

**EFFECTIVENESS OF THE E-LEARNING SYSTEM ON PEDAGOGICAL USABILITY
IN PRIVATE INSTITUTIONS IN UGANDA: A CASE OF ISLAMIC UNIVERSITY IN
UGANDA, KAMPALA CAMPUS**

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DECLARATION

I, **Nansikombi Shamim** declare that, this study is my original work and has never been presented to any institution or university for both professional and academic award. Where the work of others have been used, due acknowledgement has been done.

Signed:

Date:

APPROVAL

This is to certify that this research proposal entitled “effectiveness of the e-learning system on pedagogical in private institutions in Uganda: A case of Islamic University in Uganda, Kampala Campus has been conducted by Nansikombi Shamim under my supervision and is hereby approved.

Signed.....

Date:

Ms. NAKYANJA BETTY

DEDICATION

This research dissertation is dedicated to my dad Hajji Noordin Nkata for the lovely support and kindness during my academic struggle.

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First and foremost, I would like to acknowledge the Almighty Allah for His Grace, strength and protection during my academic struggle.

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LIST OF ABBREVIATIONS AND ACRONYMS

IUIU	Islamic University in Uganda
ICT	Information Communication Technology
TAM	Total Available Market
ISO	International Organization for Standardization
WBLE	Web Based Learning Environment
CMS	Content Management System
LMS	Learning Management System
HTML	Hypertext Markup Language
FGD	Focus Group Discussion
SPSS	Statistical Package for Social Scientist
ANOVA	Analysis of Variances

ABSTRACT

The study was about the effectiveness of the e-learning system on pedagogical in Private institutions in Uganda: A case of Islamic University in Uganda, Kampala Campus. The study was guided by the following objectives: To find out the contribution of students control to time saving in IUIU, to establish the contribution of E-learning applicability to efficiency in IUIU and to examine how value added on teaching ensures responsiveness in IUIU

This study used a descriptive cross-sectional survey research design with both quantitative and qualitative approaches. It used a population of 73 and a sample size of 62, Purposive sampling was used to select the sample. Self administered questionnaire and the interview guide were the main data collection instruments.

The study found out that, students control improves interaction between students, creates a room for electronic learning, improves on the number of participates and reduces the students' queues at IUIU. The study also found out that, E-learning applicability improves on the quality of services, creates easy access to university services, ensures easy registration of students and ensures early release of results. The study also revealed that, value added teaching promotes effective learning process, improves on data base management, increases the number of students , promotes quick decision making at the University and ensures transparency. The study also revealed that, with the adoption of pedagogical usability, the user satisfaction will be higher and a greater proportion of the students' time will be spent on useful tasks rather than with struggling and feeling alienated by the technology.

The study recommended that, the university should consider usability at the design stage and this is because it is far more cost effective and it would therefore make sense for a portion of the budget and development time to be apportioned. The various learning styles that students could adopt when using E-learning should also be taken into account. All students should be trained on how to use computer based networks and this will improve the effectiveness of E-learning.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This background was categorized into four perspectives, namely; historical, theoretical, conceptual and contextual: This chapter also presents the statement of the problem, purpose, specific objectives, hypotheses, scope and significance of the study.

1.1 Background of study

The study was about the effectiveness of the E-learning system on pedagogical usability in private institutions in Uganda: A case of Islamic University in Uganda, Kampala Campus. Information technology plays a crucial role in the context of usability because it has profound effect on the outcomes of the study process: the move away from learning facts, the need for e-learning skills and attitudes, the importance of student-centered learning and opportunities for collaborative and interactive learning (Mc Clean, 2004) and effective use of ICT develops “learning, communication and information skills” (Shin et al, 1994). Mason’s (Mc Clean, 2004) idea to shift from a student-centered approach to a dialogical approach (the student and the educator are learning together) and Fulton’s (Quintana, 1996) approach to e-communication as information processing, and learning and cooperation system constructivist approach (Quintana, 1996) have been integrated and developed in the present study.

E-learning can be utilized to achieve similar kind of learning as in real-life simulations (e.g. projects or internships) without the constrictions of time and place (Lor, 2000).

The term pedagogy usability is defined as the ability of a product to be used by specific users to achieve specific goals with, efficiency, and satisfaction, in a specific context of use (Lor, 2000).

The application of electronically-based technology is advancing dramatically and has increasingly impacted on the functioning of the University. The Private uses technology in order to deal with multiple challenges faced at all levels. These challenges include service delivery at various stages within the communities to improve the quality of life and to improve productivity through empowering employees with the required skills. Electronic learning (e-Learning) is viewed as the cheapest and most effective way in which organizations in the Private Universities provide their employees with continuous learning opportunities to improve organizational outcomes (Koohang, 2002). E-Learning, because of the way it is presented, is said to provide equal opportunities, as this is the biggest challenge for all Universities (Koohang, 2002).

According to the new vision of 12th June (2017), the state minister for higher education has called on all universities in the country to emphasize electronic learning more than face to face interaction with students. The minister believes this will reduce the cost of education because course materials, transport and accommodation costs will reduce hence making education less expensive. He added that learners prefer mobile and self-paced content and short period of the courses centrally to face to face long courses."This era of smart phones, where almost each university student has one, would provide a platform for communication and learning in the country. It would reduce on the cost of education. He added that distance learning would give room for a student to study while working and reduce on over dependence on their families.

Popularity of e-learning systems is attributed to their key benefits, when applied correctly, e-learning systems reduce teaching and learning costs, reduced teaching and learning time, more effective learning / better lecturer productivity, more consistent learning, flexible delivery / distance delivery, measurable learning, recognition of prior learning and multi-cultural learning (Nguyen and Chang (2006)).The value of ELearning is to fully enable "learning anywhere at any

time” by providing an array of resources, opportunities for active participation, mastering content and self-learning therefore, IUIU as a Private institution, embraced e-learning to add value by sharing their knowledge in the learning process even when they are across borders, empower staff with to develop learning material than hiring and reach all students in various locations who do not physically go and attend classes in one location(Zaharias 2002). However, as noted by Wong et al 2003, inadequately equipped e-learning systems can result in frustration, anxiety, confusion, and reduce learners’ interest. Silius et al (2003), states that poor usability is a major contributor to lack of adoption of most e-learning systems. Usability of e-learning systems influence the way learners evaluate their learning experience, if usability of e-learning system is bad, learners fail in their attempt to use the information and communication technology to aid education and training efforts.

1.2 Statement of the problem

IUIU has tried to integrate ICT into teaching and learning environments, but it has faced a problem of high costs in purchasing ICT tools and maintenance. And yet, failure to access and adopt information and communication technologies and this has hindered its pedagogical methods. According to the IUIU performance (2016), the value of teaching had reduced by 10%. In addition, wastage of time and poor quality of services were also reported. While several studies have documented minimal ICT implementation in such institutions, therefore, its against this background that, the study intended to investigate whether Effectiveness of E-learning contributes to usability at IUIU.

1.6 Purpose of the study

To establish the contribution of effective e-learning system on pedagogical usability in Private institutions in Uganda using Islamic University in Uganda as a case study.

1.7 Objectives of the study

1. To find out the contribution of students learning control to time saving in Islamic University in Uganda
2. To establish the contribution of E-learning applicability to efficiency in Islamic University in Uganda
3. To examine how value added on teaching ensures responsiveness in Islamic University in Uganda

1.8 Research questions.

1. What is the contribution of students learning control to time saving in Islamic University in Uganda?
2. What is the contribution of E-learning applicability to efficiency in Islamic University in Uganda?
3. How value added on teaching ensures E-learning responsiveness in Islamic University in Uganda?

1.9. Research hypotheses

H₀: There is no significant relationship between effectiveness of the e-learning system and pedagogical at IUIU

H₁: There is a significant relationship between effectiveness of the e-learning system and pedagogical at IUIU.

1.10. Significance of the study

Academic staff of Islamic University in Uganda

The study findings shall enhance the University's oversight function in providing better services to students while Using E-learning.

Academics and prospective researchers

The findings of the study shall provide and add knowledge to existing literature in higher institutions of learning and shall also act as a foundation for further research in the areas of Effectiveness of E-learning.

Ugandan Universities

The study shall raise awareness among the policy makers and managers of Universities. The Policy makers shall use the noted recommendation to improve on the effectiveness of E-learning.

Students

The users of e-learning systems in learning institutions need to know its effect on their learning process and knowing this will enable them to reach effective performance with least cost even if there are no numbers of alternatives, knowledge of the impact of the system will help in making decisions on its quality, and the needs for improvement.

1.11 Justification of the study

According to Squires (1999) countless reports, surveys, and studies have shown that eLearning industry is not showing any signs of slowing down. In fact, an increasing number of individuals, corporations, and institutions are turning to e-Learning as they recognize its effectiveness and its convenience in the field of teaching and learning. Accordingly, IUIU adopted e-Learning as a mode of teaching and all the undergraduate programs at the University are taught using the e-learning platform. The rationale for conducting this study is that it will provide the bench marks under which the usability of the e-learning system can be realized and effectiveness in IUIU is improved.

1.12 Scope of the study

1.12.1 Time scope of the study

The research investigations covered the period from 2012 to 2017 and this period was enough to collect the required data.

1.12.2 Geographical scope of the study

The study was conducted in IUIU. IUIU is a private university owned by the Muslim community established by the Uganda Government Statutory Instrument, 2015 No. 36, in accordance with the Universities & Other Tertiary Institutions Act 2006 as amended. IUIU Kampala campus is located in Kibuli, Central Uganda.

1.12.3 Content scope of the study

In terms of content, the study intended to investigate the usability of the e-learning system in terms of user-friendliness, learn ability / pedagogy, and technological infrastructure. The effectiveness of the e-learning system has been investigated in terms of upload learning materials, assignments, quiz, lecture notes, chats, forum, choices, workshops and reading materials and how they affect the effectiveness in terms of time, cost and quality of teaching and learning in IUIU.

CHAPTER TWO

LITERATURE REVIEW

2.0 Student Control and time saving

The 'student control' dimension shows that the approaches (materials, dynamics, evaluations, ...) need to be designed in order to reach an appropriate level of overload of the student memory, estimated from five to nine items (short-term memories), varying from individual to individual. This principle is relevant whereas the human cognitive system can only process a limited amount of information.

Squires et al (1999) refers to pedagogy as a 'contested' term with 'changing connotations and pressures'. His preferred definition states that pedagogy is: any conscious action by one person designed to enhance learning in another. Of particular interest to many e-learning researchers have been those pedagogies associated with social interactions and online discussions (Tselios, 2015). Online discussions are facilitated by Computer Conferencing, a web-based communication system that supports asynchronous, textual interaction between two or more persons. Online discussions combine input from tutors and students, and provide opportunities to examine their online interactions, which have been facilitated by the technology. Consequently, a great emphasis was placed on the written communications as they might reveal evidence of students' participation, contribution, communication and work that shows knowledge application, and criticality among other indicators of meaningful and effective learning. Moreover, tutors' input could be monitored for facilitation, feedback and other evidence of effective teaching.

Learning occurs with greater fluidity when the consumption process of information is aligned to the student's cognitive process, maintaining a threshold of compatibility between the amount of content, and the individual understanding capacity. By disregarding the limit, the assimilation is no longer satisfactory and natural, showing a low performance, and overloading the cognitive structure (Krus, 2004). Thus, compliance with the principle implies in an increase of the capacity of human cognition process, where the student interaction is subjected to educational technology aligned to the learning process. Strategically, considering the subjective difficulties inherent to this identification, the teaching materials to be used shall be divided into meaningful units, structuring them in pieces, or units for better assimilation. This dimension also recommends that strategies shall be implemented by aggregating the student's responsibility to the process. In addition, the adopted technologies shall be under the student control (Krus, 2004). The process of use and handling of both didactic resources and systems, settings and interactions, shall be preferably in the students domain, which will provide them greater learning and adaptation. In practical terms, a game or ludic activity, in virtual learning environment shall be fully implemented, with maximum resources as possible. A video, for example, shall be able to be seen and revised as necessary, if the student is the author responsible for limit setting.

Motivation to learn and engage with the e-Learning solution is key to effectiveness, especially when effectiveness is defined as the time spent using the product: 'Results suggest the importance of motivation to learn and workload in determining aggregate time spent in e-learning courses' (Krus, 2004). However, when projects are defined as 'blended e-Learning', time spent may not always be a good indicator of whether learning took place: 'beyond the impact of extrinsic-related perceptions, social and personal motivations are important drivers of discussion forum usage in an e-learning context. It is concluded that even for adult learners,

social interaction with instructors and collaborative interaction with peer students are important in enhancing learning and active participation in online discussion' (Krus, 2004). Therefore as in traditional learning, motivation is not only based on individual factors.

The concept (generic) deal with the facility (or quality) of use, and shall not be neglected, prevent the risk of frustrating the users expectations, which is essential in the educational environment. Meris et al (2003) states that in the virtual world, the usability refers to the ease of using a hypermedia system, defined as a combination of languages that became part of the history of humanity, such as the writing, the sound, and the image, in the same interactive communication system, being shared on a wide, global, and simultaneous scale. Usability has a component called 'technical' or 'design' (Meris et al, 2003), that addresses the web context and permeates the planning and implementation proper to systems and virtual environments. The essence of literature in design usability area, reinforces the implication that, if a virtual interface is properly designed and managed, with a high usability level, its users will learn easily to use it, and they will be pleased to have their needs supplied. Different authors relate usability issues with user satisfaction, in a direct or indirect way. Therefore, assume that by visiting a virtual page, the users present a set of expectations, anxieties, and needs that shall be removed, or satisfied.

According to Meris et al (2003), the usability is linked to efficiency, which leads to the understanding of the content, in order to make the users autonomous and sufficient in their surfing in the web, without requiring any support, help, or external action to perform the task. These environments need to be linked with the expectations of users, who in educational environment are students. Interfaces that is unsettled, polluted, full of materials, disorganized, and out of standards and conventions make students give up of interaction. A second implication

is the fact that, facing difficulties offered by virtual environments, the students tend to blame themselves for that. Although the real obstacles are in the interface or in the absence of pedagogical guidelines, this behavior is commonly observed in students who use virtual classrooms, and who have lack of knowledge base in information technology. At other extreme, when the users surf without obstacles, they are satisfied and show interest to return. The virtual learning environment shall have a clear visual hierarchy, and be clear enough to avoid doubts or concerns in the student. If they need to decipher aspects that do not matter, they will tend to waste energy and enthusiasm. Dropout in online courses also occurs due this fact. Design usability principles shall be observed in e-learning context to support the teaching-learning process, and contribute in static and dynamic structures to the proper management of electronic content.

On the other hand, despite of numerous new tools of collaboration aggregated in virtual learning environments, routines and processes related to pedagogical aspects may still be unstructured, providing a low level of learning. Depending on the level of virtual services provided, the initiatives and emerging technologies for e-learning do not guarantee the students learning. The lack of compliance with pedagogical guidelines implies in loss of the goal, which is essentially the learning. Many troubles highlight the need for a better management of existing technological resources, and standardization of processes and workflows to align them with educational goals, requiring continuous interactions (Meris et al, 2003). At this conjuncture, it is necessary the explanation of a concept in education considered emergent and innovative to some authors, although their bases are replicated or adjusted in different areas of knowledge, including the human-computer interaction, and interaction design: the pedagogical usability.

Considering the text of ISO 9241-11, it is understood that the pedagogical usability can be evaluated in the context of educational environment, occasion in which the content is consumed by specific students, who wish to achieve specific educational purposes, effectively and efficiently, and getting satisfaction in their learning. Therefore, the pedagogical usability is studied when it returns to a teaching environment. In case the interaction between students and systems that utilize technologies occurs only for a unidirectional transmission of instructions, the existing artifacts available to fundamentally change the conceptions, and the teaching-learning methods will be underutilized.

Although the numbers show an increase of publications related to e-learning, Matos (2013) states that studies on the pedagogical usability are reduced and restricted, due to the limited use of digital materials at school. In fact, new investigations are necessary, involving different usability evaluation techniques related to pedagogical issues. The term 'pedagogical usability' was first presented by Nielsen (1990) when presenting his conceptual map about usability, although without deep knowledge, and has been the target of new and recent investigations and reflections. Silius and Tervakari (2003) use the term to question whether the tools, content, interface, and tasks of environments based on the web, meet the learning needs of different students, in many contexts, according to the specified educational goals. There are diverse ways to implement and assess the requirements of pedagogical usability, which usability test is one of them. Meris et al (2003) states that a huge part of usability test in the computer area is superficial when balanced the orientation level that the user encounters. The author alleges that the pedagogical usability is more restricted compared with the proposed activity, and that the educational materials shall be developed according to the student. It is observed that the emphasis needs to be on what deals with the pedagogical preparation, so that all actions shall

point to the main purpose, whereas a low pedagogical usability affect the learning processes (Meris et al (2003). An author observation is that the pedagogical usability is consolidated through the feedback provided to the student, considering the importance of the moment and the kind of activity proposed, among other pedagogical aspects that constitute this bias. Indeed, the pedagogical usability focuses on providing feedback and reading strategies as one of its main attributes.

Mitchel et al (2005) considers that the pedagogical usability of a system, and/ or learning materials is also dependent on goals set by the student and the teacher in a learning situation. Then, considering the expressiveness and contribution to knowledge in question, Mitchel et al (2005) presented ten dimensions of pedagogical usability regard to teaching strategies and environment preparation to be observed in an application dedicated to teaching, which is already adapted to this context. The dimensions are composed by different criteria obtained from empirical studies related to the evaluation of digital educational materials, and learning management system measuring. Although it can be adopted in other fields and methods, as virtual learning environments.

Mitchel et al (2005) emphasizes the importance of feedback to the student, ensuring that when it comes at the right time; can provide greater interaction between the authors in the teaching learning process. The author tried to relate the different ways used for student learning. Different learning styles shall be considered when conceive designs that permeate the design usability and the pedagogical usability, directing the attention to the student, and considering the bias of their skills and expertise for the management of a digital environment focused on learning. Therefore, we present two aspects of the evaluation that needs to be performed, to observe if the system will promote the desired success: the design usability test, also called technical usability test; and

pedagogical usability test. The first stage is to evaluate the choices and technological quality of educational environments; the second evaluate whether the didactic and methodological choices by the developers of proposed tasks, favoring the student learning (Mitchel et al (2005). Mitchel et al (2005) states that, pedagogical usability can involve the study of more advanced issues of educational theories, and has a successful experience in evaluation research of usability, aiming to cooperate in the concept consolidation. The work demonstrated how the use of empirical methods of collection and analysis of data could contribute to improve the surfing design, focusing on the student. The research, based on collection of opinions, and organized by affinity diagrams, contributed to a greater adequacy of the course to the student's profile (Hall, 1997). Hall, 1997deals with the concept in the context of e-learning and toward, establish, and adapt criteria to the learning. Hall, (1997) used a participative design approach in developing a virtual learning environment, structured according to the principles of ergonomics-pedagogy, in order to adapt it to teaching and learning needs. Jeffels (2005) addresses studies that associate the development of educational materials, and explain how the pedagogical preparation was conducted to promote the learning. According to Jeffels (2005), the pedagogical usability is inserted within the context of participative structures for innovation, creating a new knowledge in emerging scenarios of e-learning by using educational technologies. The author states that the characteristics and demands of globalization process need to be observed in perspective of skills formation for inclusion, participation, and collaboration of a joint learning development. Years later, in contribution to thought about the pedagogical change in emerging scenarios of education and learning by Jeffels (2005) resumes the importance of adopting models and activities involving participation and collaborative mediation. The guidance is necessary for pedagogical change in the development of educational processes in relation to individual and collective

participation, in communities of learning and knowledge (Jeffels (2005)). The pedagogical usability concept is referenced in this context, where its adoption shall be performed in a consistent and practical manner, in emerging environment of open education, and in networking. The approach considers that the concept provides transformation and change from the social and cognitive mediation, for the sustainability of educational innovation. This is an alert for the need to adjust the methodologies to the new learning scenarios.

Many researchers have given different definitions of pedagogical usability based on their theoretical studies. For the purpose of this study, a few of these definitions are highlighted here. First, pedagogical usability is defined as the applicability of the web-based learning resources (WBLR) or tools (e-learning system) in actual educational contexts, e.g., in a course or study process with certain goals and practices. Jeffels (2005) defined pedagogical usability as the tools, content, interface, and tasks of the WBLE which support learners in learning in various contexts according to selected pedagogical objectives. The fullest definition from the perspective of this research is that by Jones (1994), who sees pedagogical usability as a dialogue among the user, system, and learning goals set by the learner and the teacher. According to Jones (1994), pedagogical usability seeks to measure whether the learning platform and the learning material embedded into it enable the learner and teacher to reach the learning goals. Further defining the concept of pedagogical usability, Jones (1994) gives a set of 10 criteria that can be applied to digital learning material: learner control, learning activity, collaborative learning, goal orientation, applicability, added value, motivation, previous knowledge, flexibility, and feedback. That is, as defined, pedagogical usability can be measured by the system's extent of learner control, learning activity, collaborative learning, goal orientation, applicability, added value, motivation, previous knowledge, flexibility, and feedback. Pedagogical usability,

therefore, purposes and aims to ensure that on e-learning websites, learner and teacher needs and expectations are clearly managed and achieved (Jones, 1994). A WBLE is considered pedagogically usable if the learners using the site can find what they need and accomplish their learning goals. In evaluating pedagogical usability, Silius et al. (2003) believe that pedagogical usability should moreover always be undertaken in relation to selected pedagogical objectives and the value added on teaching anticipated.

Summing up the definitions of pedagogical usability, Karat (1997) see the aspects of pedagogical usability as focusing on supporting the ease with which a user can access, study, and learn course materials in an e-learning environment. According to them, some examples of this are being able to personalize learning paths, clearly visualizing the course structure, and automatically updating students' progress tracking (Karat, 1997).

2.1 E-learning applicability and efficiency

The 'applicability' dimension recommends the use of approaches involving the alignment between the discussed subjects, and skills that will be required for professional or social life of the student, besides being related to other situations. Practices related to situations or authentic contexts, or that allows the students to learn by doing, or even leads him to use the skills and knowledge acquired in other contexts. Strategies, materials, content, and resources need to be sized in order to be in an appropriate level of the student's point of view, meeting their needs and subject to adjustments as necessary. Pedagogical practices, with the use and support of technologies, shall pass through continuous pedagogical evaluation to verify the level of difficulty found in the material, which is being an obstacle. Operationally, and in the context of e-learning, the actions allows the checking and to evaluate whether the activities are being performed, whether the time is compatible, whether the quantity of hits and misses performed by

a student in some activity is out of step, facing the collection of information, and adjusting the procedures to return to the process. It is important, in some situations, the dialogue between the authors of the process (teachers and students) to refine the necessary settings. Teachers need to be aware and get ahead in the adaptation of scenarios that may bring difficulties to the students, such as the insert of a complex concept, the need for prior knowledge, or the structure requirements for execution of the proposed tasks. The essence of candle dimension by strategies development (ways to approach the content, production of material) that correspond to the skills necessary, in a practical and applied way, in the student's life.

A recurring factor contributing to e-Learning effectiveness is 'practice'. The learner is given the opportunity or is required to practice the educational material presented via the e-Learning solution in case studies, simulations or actual work situations. The aim is to support learning retention and transfer to practice, as simulated practice provides a safe learning environment before the skills are applied in critical work situations: 'Intermediate-fidelity simulation is a useful training technique. It enables small groups of students to practice in a safe and controlled environment how to react adequately in a critical patient care situation. This type of training is very valuable to equip students with a minimum of technical and non-technical skills before they use them in practice settings' (Karat, 1997).

E-learning makes use of many technologies - some of which have been developed specifically for it, whilst others conveniently complemented the learning process, for example computer games. Communication technologies are also widely used in eLearning. Starting with the use of email and instant messaging, message forums and social networks, we see a plethora of tools that any internet user would use in any case (Kolb, 1984). There are also some technologies that work in a complementary manner to other software and enable new features, for example

software that adds a whiteboard on your video conferencing tool to allow you or your peers to make changes on other people's work for review, or screen-sharing which allows someone to make a presentation while still making comments and giving input using the microphone. E-learning makes good use of database and CMS (Content Management System) technologies. These two work hand in hand to store your course content, test results and student records. The data is stored in the database and the CMS provides a user interface for you to add, update and delete data. A good learning management systems (LMS) will often provide reporting tools to generate and store progress reports. E-learning tools and technologies used to improve the quality of content are manifold. Software such as Flash and PowerPoint will help you make your presentations slick and interesting, with high quality, graphically rich content. There are word processing packages and HTML editors available these days that make formatting your text or web pages a breeze, removing a lot of the complexity. There are also lots of online services available that you can use to create interactive elements for your courses such as quizzes and games.

2.2 Value-added on teaching and responsiveness

The 'value-added' dimension appears when the resources, materials, and strategies used in digital learning add, in fact, value to the learning. This parameter can be measured, among others, from the comparison with other types of strategies (use of printed material, for example), whether in cooperative or individual learning approaches. Value-added in e-learning is often evident when the creativity is used by technological resources, from voice files, images, videos, and even activities involving animations, which allow interactions like games. Karat (1997) studies present a list of computer-assisted learning aspects that provides value-added, such as adaptability to individual needs; number of options; learning controlled by the student, initiated

by the student, and presented according to the student desire; interesting content; communication development; and active participation of students. The operationalization of the list of items require professionals with skills, experience, multidisciplinary expertise, time to develop, test, and validate the instructional material of the design, which in turn, shall be of relevance, attractiveness, and flexibility to engage the student, since it shall be aligned to their needs.

The teaching dimension pass through strategies, materials, approaches, and interactive tasks, which provides continuous motivation in students, full conditions for creativity, and new circumstances for learning. In e-learning, the criteria operationalization can be obtained from online activities focusing on real situations, simulated scenarios, case studies of occurred facts, or the need for positioning and decision making. Activities involving the motivation can start from different approaches, where those that promote critical-analytical thought are recommended for active learning. The motivation is critical fact for learning (Karat (1997)).

For the e-learning solution and process, the key factors are ‘interaction’ and ‘practice’. The importance of these factors was determined as a result of the coding of the factors that influence effectiveness as well as the codes including the reasons that e-Learning was or was not effective. Interrelated factors, such as ‘instructional scaffolding’, modeling’ and ‘support’, were combined into a single factor, ‘interaction’. Though e-learning is often considered to be equally or more effective than face-to-face learning, interaction is generally considered to be critical to the effectiveness of e-Learning, as illustrated in the following papers: ‘Students valued interaction with instructor as an important factor in online learning. New students had a better success rate in instructor-led online courses than in independent-study online courses. Adult students need modeling and scaffolding to be successful in an online environment’ (Jiang, Parent and Eastmond, 2006); the supported training group had a significantly higher program completion

rate than the independent group' (Karat (1997) and 'Results indicate teachers attributed improved student learning to technology use; online communication with peers and experts reduced teacher isolation, enhanced professional practice and gave access to perspectives and experiences otherwise unavailable; but the additional workload discouraged several teachers' (Rossano, 2006). The last article also touches on the contextual factors as it emphasizes the need to consider both the time available to the learners and the expected workload of the e-Learning (Rossano, 2006).

It is not surprising that the experience of participants, in terms of previous relevant work experience and online experiences, affects the effectiveness of e-Learning. These factors seemed to determine the kind of attitude that participants 'go into the learning process with'; previous experience can be beneficial, if the previous work and online experiences correspond with the e-Learning (Rossano, 2006). What is intriguing is that, experience may either increase or decrease effectiveness. The authors have in previous empirical studies within higher education with students who study IT and educational design found that, when the definition of effectiveness was 'satisfaction', the students' previous experience with a variety of e-Learning solutions left the students unimpressed; hence, decreasing effectiveness (satisfaction). In the empirical study discussed in this paper, the teachers had little e-learning experience and were generally satisfied. Similarly, a learner with significant relevant work experience may perform well on tests and at work but have a low satisfaction score because the learning was not challenging. This underlines the importance of clarifying the definition of effectiveness and to discuss the ways in which individual factors can affect effectiveness.

It was highlighted by the TAM that perceived usefulness and perceived ease of use has a direct effect on attitudes towards using a new technology (Ardito et al., 2006). Attitude is another

important factor which is defined as the degree to which the user is interested in specific systems. It has a direct effect on the intention to use those specific systems in the future (Davis et al., 1989). It should also be noted that behavioural intention is affected by perceived ease of use and perceived usefulness (Ardito et al., 2006). Furthermore, examples of the external variables were given in the new model by Ardito et al (2006) as TAM2, such as “job relevance”, “output quality” and the “results demonstrability” (Ardito et al (2006). In this study about e-learning, the factor of design is of special interest, as it gives evidence of the dependency between system design and system use. The link between these two parameters is the behavioural intention influenced by PU and PEOU, as there is no direct dependency.

Learning has become a critical success factor for organizations, because complex and quickly changing situations constantly require the development of new thinking models, and learning has become a central part of everyday work (Ardito et al (2006). Traditionally learning occurs through three means: textbooks, teachers and real cases, but virtual tools may be used to take over at least part of these learning functions (Ardito et al (2006). In e-learning, teachers are replaced by online help systems or performance support systems that provide information either on learner’s request or automatically (Ardito et al (2006).

Technological development has removed temporal and spatial barriers, which allows obtaining and delivering knowledge anytime and anywhere (Aberdour, 2006). The limitations of e-learning have in the past been based on technological inability to create authentic and realistic input-output models (Aberdour, 2006), but in recent years technological development has enabled the development of better tools and e.g. the utilization of virtual reality to create authentic simulations. For example the possibilities of m-learning or mobile learning increase as wireless training is becoming more and more accessible (Aberdour, 2006).

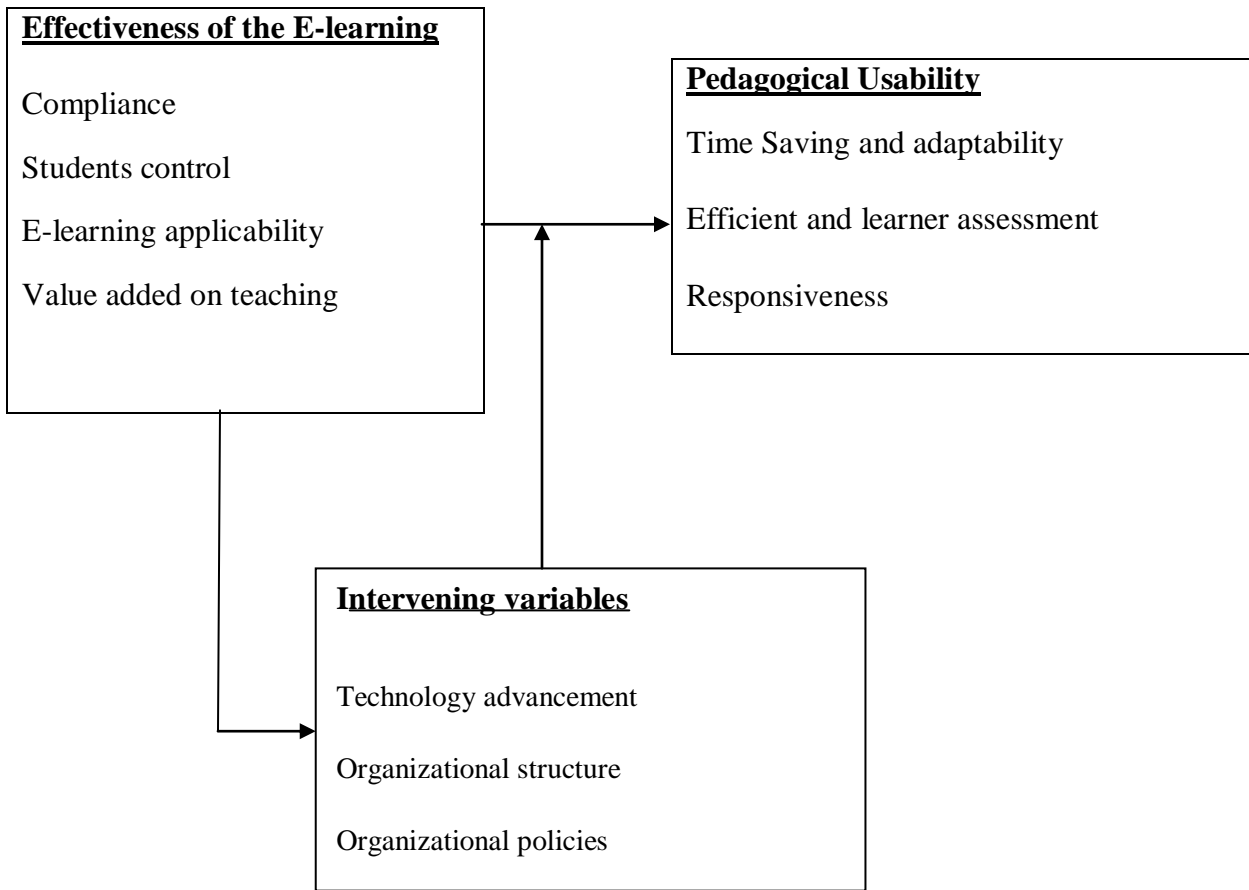
E-learning fundamentally changes how training and learning is conducted by Aberdour, 2006 suggests that it is the biggest change in learning since the invention of the alphabet. There is a consensus between practitioners (Cooper et al 2007) and researchers (Cooper et al 2007) that technological advances are dramatically affecting how training is conducted. Many big companies, such as Accenture, American Airlines, Dow Chemical, GE, IBM, Nokia, and Unilever to name a few, have decided to utilize e-learning already in the beginning of the 21st century (Cooper et al 2007). The utilization of e-learning in training is increasing in organizations as the borders between learning and working are slowly fading away. As technology is quickly improving, also the general guidelines and frameworks of e-learning need to be developed further in order to fully utilize the new options technological development is offering for e-learning (Van Rennes et al 1998).

1.9.4 Conceptual framework

The figure 2.1 represents the Conceptual Framework as adopted from Davis et al. (40) modified by the researcher. It shows the main variables in the study; it reflects the relationship between the Independent Variable, Pedagogical Usability, Effectiveness, Behavioral Intentions as the mediating factor and the Dependent Variable, E-learning system.

Independent Variable

Dependent Variable



Source: Researcher 2018

Figure2.1 Conceptual Framework

As mentioned earlier, TAM is used as an information-theoretic model for the second-step of the research study. It enables researchers to make statements about possible acceptance or rejection of a new technology by a designated user group. With a growing demand for technology and the starting computerization, difficulties increase in system integration. As a consequence, the acceptance of specific technologies by their designated operators became a field of research to diminish the effects of possible rejection. Van Rennes et al (1998) adjusted the Theory of Planned Behaviour by adding a technical scope, with the intention to give recommended procedure for the search of acceptance of technical products. His aim was to identify and neutralize reasons of rejection for these technical items. There are several studies in the literature that have successfully extended TAM applications for e-learning technology. TAM has also been

used to measure e-learning acceptance in developing countries, such as Van Rennes et al (1998). In most developing countries, traditional styles of pedagogy are utilized in education, due to a lack of financial resources and appropriately trained staff (Van Rennes et al 1998).

CHAPTR THREE

STUDY METHODOLOGY

3.1 Research design

Omagor. (2000) defines a research design as the scheme, outline or plan that is used to generate answers to the research problems. A research design can be regarded as an arrangement of conditions for collection and analysis of data in a manner that aims to combine relevancy with the research purpose. It is the conceptual structure within which the research was conducted. It constituted the blueprint for collection, measurement and analysis of data (Kothari, 2004).

This study used a descriptive cross-sectional survey research design. In a descriptive cross-sectional survey research design, the study variables, that is independent and dependent variables were measured at the same point in time and this enabled description as well as comparison of various factors associated with the study Kothari (2004). This further helped the researcher to ensure that people's views and opinions were sought and described accordingly to establish the pedagogical usability and effectiveness of the e-learning system within the study scope. The study used a descriptive cross-sectional survey research design because the study intended to pick only representative sample elements of the cross section of the study population. The study employed both qualitative and quantitative approaches.

3.2 Study population

The actual population comprised of 5 IT staff, 30 Academic staff, 13 Administrative staff and 20 students. The study targeted key players in the teaching and learning department of IUIU who were more conversant with the e-learning system.

3.3 Determination of sample size

Sampling is the procedure a researcher uses to gather people, places or things to study. It is the process of selecting a number of individuals or objects from the population such that the selected group contains elements representative of the characteristics found in the entire group (Oketch 2000). A sample size of 62 respondents was determined using solven's as cited by Amin (2005).

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

Where, N is the target population,

n is the sample size

e, is the level of statistical significance which will be 0.05 for purpose of this study.

$$(e)^2 = 0.0025$$

For this case:

$$N = 100$$

$$n = \frac{79}{1+79 (0.0025)}$$

$$n = 66$$

In addition to the above formula, Sekaran (2003) contends that, a sample size larger than 30 but less than 500 is appropriate for most studies and this in agreement with the current study sample size. The sample size was 62 and the researcher opted for this sample size because it enabled him gather the required data and the distribution of the population and sample size is indicated in table 3.1:

Table3.1: Respondents by category and sample

No.	Category of respondents	(N)	(S)
1	Academic staff	30	28
2	Administrative staff	13	13
3	IT staff	5	5
4	Students	29	16
	Total	79	66

Source: primary data (2018)

3.4 Sampling Techniques and Procedure

Purposive sampling was used to select University Council members who were interviewed. The researcher chooses this technique to select this category of respondents in order to focus on those that are the most knowledgeable and with vast experience about what to be investigated. Simple random sampling was used to select Academic staff and the students expected to participate in the research. The researcher chose this sampling technique for this particular group because this group of respondents is homogenous with almost equal understanding of the topic under investigation. In addition, they constitute a reasonable number to support selection by this procedure.

3.6 Data Collection Methods

There were several methods used to collect required data which included face-to-face interview, key informants interview, focus group discussion (FGD), survey, observation, and documentary review. However, for the purpose of this study focused on survey and documentary review and face to face interviews.

Survey

The selection of the survey method was guided by the nature of data collected, the time available and the objectives of the study. This method was used on all respondents who were selected to

participate in the study. One of the reasons why this method was preferred because the study involved variables that could not be observed and could only be derived from respondents' views, opinions and feelings.

Documentary review

Document analysis was used in studying the already existing literature and documents in order to either find gaps that could be filled by the study or evidence that could support or contradict the quantitative and quantitative findings. To exhaustively investigate the study, the researcher used triangulation to capture a variety of information, and reveal discrepancies that a single technique was not enough.

3.7 Data Collection Instruments

The researcher was guided by the nature of the problem under investigation in as far as data collection instruments are concerned. Accordingly, the study used interview guide, questionnaire and documentary checklists.

Questionnaire

A questionnaire is a data collection instrument used to gather data over a large sample or number of respondents (Amin, 2005). Structured questionnaire was developed following recommended guidelines by various scholars that include Kothari (2005). All respondents were considered for the questionnaire method and all were filled and returned making a 100% response rate.

Interview Guide

An interview guide is a set of questions that the researcher asks during the interview (Mugenda and Mugenda (2003). The researcher designed an interview guide which was used during the interview of respondents. The interview was face-to-face with the IT staff and students.

3.8 Validity and reliability of Instruments

As observed by Mugenda and Mugenda (2003), a number of studies have used this instrument and found both their reliability and validity values to be acceptable to the population being studied and in a different context thus recommends for testing the validity and reliability of the instruments.

Validity of instruments

Amin (2005) defines validity as the truth or accuracy of the research. Amin (2005) adds that it is the extent to which the data collection instrument measures as well as the appropriateness of the measures coming to accurate conclusions. Validity tests was conducted for content, criterion & construct validity test how well the instrument was representative, captured relationships between the variables as well as measures the concepts. This study utilized triangulation to ensure validity of research findings prior to the administration of the research instruments. This instrument was checked by experts. Content validity ratio was used to calculate the Content Validity Index, using formula below;

$$CVI = \frac{R}{R+N+IR}$$

Where

CVI = content validity index; R= Total number of items rated as relevantly N = Total number of items rated as Neutral; and IR= Total number of questions rated as irrelevant

So using the formula above, the researcher calculated the content validity index for the questionnaire as follows; the results of the CVI are shown in table 3.6.

Table 3.2: Showing the Content Validity Index of the study variables

Variable	Number of items judged relevant (R)	Number of Neutral items (N)	Number of irrelevant Items (IR)	CVI
Students control	4	1	1	0.67
E-learning applicability	3	2	-	0.60
Value added on teaching	4	-	1	0.80
Average				0.69

Source: Primary data (2018)

The computed CVIs were above the 0.5 or 50% threshold postulated by Okech (2000) and an average of 0.69 is also above 0.5 and this implies that the tools that were used in data collection were valid. A content validity index of 0.7 and above according to Amin, (2005) qualified the instrument for the study.

Reliability of instruments

Reliability is defined by Vogt (2007) as the consistency of either measurement or design to give the same conclusions if used at different times or by different scholars. Internal consistency was measured through internal consistency reliability using split-half reliability method. On the reliability issue, at least 10% of the questionnaires were selected randomly in order to evaluate the data collected, and then any possible amendment was made. Cronbach's alpha coefficient was used to test for the reliability of the questionnaire using formula;

$$\alpha = \frac{k}{k-1} \left(1 - \frac{\sum \sigma_k^2}{\sigma^2} \right)$$

Where

$\sum \sigma_k^2$ = the sum of the variances of the k parts (usually items) of the test.

σ = standard deviation of the test (items in the instrument).

α = Cronbach's alpha coefficient.

The results obtained were as follows;

Table 3.3: Reliability analysis

Variable	Number of questions	Cronbach's alpha coefficient
Students control	6	0.71
E-learning applicability	5	0.73
Value-added on teaching	5	0.75

Sources: From primary data reliability test (2018)

Table 3.3 shows the alpha values of 0.71 for student control, 0.73 for E-learning applicability and 0.75 for Value-added on teaching which were higher than 0.60 recommended for social research by Oketch (2000), thus suggesting that all the items used to measure each variable were consistent in measuring the reliability.

3.9 Data Analysis

The findings of the study were analyzed using both quantitative and qualitative methods. This involved uncovering structures, extracting important variables, detecting any irregularity and testing any assumptions. The researcher further used triangulation method of analysis to come up with appropriate conclusions and recommendations.

Quantitative data analysis

The quantitative data analysis consisted of numerical values from which descriptions such as mean and standard deviations were made. The quantitative data gathered was organized, numbered and coded then entered using SPSS 23.0 for windows. The researcher used both

descriptive and inferential statistics to analyze data. Percentages and frequencies were also used in order to come up with the conclusion.

Qualitative data analysis

This involved cleaning up of data from the focus group discussions, key informants interviews and the questionnaires categorizing them into themes and patterns and making a content analysis to determine the adequacy of the information credibility, usefulness and consistency. Data was analyzed before, during and after data collection and the tentative themes were defined. Responses were grouped into common responses and thereafter conclusions were made depending on respondents' views.

3.10 Measurement of variables

By measurement, it refers to the formulae or scale that was used in the study in relation to the variables (Kothari, 2004). The study variables were measured using nominal and ordinal types of measurements. The questionnaires specifically for respondents was measured on a five interval Likert Scale, the level of agreement was ranked as strongly agree, which reflected more agreement than just agreement or strongly disagree compared to just disagree. Ordinal Scale as measurement of variables was not only to categorize the elements being measured but also rank them into some order.

CHAPTER FOUR

CONTRIBUTION OF STUDENTS LEARNING CONTROL TO TIME SAVING

4.0. Introduction

This chapter presents findings about contribution of students control to time saving, however it starts with background information of respondents.

4.1. Background information of respondents

The background information focused on gender, number of years in the organization, age group and the qualifications of respondents. Details of the findings are presented in the proceeding tables. The study distributed 66 questionnaires however, only 62 were filled ad returned making the response rate of 94%.

4.1.1 Gender

The study asked respondents to state their gender and the results are indicated in table 3.2:

Table4.1: Gender

	Frequency	Percent
Male	33	53
Female	29	47
Total	62	100.0

Source: Primary data (2018)

From the table 3.2 above, majority of the respondents 33(53%) were male and 29(47%) were female. Majority of the respondents were males and this implies that IUIU employs more males than female and this means that males are more qualified than females and they were willing to work with IUIU.

4.1.2 Age of the respondents

Respondents were asked to state their age and the results are indicated in table 4.2.

Table4.2: Age group

	Frequency	Percent
21 - 30 Years	14	23
31 - 40 Years	30	48
41 – 50 years	15	24
Above 50	3	5
Total	62	100.0

Source: Primary data (2018)

From the table 4.2 above, 14(23%) were between the age brackets of 21-30 years, 30(48%) were between 31-40 years, 15(24%) were of 41-50 years and 3(5%) were above 50 years. Majority of the respondents were above 30 years and this implies that IUIU employs mature people and at the same time young and energetic people who performs better since the majority were below 50 years.

4.1.3 Marital Status

Respondents were asked to state their marital status and the results are indicated in table 4.3.

Table4.3: Marital status

	Frequency	Percent
Married	32	52
Single	27	44
Divorced/Separated	3	5
Total	62	100.0

Source: Primary data (2018)

From the above 4.3 table, 32(52%) were married, 27(44%) were single and 3(5%) had divorced/ separated. Majority of the respondents were married and this implies that IUIU employs people with responsibilities and thus they work better to protect their status quo.

4.1.4 Highest Academic Qualification

The study asked respondents to state their highest academic qualification and the results are indicated in the table 4.4.

Table4.4: Education Level attended

		Frequency	Percent
Valid	Diploma	8	13%
	Degree	41	66
	Master	10	16
	PhD	3	5
	Total	40	100.0

Source: Primary data (2018)

According to the table 4.4 above, 8(13%) were diploma holders, 41(66%) were degree holders, 10(16%) were master holders and 3(5%) were PhD holders. Majority of the respondents had attained education levels and this implies that respondents would understand and interpret questions that were sent to them and thus gave reliable data.

4.5 Duration of employment

Respondents were asked to state their duration of employment and the results are indicated in table 4.5.

Table4.5: Duration of employment

	Frequency	Percent
Less than 1	8	13
1 – 3 years	19	31
3 – 6 years	22	35
Above 6 yrs	11	18
Total	62	100.0

Source: Primary data (2018)

According to the table 4.5 above, 8(13%) had worked in IUIU for less than 1 years, 19(31%) 1-3 years, 22(35%) for 5-9 years and 11(18%) above 6 years. Majority of the respondents had worked at the IUIU for more than one year and this implies that it maintains experienced staff. In addition, these respondents had gathered enough information about the topic under study and thus they gave reliable data.

4.2. Contribution of students control to time saving

4.2.0 Introduction

The chapter presents the results from the field relating to contribution of students control to time saving. The study results are also discussed in detail with the interpretation of the results from the analyzed data. The presentation method adopted for this study was appropriate to ease the interpretation and understanding of the results considering a descriptive approach. Tables were chosen as the most appropriate method of presentation as the results can be easily in a tabular form.

4.2.1. Students control improves interaction between students.

Respondents were asked to state whether students control improves interaction between students and the results are presented in table 4.6.

Table4.6 Students control improves interaction between students.

	Frequency	Percent
Strongly agree	26	42
Agree	20	32
Not sure	-	16
Disagree	10	
Strongly disagree	6	10
Total	62	100.0

Source; Primary Data (2018)

According to the findings in the table, 26(42%) Strongly agree, 20(32%) agreed, 10 disagree,6(10) Strongly disagreed. Majority of the respondents 74% of the respondents reported that the students control improves interaction between students. It was discovered that, student's control at IUIU is well designed in order to reach an appropriate level of overload of the student memory and this has improved the process of E-learning. Results from interviews with the respondents indicated that, e-learning application is a mere electronic transposition of traditional material, presented through rigid interaction schemes and awkward interfaces and therefore, it must be usable friendly. This is in line with Cooper, et al (2007) who states that "If an e-learning system is not usable enough, it obstructs student's learning, the learners would not spend more time learning how to use the software rather than learning the contents.

4.2.2 Students control creates a room for electronic learning

Teams in the organizations play vital roles in making organizations achieve their set goals and objectives, therefore respondents were asked to state whether Students control creates a room for electronic learning and the results are presented in table 4.7.

Table4.7 Students control creates a room for electronic learning

	Frequency	Percent
Strongly agree	17	27.4
Agree	20	32.3
Not sure	10	16.1
Disagree	-	24.2
Strongly disagree	15	100.0
Total	62	

Source; Primary Data (2018)

As illustrated in the table, 17(27.4%) Strongly agree, 20(32.2%) Agree, 10(16.1%) Not sure, 24.2% disagree, 15 (100%) Strongly disagree. Most of the respondents (59.7%) agreed with the statement Students control creates a room for electronic learning. 40.3% reported that the students control does not creates a room for electronic learning. Majority of the respondents agreed and this implies that, E-learning can only be successful with the application of students' control as a usability element. It was discovered that, many eLearning systems fails because they aim at replacing proven methods of learning instead of improving the learning experience, where there is room for improvement, therefore, IUIU must get all ways of improving its usability in order to make E-learning effective.

4.2.3 Students control improves on the number of participates

According to Rossano, (2006), organizations can not succeed with E-learning without the stakeholders' participation. Respondents were asked to state whether students control improves on the number of participates and the results are presented in table 4.8.

Table4.8 Students control improves on the number of participates

	Frequency	Percent
Strongly agree	20	32.3
Agree	16	25.8
Not sure	-	-
Disagree	-	-
Strongly disagree	26	41.9
Total	62	100.0

Source; Primary Data (2018)

According to the findings, 20(32.3%) Strongly agree, (16(25.8%) agree, 26(41.9%) Strongly disagree. Majority 58.1% of the respondents agreed that most of the stakeholders involved in the design and development of the initiative on a monthly basis and 41.9% disagreed. Majority of the respondents agreed and this implies that, student controls improves on the number of participates. However, through interviews with the respondents, it was revealed that, E-learning has to work much harder than traditional learning to engage and retain the learner. In the classroom, content is ‘hidden’ behind the teacher who mediates the learning, whereas e-learning content is fully visible and has nowhere to hide; all its flaws are exposed, making it an easy target for detractors. Therefore, pedagogical usability is a tool for increasing the number of users of E-learning.

4.2.4 Students control reduces the students’ cues

Students control in any system can be termed as a tool for improvement and advancement facility accessibility. Respondents were asked to state whether students control reduces the students’ cues and the results are presented in table 4.9.

Table 4.9 Students control reduces the students' cues

	Frequency	Percent
Strongly agree	20	32
Agree	21	34
Not sure	5	8
Disagree	8	13
Strongly disagree	7	11
Total	62	100.0

Source; Primary Data (2018)

Findings, as presented in table 4.9, 20(32%) strongly agree, 21(34%) agree, 5(8%) Not sure, 8(11%) disagree, 7 strongly disagree. Illustrate that 66% of the respondents agreed that, students control reduces the students' cues. On the other hand, 34% of the respondents reported that students control does not reduce the students' cues. Majority of the respondents agreed and this means that, there is no need for students to line or gather together for services such as lectures at IUIU.

The study discovered that to the students' control, students performs better with a system design matching their preferences and however, for students with low levels of e-learning enjoyment need additional help like face to face interactions with lecturers. This is supported by Jones (1994) who suggests that lectures should create an email list that includes all the email addresses of the students taking the same course, so the students can discuss their problems and share their experience with their classmates. This also provides a way to gain encouragement from each other, which may increase their enjoyment. Therefore usability incorporates a number of different teaching strategies to ensure that there is e-learning is very effective. However, the study also revealed that, while students gain the advantage of flexibility in time, pace, and

distance with web-based instruction, many of them feel isolated, suffer from a lack of motivation, or lack of support, and find that the feedback provided is too limited, and consequently drop out of their courses and this is why 34% of the respondents disagreed.

4.2.4 Students control improves on feedback communication

Effective Electronic learning involves feedback communication, Respondents were asked to state whether students control improves on feedback communication at IUIU and the results are presented in table 4.10.

Table4. 10. Students control improves on feedback communication

	Frequency (n)	Percent (%)
Strongly agree	23	37
Agree	18	29
Not sure	3	5
Disagree	8	13
Strongly disagree	10	16
Total	62	100

Source; Primary Data (2018)

As presented in the table above, 23 (37%) strongly agree, 18(29)agree, 3(5%) not sure, 8(13%) disagree, 10(16%) strongly disagree. Majority of 66% of the respondents indicated that, students control improves on feedback communication. However, the study also revealed that, communicational channels were effective enough represented by 34% of the respondents.

Qualitative results

Generally, the study through interviews revealed that, e-learning to be success, student control must be considered as the main the key factor. Results from the documents such as performance report 2017 indicated that, the importance student control to the influence effectiveness as well as the codes including the reasons that e-learning was or was not effective. It should be noted that, interrelated factors, such as instructional scaffolding, 'modeling and support, were combined into a single factor, interaction. Though e-learning is often considered to be equally or more effective than face-to-face learning, students' control is generally considered to be critical to the effectiveness of e-learning.

CHAPTER FIVE

E-LEARNING APPLICABILITY AND EFFICIENCY

5.0 Introduction

This chapter presents findings on the system applicability, efficiency and effectiveness which was the objective number two of the study. The success of the E-learning applicability in IUIU brought in some good performance as presented in the proceeding tables.

5.1 E-learning applicability improves on the quality of education

Respondents were asked to state whether E-learning applicability improves on the quality of services and the responses are contained in the table 5.1.

Table5.1 E-learning applicability improves on the quality of services

	Frequency	Percent
Strongly agree	25	40.0
Agree	16	26.0
Not sure	4	6
Disagree	7	11
Strongly disagree	10	16
Total	62	100.0

Source; Primary Data (2018)

As shown in the table above, 25(40.0%) strongly agree, 16(26.0%) agree, 4(6%) not sure, 10(16%) disagreed. Majority of the respondents presented by 66% indicated that, E-learning applicability improves on the quality of services. The majority of the respondents agreed and this means that E-learning applicability improves on the quality of services.

5.2 E-learning applicability creates easy access to university services

Respondents were asked to state whether E-learning applicability creates easy access to university services and the responses are contained in the table 5.2.

Table5. 2. E-learning applicability creates easy access to university services

	Frequency (n)	Percent (%)
Strongly agree	23	37
Agree	20	32
Not sure	3	5
Disagree	8	13
Strongly disagree	8	13
Total	62	100

Source; Primary Data (2018)

Table 5.2, 23(37%) strongly agree, 20(32%) agreed, 3(5%) Majority of the respondents presented by 69% indicated that, E-learning applicability creates “easy access” to university services. Majority of the respondents agreed with the statement that E-learning applicability creates easy access to university services. Respondents through interviews revealed that E-learning applicability provides a way to gain encouragement from each other, which may increase their enjoyment. It was further discovered that, E-learning applicability incorporates a number of different teaching strategies to ensure that there is at least one effective strategy for each learner and making E-learning effective.

5.3 E-learning applicability ensures easy registration of students

Respondents were asked to state whether E-learning applicability ensures easy registration of students and the responses are contained in the table 5.3.

Table5. 3. E-learning applicability ensures easy registration of students

	Frequency (n)	Percent (%)
Strongly agree	19	31
Agree	17	29
Not sure	7	11
Disagree	8	13
Strongly disagree	11	18
Total	62	100

Source; Primary Data (2018)

Results from the table above, the findings indicated that, the majority of the respondents presented by 60% agreed that E-learning applicability ensures easy registration of students. Majority of the respondents agreed with the statement and this implies that, E-learning applicability ensures easy registration of students at IUIU. The study is supported by Karat, (1997 who states that, E-learning developers have to identify software with suitable that helps students to join very easy and tailor it to more closely to meet the community's needs.

5.4 E-learning applicability ensures early relies of results

Respondents were asked to state whether E-learning applicability ensures early relies of results and the responses are contained in the table 5.4.

Table5. 4. E-learning applicability ensures early relies of results

	Frequency (n)	Percent (%)
Strongly agree	19	31
Agree	18	29
Not sure	3	4
Disagree	8	13
Strongly disagree	14	23
Total	62	100

Source: Primary data (2018)

As presented in the table above, majority of the respondents 60% agreed with the statement that E-learning applicability ensures early relies of results, however 46 disagreed. Most respondents agreed that E-learning applicability ensures early relies of results. The study revealed that, results are posted to students emails and others access them by logging into the University website. And this supported by Lohr (2000) who explain that E-learning applicability supports people in their everyday and working lives and it is concerned with a broader range of issues and paradigms that creates user experiences that enhance and extend the way students work, communicate, and interact which leads to the effectiveness of the E-learning.

5.5 E-learning applicability ensures good coordination between students and management

Respondents were asked to state whether E-learning applicability ensures good coordination between students and management and the responses are contained in the table 5.4.

Table5.6. E-learning applicability ensures good coordination between students and management

	Frequency (n)	Percent (%)
Strongly agree	12	19
Agree	15	32
Not sure	3	5
Disagree	13	13
Strongly disagree	19	31
Total	62	100

Source; Primary Data (2018)

Majority of the respondents presented by 51% agreed that, E-learning applicability ensures good coordination between students and management and 49% disagreed. Majority of the respondents agreed and this implies that, E-learning applicability ensures good coordination between students and management.

CHAPTER SIX

VALUE ADDED ON TEACHING AND RESPONSIVENESS OF E-LEARNING

6.0 Introduction

This section presents findings on the strategies that value added on teaching and responsiveness and the results are indicated in the proceeding tables.

6.1 Value added on teaching promotes effective learning process

Respondents were asked to state whether the value added on teaching promotes effective learning process and the responses are contained in the table 6.1.

Table 6.1. Value added on teaching promotes effective learning process

	Frequency	Percent
Strongly agree	20	32
Agree	20	32
Not sure	1	2
Disagree	11	18
Strongly disagree	10	16
Total	62	

Source; Primary Data (2018)

As shown in the table 6.1, majority of the respondents (64%) agreed that the Value added on teaching promotes effective learning process. However, 36% of the respondents felt that the goals were never defined properly.

6.2 Value added on teaching increases the number of students

Respondents were asked to state whether the value added on teaching increases the number of students and the responses are contained in the table 6.2 below.

Table 6.2 Value added on teaching increases the number of students

	Frequency	Percent
Strongly agree	16	26
Agree	14	23
Not sure	8	13
Disagree	12	19
Strongly disagree	12	19
Total	62	100

Source; Primary Data (2018)

Basing on the results in table above, 49% agree with the statement that value added on teaching increases the number of students, however, 38% of the respondents disagreed. Majority of the respondents agreed and this implies that, E-learning applicability ensures good coordination between students and management and hence making more students to join the University.

6.3 Value added on teaching promotes quick decision making at the University

Respondents were asked to state whether the value added on teaching promotes quick decision making at the University and the responses are contained in the table 6.3 below.

Table6.3 Value added on teaching promotes quick decision making at the University

	Frequency	Percent
Strongly agree	19	31
Agree	19	31
Not sure	7	11
Disagree	8	13
Strongly disagree	7	11
Total	62	100

Source; Primary Data (2018)

As presented in table above, 62% of the respondents agreed with the statement that, Value added on teaching promotes quick decision making at the University and 24% disagreed. Most of the respondents agreed and this implies that value added on teaching promotes quick decision making about E-learning at the University.

The study through interviews found that perceived usefulness and perceived ease of use has a direct effect on attitudes towards using E-learning and this supported by Chen et al., 2011) who argues that, quick decision making while using E-learning is as a result value added.

6.4 Value added on teaching promote transparency

Respondents were asked to state whether the value added on teaching promote transparency and the responses are contained in the table 6.4.

Table6.4. Value added on teaching promote transparency

	Frequency	Percent
Strongly agree	38	61
Agree	-	-
Not sure	3	5
Disagree	11	18
Strongly disagree	10	17
Total	62	100

Source; Primary Data (2018)

As shown in the table, a majority of the respondents (61%) reported that value added on teaching promote transparency, however 35% disagreed. The study also revealed that, the addition of value enables each task to be completed on time and within the expectations.

6.5 Value added on teaching improves on data base management.

Respondents were asked to state whether the value added on teaching improves on data base management and the responses are contained in the table 6.5 below.

Table6.5. Value added on teaching improves on data base management.

	Frequency	Percent
Strongly agree	18	29
Agree	18	29
Not sure	4	6
Disagree	11	18
Strongly disagree	11	18
Total	62	100

Source; Primary Data (2018)

As in table 4.25, 74.2% reported that the implementation team worked within the provided timelines and were able to meet the target. However, from the table, 25.8% of the respondents felt that the value added on teaching not improves on data base management. The study discovered that, since all information related students learning is done electronically, their data base is created and it can be easily management.

CHAPTER SEVEN

HARMONIZATION OF EFFECTIVENESS OF THE E-LEARNING SYSTEM ON PEDAGOGICAL

7.0 Introduction

In regression with a single independent variable, the coefficient shows how much the dependent variable is expected to change in response to a unit change in the independent variable. In regression with multiple independent variables, the coefficient informs how much the dependent variable is expected to increase when one of the independent variables increase by one unit, holding all other independent variables constant.

7.1 E-learning system on pedagogical

The regression results are presented in tables 7.1, and table 7.2 for regression model summary and the regression coefficients results respectively.

The regression model summary results are as presented in Table 4.29 that shows the multivariate R^2 and adjusted R^2 .

Table 7.1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.725 ^a	.526	.515	.63476

a. Predictors: (Constant), Pedagogical Usability

The overall model was significant ($R^2 = 0.526$, $F = 48.178$, $p = 0.000$). From the table, the coefficient of determination, R -square that informs the proportion of change in the effectiveness of E-learning that is caused by the variation of the explanatory variables is 0.526. This shows that the pedagogical usability contributes 52.6% of the effectiveness of E-

learning ($R^2=0.526$, $p=0.000$). The remaining 47.4% is contributed by other factors not reflected on the study statistical model.

Table 7.3 Regression Model Coefficients

Model		Unstandardized		Standardized	t	Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
1	(Constant)	.964	.321		3.000	.003
	Students control	.058	.039	.081	2.509	.033
	E-learning applicability	.180	.062	.178	2.923	.004
	Value added on teaching	.191	.065	.182	2.958	.003

a. Dependent Variable: Effectiveness of E-learning

Results in Table 7.3 shows the coefficients of the multiple regression model for the explanatory variables. At 5% significance level and 95% confidence level, students control, E-learning applicability and value added on teaching were significantly influencing to the Effectiveness of E-learning.

Among the independent variables, all the variables indicated a positive relationship with the dependent variable. This shows that pedagogical usability positively influence the Effectiveness of E-learning. Similarly, all the variables showed a statistically significant relationship as indicated by the p-values which are all less than 0.05 at the 5% level of significant. From the table 7.3, students control had a positive effect on Effectiveness of E-learning ($\beta = 0.058$), this was also significant at the 5% level of significance ($p=0.033$); E-learning applicability had a significant influence on Effectiveness of E-learning at ($\beta =0.180$, $p=0.004$), whereas value added on teaching indicated also a positive and significant influence on the Effectiveness of E-learning at ($\beta =0.191$, $p=0.003$).

CHAPTER EIGHT

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

The chapter presents summary, conclusion and recommendations that emerge in the study. These findings can be used by any University that plans to implement a similar system. The recommendations issued are significant in dealing with the E-learning in Universities towards the improvement of pedagogical.

8.2 Summary

This section presents the summary of findings from the field and they are presented in accordance with the study objectives.

8.2.1. Contribution of students control to time saving

The study considered student controls as the dimension that shows materials, dynamics, evaluations, .need to be designed in order to reach an appropriate level of overload of the student memory, estimated from short-term memories varying from individual to individual. As presented in chapter four, most of respondents indicated that, students control improves interaction between students (basing on 74% agree rate), students control creates a room for electronic learning (basing on 59.7% agree rate), students control improves on the number of participates (basing on 58.1% agreed rate), students control reduces the students' cues (basing on 66% agreed agree rate), students control improves on feedback communication (basing on 66% agree rate).

8.2.2. E-learning applicability and efficiency

The study discovered that, the applicability recommends the use of approaches involving the alignment between the discussed subjects, and skills that are required for professional E-learning and practices that allows the students to learn by doing, or even leads them to use the skills and knowledge acquired through E-learning. Therefore, as presented in chapter five, majority of the respondents indicated that, E-learning applicability improves on the quality of services (basing on 66% agree rate), E-learning applicability creates easy access to university services (basing on 69% rate), E-learning applicability ensures easy registration of students (basing on 60% agree rate), E-learning applicability ensures early relies of results (basing on 60% agree rate) and E-learning applicability ensures good coordination between students and management (basing on 51% agree rate).

8.2.3. Value added on teaching and responsiveness

The was set to find out whether resources, materials, and strategies used in digital learning add, value to the learning process of the University and this was measured among others from the comparison with other types of learning such use of printed material both in cooperative or individual learning approaches. Therefore, as presented in chapter six, most of the respondents indicated that, value added on teaching promotes effective learning process (basing on 64% agree rate), value added on teaching increases the number of students (basing on 49% agree rated), value added on teaching promotes quick decision making at the University (basing on 62% agree rate), value added on teaching promote transparency (basing on 61% agree rate) and value added on teaching improves on data base management (basing on 74.2% agree rate).

8.3 Conclusions

The study discovered that, students control improves interaction between students, creates a room for electronic learning, improves on the number of participates and reduces the students' cues at IUIU.

The study also found out that, E-learning applicability improves on the quality of services, creates easy access to university services, ensures easy registration of students and ensures early relies of results.

The also revealed that, value added on teaching promotes effective learning process, improves on data base management, increases the number of students , promotes quick decision making at the University and ensures transparency.

The study also through interviews with respondents discovered that, for e-learning to be successful, it must be engaging pedagogical aims of the course, accommodate students with a range of learning styles and contain help and hints for those who are less confident in using computer based materials. E-learning materials must usable for all students, including those with a range of disabilities.

The study also revealed that, with the adoption of pedagogical usability, the user satisfaction will be higher and a greater proportion of the students' time will be spent on useful tasks rather than with struggling and feeling alienated by the technology.

8.4. Recommendations

The study recommended that, the university should consider usability at the design stage and this is because is far more cost effective to and it would therefore make sense for a portion of the budget and development time to be apportioned.

The various learning styles that students could adopt when using E-learning should also be taken into account.

All students should be trained on how to use computer based networks and this will improve the effectiveness of E-learning.

8.5 Areas for further Studies

The study recommends that, more research can be done in respect to Pedagogical Usability which include.

- i. Pedagogical Usability and performance of Universities in Uganda
- ii. E-learning and academic performance of IUIU
- iii. Pedagogical usability and academic staff in IUIU

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APPENDICES

Appendix I: Questionnaire

Dear Respondent, I am **Nansikombi Shamim** a student of Nkumba University pursuing a Master's degree Information Technology of Nkumba University. I am conducting a study on Effectiveness of the E-Learning System on Pedagogical Usability of Private institutions in Uganda: A Case of "Islamic University in Uganda. I would be grateful if you avail me with the information relating to the above topic for research purposes. Be assured that the information you provide will be used for this study and will be treated with maximum confidentiality.

Thank you.

Section A: Background information

1. Gender:

Male Female

2. Age (Years):

18-25 26-35 36-45 Above 46

3. Marital Status

Single Married Divorced/Separated

Others (Specify).....

4. Highest Academic Qualification:

Diploma Degree Masters PhD

Others (Specify).....

5. Duration of Employment:

Below 1 Year 1-4 Years 5-9 Years Above 10 Years

Section B: Contribution of students control to time saving

No.	Question	SD	D	NS	A	SA
1.	Students control improves interaction between students					
2.	Students control creates a room for electronic learning					
3.	Students control improves on the number of participates					
4.	Students control reduces the students cues					
5.	Students control improves on feedback communication					
6.	Staff appraisal is used as a decision making tool for the increasing my performance.					

SECTION B: E-learning applicability and efficiency and effectiveness

No.	Question	SD	D	NS	A	SA
1	E-learning applicability improves on the quality of services					
2	E-learning applicability creates easy access to university services					
3	E-learning applicability ensures easy registration of students					
4	E-learning applicability ensures early relies of results					
5	E-learning applicability ensures good coordination between students and management					

SECTION C: Value-added on teaching and responsiveness

1	Value-added on teaching promotes effective learning process					
2	Value-added on teaching increases the number of students					
3	Value-added on teaching promotes quick decision making at the University					
4	Value added on teaching promote transparency					
5	Value-added on teaching improves on data base management					

Appendix: II. Interview Guide

- i. What is the contribution of students control to time saving in IUIU?
- ii. What is the contribution of E-learning applicability to efficiency and effectiveness in IUIU?
- iii. How value added on teaching ensures E-learning responsiveness in IUIU?
- iv. Does students control improves interaction between students?
- v. How does control improve on the number of participates?
- vi. What is the contribution of E-learning applicability to the quality of services?
- vii. Does E-learning applicability ensure easy registration of students?
- viii. Does value added on teaching promote effective learning process?
- ix. What is the contribution of value added on teaching to quick decision making at the University?
- x. Does value added on teaching improve on data base management?