, 13% to a small extent and 5% to a very small extent. It can be deduced that adoption of e-learning was affected by the organization structure to a great extent (67%). According to APM(2005), the governance structure of the University management ensures that an organization's E-learning portfolio is aligned to the organization's objectives, is delivered efficiently, and is sustainable.

**Figure 4.20: Effects of Governance Structure on ELearning Adoption**

From the study findings, the study revealed 54% of the respondents indicated that the it involves management in formulation of strategies to facilitate organizational development on e-learning adoption, 65% of the respondents stated that it helps the management on setting goals and objectives, planning and implementing plans on organizational development for e-learning adoption and 35% of the respondents indicated that the leadership of the organization support resources allocation, monitoring and evaluation and systems development to enhance e-learning in the university. According to APM (2005), it states that governance

structure of university management facilitates adoption of e-learning.

ELearning Adoption

Number of Courses Available Online
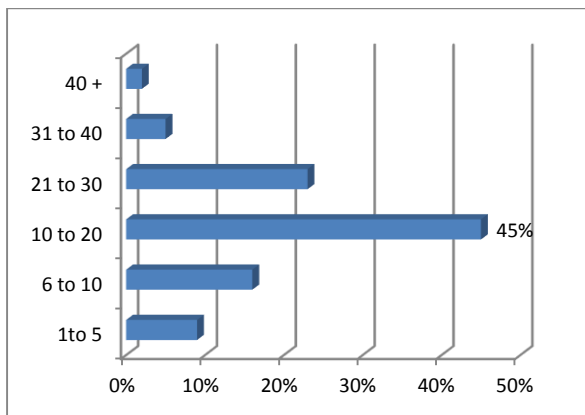
Figure 4.21: Number of Courses Available Online

From the study findings in figure 4.21, 45% of the respondents indicated that there are 10 to 20 courses one can enroll for online at the University for ELearning program, 23% indicated there are 21 to 30 courses, 16% said 6 to 10 courses, 4% posited 31 to 40 courses.It can be deduced that there are 10 to 20 courses that are online that the students can apply for e-learning. The study results concur with literature review by Tetty (2013) who states that E-learning in the university is influenced by the number of courses online.

**Number of Students Enrolled for Online Courses**
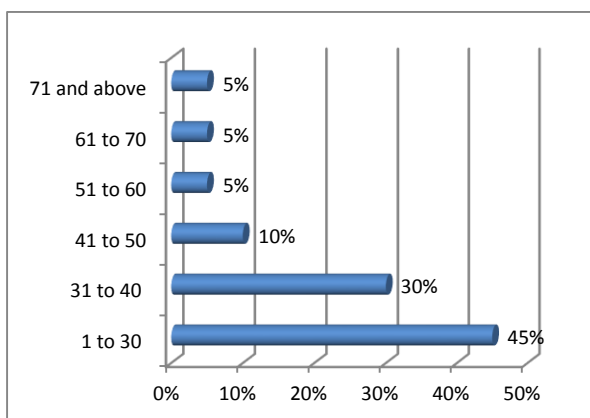
Figure 4.22: Number of Students Enrolled for Online Courses

The study requested the respondent to indicate the number of students enrolled for the online courses at the university ELearning program. From

the results shown in Figure 4.22 , 45% of the respondents indicated that 1 to 30 students enrolled for online courses at the University for e-learning Program, 30% indicated 31 to 40 students, 10% said 41 to 50, and 5% cited 51 and above students were enrolled for online courses. It can be deduced that few students enrolled for online courses thus an indication that there is low adoption of e-learning at the university. The number of students enrolled for online courses determines sustainability of the ELearning program in the universities (Edie, 2013)

Information on Online Courses
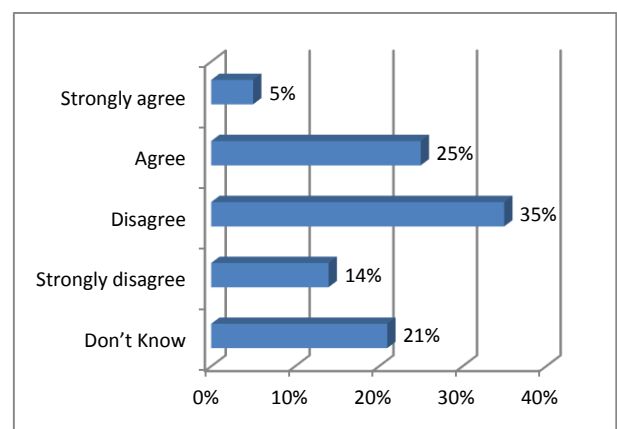
Figure 4.23: Information on Online Courses

Figure 4.23 revealed that 35% of the respondents disagreed being aware of online courses at the University for ELearning Program, 25% agreed they were aware, 5% strongly agreed being aware of online courses, 14% strongly disagreed and 21% didn't know of online courses offered by the university. It can thus be inferred that few students had information of online courses offered by the university. This indicates that due to lack of promotion of e-learning by the university on the online courses offered by the university has led to slow adoption e-learning programs.

Correlation Analysis

To quantify the strength and direction of the relationship between the variables, the study used Karl Pearson's coefficient of correlation (Lewin, 2005). The Pearson product-moment correlation coefficient (or Pearson correlation coefficient for short) can measure the strength of a linear association between two variables and is

denoted by *r*. The Pearson correlation coefficient, *r*, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association, that is, as the value of one variable increases so does the value of the other variable. A value less than 0 indicates a negative association, that is, as the value of one variable increases the value of the other variable decreases. The correlation is significant at the 0.05 level for 2-tailed (Kothari, 2010).The results are as follows in Table 4.7.

Table 4.7: Correlation Analysis

		Adoption of E-learning	Stakeholder Participation	Financial resources	ICT Infrastructure	Organizational structure
Adoption of E-learning	R	1.000				
	Sig.(2-tailed)					
	N					
Stakeholder Participation	R	.586	1.000			
	Sig. (2-tailed)	.000				
	N	63				
Financial resources Allocation	R	.493	.514	1.000		
	Sig. (2-tailed)	.006	.004			
	N	63	63			
ICT Infrastructure	R	505	.345	.231	1.000	
	Sig. (2-tailed)	.002	.033	.020		
	N	63	63	63		
Organizational structure	R	.483	.161	.236	.402	1.000
	Sig. (2-tailed)	.004	.024	.044	.002	
	N	63	63	63	63	

The analysis above shows that stakeholder participation has the strongest positive (Pearson correlation coefficient =.586; P value 0.000) influence on adoption of E-learning. In addition, ICT Infrastructure, financial resources allocation and organizational structure are positively correlated to adoption of E-learning (Pearson correlation coefficient =.493, .505 and .483). The correlation matrix implies that the independent variables are very crucial determinants of adoption of E-learning at the University as shown by their strong and positive relationship with the dependent variable; adoption of e-learning. The significance values for relationship between adoption of E-learning and ICT Infrastructure, financial resources allocation and organizational structure were 0.001, 0.002, 0.006 and 0.004 respectively. This implies that stakeholder participation as the most significant factor, followed by ICT infrastructure, organizational structure and financial resources allocation respectively.

Multiple Regression Analysis

The study used multiple regression analysis so as to establish that the relationship of independent variables and dependent variable. The study applied SPSS version 21 to code, enter and compute the measurements of the multiple regression. Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable. The findings are as shown in Table 4.8.

Table 4.8: Model Summary

Model	R	R Square	Adjusted Square	RStd. Error of the Estimate
	.805	.648	.595	.523

The value of adjusted R squared was 0.595 an indication that there was variation of 59.50 percent on adoption of E-learning due to changes in stakeholder participation, financial resources, and ICT infrastructure and organization structure

at 95 percent confidence interval. This shows that 59.50 percent changes in adoption of E-learning could be accounted to stakeholder participation, financial resources allocation, ICT infrastructure and organization structure. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the Table 4.8, it is notable that there extists strong positive relationship between the study variables as shown by R value (0.805).

Analysis of Variance

From the ANOVA statics in Table 4.9, the study established the regression model had a significance level of 0.4% which is an indication that the data was ideal for making a conclusion on the population parameters as the value of significance (p-value) was less than 5%. The calculated value was greater than the critical value (66.497 > 6.543) an indication that Stakeholder participation, financial resources, ICT infrastructure and Organization structure all affects adoption of E-learning. The significance value was less than 0.05 indicating that the model was significant.

Table 4.9: Analysis of Variance[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.094	4	7.7735	66.497	.004[b]
	Residual	6.896	59	.1169		
	Total	37.990	63			

a. Dependent Variable: Adoption of E-learning at JKUAT
b. Predictors: Stakeholder participation, Financial resources allocation, ICT infrastructure and organization structure
c. Critical value =6.543

Regression Coefficients

Table 4.10: Regression Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	44.324	1.033		1.494	.005
	Stakeholder participation	.666	.108	.203	2.602	.002
	Financial Resources Allocation	.543	.127	.227	2.528	.013
	ICT Infrastructure	.658	.125	.216	2.528	.005
	Organizational structure	.504	.113	.251	3.327	.011

Finally, from the data in Table 4.10, the study established regression equation was $Y = 44.324 + 0.666X_1 + 0.543X_2 + 0.658 X_3 + 0.504X_4$. Therefore, Adoption of E-learning at JKUAT= 44.324 + (0.666 x Stakeholder participation) + (0.543 x Financial resources allocation) + (0.658 x ICT Infrastructure) + (0.504 x Organizational structure). From the results of this study, stakeholder participation contributed more to the adoption of E-learning at JKUAT.

The findings revealed that Stakeholder participation, Financial resources allocation, ICT infrastructure and organization structure to a constant zero, adoption of E-learning at JKUAT would be at 44.324, at one percent change in stakeholder participation would lead to an increase in adoption of E-learning at JKUAT by a variations of 0.666%, at one percent change in financial resources would lead to increase in adoption of E-learning at JKUAT by a variations of 0.543%, at one percent change in ICT Infrastructure would lead to increase adoption of E-learning at JKUAT by a variations of 0.658%, and a at one percent change in organizational structure would increase adoption of E-learning at JKUAT by a variations of 0.504%. Further, the study established that all the variables were significant as their significant value was less than ($p<0.05$). At 5% level of significance, stakeholder participation had a p-value of 0.002; financial resources

allocations had a p-value of 0.013; ICT Infrastructure had a p-value of 0.005; Organization structure had a p-value of 0.011. Therefore, the most significant factor was stakeholder participation.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The study sought to establish the determinants influencing adoption of E-learning in Kenyan Universities. The study examined theoretical and empirically how various variables were considered on adoption of e-learning is concerned. In assessing the determinants, the study focused on how selected factors (stakeholder participation, financial resources, ICT Infrastructure and organizational structure relate to adoption of E-learning. This chapter captures the summary of findings, from which conclusions were drawn and recommendations made.

Summary of the Findings

The study revealed that the determinants influencing E-learning adoption as indicated by the 64% of the respondents show majority of the respondents (78%) indicated stakeholders' participation influenced adoption of E-learning at the university whereas 22% indicated did not consider it as an influence. The findings also indicated that the majority of the respondents (78%) indicated financial resources influenced adoption of E-learning at the university whereas 22% indicated it did not. The study also reveals that majority of the respondents (55%) indicated ICT infrastructure influenced adoption of E-learning at the university whereas 45% posited that it did not affect it. It was also revealed that 44% of the respondents stated that governance structure influenced adoption in the university to a great extent, 23% to a very great extent, 15% to a moderate extent, 13% to small extent and 5% to a very small extent.

Summary of Objectives

Objective One: To establish the influence of stakeholder participation on adoption of ELearning in Kenyan Universities

According to literature reviewed (Amstrong & Tayleor, 2008; Amir & Sahibzada, 2010), stakeholders participation can help promote the University and make it attractive to students it can lead to improvement in adoption of E-learning. This underscores the fact that stakeholders' participation is critically important in adoption of E-learning. Therefore, the study sought to find out if the stakeholder participation influences adoption of E-learning in Kenyan Universities. From the descriptive statistics, majority of the respondents indicated that stakeholder participation is necessary for adoption of E-learning in JKUAT and respondents disagreed that stakeholders had qualifications and skills to implement E-learning. The study also established that to a moderate extent that the institution developed E-learning to stakeholders implement the E-learning program, respondents indicated to a low extent that the university involved stakeholders in capacity building & training to facilitate adoption of E-learning program, the university strategy to implement the E-learning program with involvement of stakeholders' participation was slightly successful. The respondents also indicated that university consulted the involved stakeholders in implementation of E-learning programs to a low extent. Additionally, the study established that the variable statistically and significantly influenced adoption of E-learning at JKUAT at 0.05 level of significance. This implies that the more stakeholder participation becomes the more the adoption of E-learning at JKUAT. Therefore, from the qualitative analysis, these findings show that the research which sought to establish the influence of stakeholder participation on adoption of E-learning was achieved because it established that it influences adoption of E-learning.

Objective Two: To examine the influence of financial resources on adoption of ELearning in Kenyan Universities

Descriptive analysis results showed that financial resources influenced adoption of E-learning in Kenyan Universities to a great extent. Further, the study revealed to a large extent that source of

financing E-learning was from university school fees, budget allocation influence adoption of E-learning to a great extent, the university has invested in the E=-learning program to a moderate extent. The operation costs have also hindered adoption of E-learning program to a great extent. Further, the study established that the variable statistically and significantly influenced adoption of E-learning at JKUAT to a great extent at 0.05 level of significance. This implies that the more financial resources becomes the more the adoption of E-learning at JKUAT. Therefore, from the qualitative analysis, these findings show that the research which sought to establish the influence of financial resources on adoption of E-learning was achieved because it established that it influences adoption of E-learning.

Objective Three: To examine the influence of ICT infrastructure on adoption of ELearning in Kenyan Universities

From the descriptive statistics, majority of the respondents indicated that ICT infrastructure influence adoption of E-learning at JKUAT. The respondents agreed to a great extent that laptop computer owned by the respondent, the specific tasks and duties assigned for the device included course work development, class lectures and access to E-learning application. The study also revealed that E-learning software at JKUAT E-learning program was not easy to use and support of ICT services at the University was not sufficient and the frequently used method for access to the internet at the university was the commercial personal modem. Further, the variable statistically and significantly influenced adoption of E-learning at 0.05 level of significance. This implies that the more ICT Infrastructure the more the E-learning adoption at JKUAT could be enhanced. The descriptive and qualitative results show that the research sought to establish the influence of ICT Infrastructure was achieved because it established that it influences E-learning adoption.

Objective Four: To examine the influence of organization structure on adoption of ELearning in Kenyan Universities

From the descriptive and qualitative analysis, the study revealed organizational structure influenced adoption of E-learning in the university to a great extent. The respondents indicated that the it involves management in formulation of strategies to facilitate organizational development on e-learning adoption, it helps the management on setting goals and objectives, planning and implementing plans on organizational development for e-learning adoption and indicated that the leadership of the organization support resources allocation, monitoring and evaluation and systems development to enhance e-learning in the university.

E-Learning Adoption

The study established that the number of courses enrolled for online at the university's e-learning program and students enrolled online is a good indicator of adoption of E-learning at the university. From the study findings, there is low adoption of e-learning at the university few students' enrolled online courses at the university. The quantitative statistics, showed that stakeholder participation, financial resources, ICT infrastructure and organization structure influenced adoption of E-learning and the relationship between the study variables, is notable that there extists strong positive relationship between the stakeholder participation, financial resources, ICT infrastructure and organization structure on adoption of E-learning at the university.

Conclusion

The study findings established that stakeholder participation is necessary for adoption of E-learning in JKUAT, stakeholders did not have enough qualifications and skills to implement E-learning. The study also established that that the institution had not developed E-learning to stakeholders implement the E-learning program stakeholders in capacity building & training to facilitate adoption of E-learning program and the university strategy to implement the E-learning program with involvement of stakeholders' participation was slightly successful and the university consulted the involved stakeholders in implementation of E-learning programs to a low

extent.Additionally, from the study results, the financial resources influenced adoption of E-learning at JKUAT to a great extent and E-learning was supported from university school fees and budget allocation influence adoption of E-learning to a great extent. The university has invested in the E-learning program to a moderate extent and operation costs have also hindered adoption of E-learning program to a great extent.Further, from the study results majority of the respondents indicated that ICT infrastructure influence adoption of E-learning at JKUAT. The E-learning software at JKUAT E-learning program was not easy to use and support of ICT services at the University was not sufficient and the frequently used method for access to the internet at the university was the commercial personal modem. The study revealed organizational structure influenced adoption of E-learning in the university to a great extent. It involves management in formulation of strategies to facilitate organizational development on e-learning adoption, it helps the management on setting goals and objectives, planning and implementing plans on organizational development for e-learning adoption and indicated that the leadership of the organization support resources allocation, monitoring and evaluation and systems development to enhance e-learning in the university.

Finally, that number of courses enrolled online at the university e-learning program and students enrolled online is a good indicator of adoption of E-learning and courses enrolled online at the university. The study also established that stakeholder participation, financial resources, ICT infrastructure and organization structure influenced adoption of E-learning and the relationship was notable that there extists strong positive relationship between the stakeholder participation, financial resources, ICT infrastructure and organization structure on adoption of E-learning at the university.

Recommendations

The stakeholder participation is necessary for adoption of E-learning they should have enough qualifications and skills to implement E-learning. There is need to offer capacity building & training to stakeholders to facilitate adoption of E-learning programs. The study recommends that financial resources for E-learning to be added to supplement the university school fees and budget allocation to be offered to be invested in the E-learning program as the operation costs were high thus hindering adoption of E-learning program.

Further, from the study recommends for the support of ICT infrastructure such as E-learning software and should be easy to use and support of ICT services at the University as it was not sufficient. There is need to support students with devices to enable the access E–learning programs. The study recommends that organization structure to develop management in formulation of strategies to facilitate organizational development on e-learning adoption, as it helps the management on setting goals and objectives, planning and implementing plans on organizational development for e-learning adoption through resources allocation, monitoring and evaluation and systems development to enhance e-learning in the university. Finally, there is need to increase number of courses enrolled online at the university e-learning program and students enrolled online is a good indicator of adoption of E-learning.

Recommendations for further Studies

Since this study sought to establish the determinants influencing adoption of E-learning in Kenyan Universities, it was established that from literature review most studies were conducted in USA, Canada, South Africa, Norway, Germany among others European countries and scanty studies are available in Africa and specifically in Kenyan universities set up. Additionally, very little has been undertaken to explore determinants influencing adoption of E-learning in Kenyan Universities thus the researcher call for further studies to be undertaken in Kenyan public universities for generalization of the findings of this study.

This study used qualitative and quantitative techniques. It was also a cross sectional study and hence other studies using longitudinal design could be carried out to establish whether E-learning adoption is actualized. Also, an exploratory study would enrich findings because such a study would have a wide range of factors that influence E-learning addressed other than the ones identified in this study.

This study confined itself to the one public university. A comparative study should be carried out to compare whether the findings also apply for the private universities in Kenya in order to validate whether the findings can be generalized to ELearning adoption in Kenyan Universities.

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