# KYAMBOGO UNIVERSITY

**ORGANISATIONAL CRITICAL SUCCESS FACTORS AND THE ADOPTION OF**

**E-LEARNING IN SELECTED PUBLIC AND NON-PROFIT**

**MIDWIFERY SCHOOLS IN UGANDA**

**BY**

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# DECLARATION

I, June Patrick Bigirwa, declare that this dissertation titled "Organisational Critical Success Factors and the Adoption of E-learning in Selected Public and Non-Profit Midwifery Schools in Uganda" is my original work, and to the best of my knowledge it has never been submitted to any institution for any award or publication.

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## DEDICATION

I dedicate this report to my dear wife Betty and our lovely children Lorna, Shane, and Jonathan. I pray that the Almighty blesses you abundantly.

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## ABBREVIATIONS AND ACRONYMS

**ARCS**          Attention, Relevance, Confidence, and Satisfaction Model

**BTVET**         Business, Technical, Vocational Education and Training

**CD-ROM**        Compact Disc, Read-Only-Memory

**CFW**           Conceptual Framework

**GUREC**         Gulu University Research and Ethics Committee

**LMS**           Learning Management System

**MOES**          Ministry of Education and Sports

**MOH**           Ministry of Health

**OCSFs**         Organisational Critical Success Factors

**UNCST**         Uganda National Council of Science and Technology

**UNMC**          Uganda Nurses, and Midwives Council

**UNMEB**         Uganda Nurses and Midwives Examination Board

**UTAUT**         Unified Theory of Acceptance and Use of Technology

**WHO**           World Health Organisation

# ABSTRACT

The government of Uganda has invested in the e-learning approach in many health training institutions. However, despite the high investment, there is a low adoption to this approach. This study aimed at establishing organisational critical success factors (OCSF's) that could be used to improve the adoption of e-learning in midwifery schools in Uganda. The study used an explanatory sequential mixed method design to identify the most significant factors to the adoption of e-learning. 210 participants from ten midwifery schools were sampled, and both quantitative and qualitative data were collected. Linear regression analysis was used to establish whether OCSF's (technology leadership practices, instructional design strategies, online quality management practices and school financing mechanisms) had influence on the adoption of e-learning. Results indicated that variability in the adoption of e-learning was more explained as a result of OCSF's. The study showed that all the four OCSF's hypothesised were found to have significant influence on the adoption of e-learning since their p-values (Sign.) were less than 0.05: technology leadership practices (r=0.691, p=0.000, n=167), instructional design strategies (r=0.625, p=0.000, n=167), online quality management practices (r=0.747, p=0.000, n=167), and school financing mechanisms (r=0.402, p=0.000, n=167). Technology leadership practices accounted for 47.5% of the variance in the adoption of e-learning, instructional design strategies accounted for 38.7% of the variance in the adoption of e-learning, online quality management practices accounted for 55.5% of the variance in the adoption of e-learning, and school financing mechanisms accounted for 15.7% of the variance in the adoption of e-learning. Qualitative data indicated that the salient technological leadership practices were: commitment of school administration to provide technological facilities, encouragement of students and faculty to use technological facilities, a culture of appreciating those who excel at using technological leadership facilities, grooming of technological champions, ambient and supportive environment for technological use, and institutionalising technological use in all teaching and learning activities of the midwifery school. Instructional design strategies included: choosing an appropriate instructional design model to guide the entire e-learning process, interactivity of e-learning materials, collaborative working in developing and updating e-learning materials, eliciting feedback on instructional materials, and engaging in more than one e-learning activity. While those of online quality management practices included: CD-ROMS-meeting expectation of users, collaborative improvement of online quality, LMS-meeting expectations of users, providing the best online experience, e-learning program being described as an excellent online learning experience, and guidelines for improving online quality. And the school financing mechanisms were diversified and equitable sources of funds. The study therefore suggested that in order to improve the adoption of e-learning in midwifery schools in Uganda, all the four OCSF's (technology leadership practices, instructional design strategies, online quality management practices, and school financing mechanisms should be implemented.

## CHAPTER ONE

## INTRODUCTION

### 1.1 Introduction

This chapter presents the background to the study: historical, theoretical, conceptual, and contextual perspectives. The chapter also presents the statement of the problem, purpose, objectives, hypothesis, questions, scope, justification, significance of the study, and conceptual framework. The operational definition of key concepts are also laid out herein.

### 1.2 Background to the Study

Literature  on the adoption of e-learning presents various factors that impact the use of this modality of learning, and these have been grouped into technological factors such as technological infrastructure (Kimwise et al., 2019); social cultural factors such as social capital, attitudes and forms of behaviour in leadership (Barton, 2010); individual factors such as characteristics of teachers and students (Drent & Meelissen, 2008; Rogers, 1995); and organisational characteristics such as change management, organisational size, and the ability to absorb change (Bakkabulindi & Oyebade, 2011).

However, there is scanty information about the analysis of organisational critical success factors such as technological leadership practices, instructional design strategies, online quality management practices, and school financing mechanisms, and how they influence the adoption of e-learning in midwifery schools in Uganda, and yet these can be very pertinent if properly harnessed. The background to this research is presented under four perspectives: the historical, theoretical, conceptual, and contextual.

### 1.2.1 Historical Perspective

The 1970s were typified by a paradigm shift in education that contended for a shift from an elite to mass access in higher education globally (Amano & Kimmonth, 2010; Trow, 2007). As a result, the demand for education, especially in sub Saharan Africa, more than

doubled in the subsequent decades (Baker, 2014; Lewin, 2009). Education officials and change agents in institutions of higher learning have been struggling with how to manage this rapid change (Baker, 2014). Amidst this abrupt change, brick and mortar traditional educational systems are becoming difficult to develop and maintain given the growing demand for higher education (Mbatia, 2008). On the other hand, e-learning has gained popularity and has been positioned as a modern pedagogy aimed at managing this abrupt change (Bates, 2005). Nevertheless, the adoption of e-learning is still quite low in sub-Saharan Africa and Uganda in particular. Consequently, this study sought to ascertain organisational critical success factors for effective adoption and continued use of e-learning in midwifery schools in Uganda.

The origin of e-learning is centred on human cooperation in knowledge work and innovation (Harasim, 2006). This is linked to the advancement of network communication in the late 1960s, with the invention of e-mail and computer conferencing over packet-switched networks in 1971. Historically, these technological innovations introduced an unprecedented opportunity for people to communicate and collaborate despite differences in time and space. Thus, these innovations became key to a social, economic, and especially educational paradigmatic shift (Harasim, 2006). Networked communication systems created broad opportunities for "meetings of minds", participatory government, and interconnected social and cognitive communities (Hafner & Lyon, 1998). Consequently, e-learning developed and is no longer on the periphery or supplementary; it has become an integral part of the revolution that has characterized distance education theory and practice (Darkwa & Mazibuko, 2000; Holmes & Gardner, 2006; Keegan, 2013).

In Uganda, e-learning is believed to have taken root during the early 2000s, with the developed of the National Policy on ICT in 2003 (Farrell & Isaacs, 2007), which emphasises the role of ICT in fostering lifelong learning opportunities (Muyinda et al., 2019). In the 2003

policy, ICT integration in the education curriculum was articulated as one of the strategies for providing improved literacy and creating competent human resource for the country. Uganda government followed up the 2003 policy with the ICT in education policy of 2006 (Muyinda et al, 2019). This policy led to realization of several achievements including: development of guidelines on the use of ICTs in schools, signing of an agreement with Microsoft to subsidise educational software licenses, training of ICT teachers, and setting up activities for implementation of ICT education. Furthermore, the policy led to government budgeting for ICTs and provision of funds to the different levels of the education system, negotiation with ICT service providers to subsidize rates for ICT systems, on-job training of teachers in ICT skills, introduction of computer studies in the curriculum of different levels of the education system and setting up infrastructure for ICTs in many educational institutions, including midwifery schools.

In regard to institutions of higher learning, a White Paper that was derived from the McGregor Report (2008) of the Visitation Committee to Public Universities in Uganda, recommended a phased expansion of distance education in public universities, establishment of an Open University, and integration of e-learning with conventional learning. In 2012, the government of Uganda revised the National ICT Policy to keep pace with the global ICT trends (Farrell & Isaacs, 2007). In that policy strategies for use of ICT in education were articulated, some of which include: review of curricula at different levels of education to improve quality and learning experiences, improve the level of investment of educational ICT infrastructure, software as well as wide range connectivity at all institutions of learning, train teachers in ICT pedagogical skills, establish systems for distribution of educational resources, encourage the advance and application of e-learning, and generate prospects and offer support to the disadvantaged groups of people with distinct needs, including youth and

women to access training in skills related to ICT. These policies set the agenda of initiating e-learning programs in different universities and institutions of higher learning in Uganda.

However, adoption of this approach has been slow. For instance, since 2006 Makerere University Business School (MUBS) has explored possibilities of using e-learning to increase access to its programmes at study centres but with limited success (Kituyi & Tusubira, 2013). At Makerere University, where e-learning was pioneered, a bulk of university staff are proficient in computer skills (over 90.0%) however, there is inadequate usage of ICTs in educational activities (Muyinda et al, 2019). The slow pace of the adoption of e-learning is even worse in other institutions of higher learning including midwifery schools.

### 1.2.2 Theoretical Perspective

The study was mainly guided by the transformational leadership theory (Burns, 1997; Leithwood & Jantzi, 2000); situated learning theory (Lave & Wenger, 1989); the framework for promoting and assuring quality in virtual institutions (Masoumi & Lindström, 2012), and the diffusion of innovation theory (Lundblad, 2003; Rogers, 2003; Sahin, 2006).

Transformational leadership theory espouses four major tenets which include; idealized influence, intellectual stimulation, inspirational motivation, and individualized consideration (Barbuto, 2015; Hall et al, 2012), all these helped to construct technology leadership dimensions espoused in this study. Idealized influence refers to charismatic vision and behaviour that inspires others to follow (Burns, 1997). Inspirational motivation, highlights the aspect of the ability to motivate others to commit to the vision, and intellectual stimulation involves encouraging innovation and creativity, whereas individualized consideration includes coaching to the specific needs of followers and developing structures to foster participation in decisions. The technology leadership dimensions which included; commitment of school administration to provide technological facilities, encouragement of students and faculty to use technological facilities, a culture of appreciating those who excel

at using technological facilities, grooming of technological champions, an ambient and supportive environment for technological use, and institutionalising technological use in all teaching and learning activities of the midwifery school were developed with the guidance of these tenets.

The situated learning theory highlights three key tenets: authentic context, constructivist learning, and social interaction (Green et al. 2018). In the realm of e-learning, Herrington and Oliver (1995; 1995) summarises these into three elements of interactive multimedia, implementation, and the learner. Each of these three has its own dimensions. For instance, interactive multimedia articulates four tenets i.e., authentic content, which explores the learning setting which needs to provide learners with a variety of resources, authentic activity, which explores the aspects of creating opportunities for students to define for themselves the tasks and sub-tasks required to complete an activity, the expert performances, which emphasises the believe that learners learn best through interactions with those who are more experienced and with experts, and the multiple perspectives, which underscores the importance of providing learners with an opportunity to express their opinions through collaboration.

The tenet of the 'learner' in the situated learning theory highlights three elements: collaboration, reflection, and articulation. Collaboration refers to creating opportunities for learners learning with, and from, one another. Reflection focuses on providing learners with an opportunity to compare themselves with experts and with other learners in varying stages of accomplishments. Articulation emphasises the aspect of creating opportunities for learners to explain their understanding and constructed meanings.

The third tenet of 'implementation' highlights two elements of coaching and authentic assessment. Coaching emphasises stakeholders often assisting the less able others, and authentic assessment focuses on providing an opportunity for the leaners to demonstrate their

acquired knowledge. All these tenets of situated learning theory helped in refining the dimensions of instructional design strategies espoused in this study which included: choosing an appropriate instructional design model to guide e-learning program; collaborative working in developing e-learning materials; engaging in more than one e-learning activity; interactivity of e-learning instruction materials; eliciting feedback from tutors and students on e-learning instruction materials, and providing or eliciting feedback from students and tutors on the e-learning program as a whole.

The framework for promoting and assuring quality in virtual institutions, highlights seven main factors or building-blocks that should be considered when assessing e-learning quality (Masoumi & Lindström, 2012). However, for this study, one factor that is the evaluation factor was found to be very crucial as it was used to refine dimensions of the two OCSF's out of the four espoused by this study, specifically online quality management practices and school financing mechanisms. There are three central tenets in the evaluation factor that is, student and teacher satisfaction, learning effectiveness, and cost effectiveness. Student and teacher satisfaction emphasises students' and teachers' standpoints in relation to teaching and learning experiences. Learning effectiveness explores the aspect of virtual learning environment being able to satisfy students' and other gatekeepers' demands. Cost - effectiveness emphasises the virtual learning environment having sustainable funding and being able to improve financially over time (Phipps & Merisotis 2000; Moore, 2005).

The tenet of cost-effectiveness in the evaluation factor was used to develop the dimensions of school financing mechanisms which included diversified sources of funds and equitable school fee's structure, which envisage the desire for institutions to satisfactorily function within a limited timeframe, budgetary constraints, and logistical boundaries. This can help institutions to forecast their costs as well as to identify benefits in a systematic manner. Whereas, the tenets of student and teacher satisfaction, and learning effectiveness

were relied on to construct the dimensions of online quality management. These dimensions which include, providing the best online experience for e-learning stakeholders; infrastructure (LMS/CD-ROMS) meeting expectation of end users; and developing guidelines for improving online quality.

The diffusion of innovation theory posits four main elements that are critical for the adoption of e-learning that is, innovation, an idea, practice or project that is perceived as new by an individual or a group of adopters (Rogers, 2003); communication channels, which are processes for creating and sharing information with one another; the aspect of time, which is used to define the rate of adoption of the innovation, for instance, number of individuals who adopt the innovation in a period of time; and lastly, social system, which is a set of interrelated units engaged in a joint problem-solving to a accomplish a desired goal (Sahin, 2006). These four elements of diffusion of innovation theory were relied on to develop the dimensions of adopting e-learning as embedded in this study, and these included: the number of students enrolling for the e-learning programme; the number of tutors providing online support; and the rate of usage of infrastructure (LMS/CD-ROMS) by the e-learning key stakeholders.

### 1.2.3 Conceptual Perspective

The Organisational Critical Success Factors are the independent variables. The Adoption of E-learning the dependent variable. The Oxford Dictionary (n.d.) defines adoption as starting or accepting to utilize a relatively new thing. Nyeko and Ogenmungu (2017), and Thirtle and Ruttan (2014) define adoption as the process of starting to use a new innovation within individuals, and the individuals are considered as adoption stakeholders. Kariuki (2008) defines the adoption of e-learning as a trajectory undertaken by decision makers characterised by: acquiring preliminary knowledge on e-learning; developing an opinion on e-learning which can culminate into rejection or use of e-learning; acquiring

resources for e-learning; and institutionalising the use of e-learning in all processes of a school. Specifically, in this study, e-learning was defined as using the "Learning Management System" (LMS) or "Compact Disc Read-Only Memory" (CD-ROM) in conjunction with interactive face-to-face lessons to provide fit-for-purpose teaching and learning experiences to student midwives (Govindasamy, 2001). Consequently, the major constructs for the adoption of e-learning were highlighted as: proportion of enrolled students on the e-learning programme; proportion of tutors and students relying on the LMS/CD-ROMs as their key source for acquiring skills and knowledge; and faculty offering online support (Santally et al., 2012).

It was hypothesized that the analysis of OCSF's would significantly influence the adoption of e-learning and relatedly, the seminal work of McPherson and Nunes (2006), shows that the analysis of OCSF's is a broadly applied managerial approach for investigating factors that influence technological innovations. In most cases this approach is applied as a measure of ascertaining key information about vital factors that must be focused on by an organisation in order to improve the management of adopting to any new innovation (McPherson & Nunes, 2003). Broadly, OCSF's are referred to as those handful of things that are within the leader's job which must go right for the organisation to flourish (Robson, 1997). This signifies that these are factors that the administrator and the other members of the school should constantly watch over. In strategic terms, Johnson and Scholes (1998) termed these as those components of strategy where the organisation must excel to outperform competition.

In a study by Ritchie et al. (1998) as cited by Jackson (2000), it was highlighted that the analysis of OCSF's in particular circumstances, such as those characterised by change including adoption of e-learning, are a critical tool for acquiring comprehensive conceptualisation of the entire process of introducing innovations and are therefore an

important tool for eliciting strategies for successful implementation of innovations. Furthermore, Riddy and Fill (2003) have presented the analysis of OCSF's as the most important approach that an organisation must undertake to ensure the successful implementation of e-learning programmes. Consequently, it is implied that the analysis of OCSF's should be considered as an exceptionally appropriate practice for managing the design, planning, and implementation of e-learning programmes in any organisation. Testa and de Freitas (2003) further agrees to this assertation, by suggesting that strategies embraced by the organisation in implementing e-learning programmes must be collaborated with the identified OCSF's. Subsequently, successful adoption of e-learning within an organisation is highly likely to be facilitated by the timely identification and continuous implementation of the identified OCSF's.

In the realm of e-learning, the underlying concern in the analysis of OCSF's is how this can be achieved owing to its being a relatively new field coupled with its seemingly limited sphere. And yet, if appropriately done, it could facilitate the identification of critical factors that are crucial to the successful management of e-learning, which meets specific standards. Nevertheless, Bendell *et al.* (1998) proposes that OCSF's, represent a small number of key indicators such that if they are showing satisfactory progress towards targets, the organization generally will be perceived as being successful on its path to successful adoption of innovations (Bendell et al. 1998). The analysis of OCSF's was considered as a valuable method for transforming conceptual viewpoints espoused in this study, into an explicit strategic statement about OCSF's which could be used to improve the adoption of e-learning in midwifery schools in Uganda. This analysis therefore was hinged on the characterisation of four fundamental factors of e-learning in the midwifery context, and these included: technology leadership practices; instructional design strategies; online quality

management practices; and the school financing mechanisms, as portrayed in the conceptual framework in Figure 1.

**1.2.4 Contextual Perspective**

In Uganda, Katharine Timpson and Sir Albert Cook are highly credited for having initiated the nursing and midwifery training programmes. They spearheaded the laying of a firm foundation for the Lady Corydon maternity training school and founded the nurses training college in 1931 at Mengo hospital (UNMC, 2016). A school for midwives at Mengo hospital and authoring of a manual of midwifery in Ganda local language were some of the breakthroughs in midwifery training evolvement brought about by the duo in their attempts to further professionalise the midwifery arena (WHO, 2017). Since then, midwifery training has undergone a number of changes and milestones (Edwards et al, 2018; Kemp et al, 2018; Nabirye et al, 2014; Nabirye et al, 2015). The current push factor for having to train more midwives is the low skilled birth attendance levels (Munabi-Babigumira et al, 2019), being fuelled by the severe shortage of highly trained midwives (Kumaketch, 2020). The midwife to patient ratio stands at 6:100,000 which exemplifies a severe shortage of midwives in Uganda, as compared to the recommendation of 2.5:100,000 as per the World Health Organization (WHO) estimates (Copestake et al. 2019).

From 2013, the Ministry of Education and Sports has been involved in coming up with cost effective, appropriate and student centred training approaches to address the severe shortage of midwives in the country, and also improve the skill mix of the existing midwifery cadres by developing and implementing various continuous professional development (CPD's) programmes (Amref, 2014; Koczorowski & Bigirwa, 2013; Anobe & Ojok, 2014). One of the most recurring challenges in these endeavours has been the low adoption rates especially for the technologically driven training approaches. Midwifery schools in Uganda have previously used several training approaches to rise the supply of midwives, and notable

among them was the award winning e-learning approach (Amref, 2015). As a result, the e-learning training approach was welcomed by Ministry of Education and Sports (MoES) through the Business, Technical, Vocational Education and Training (BTVET) directorate, to train midwives across twelve midwifery schools.

However, despite the high level of investment in e-learning programmes since 2010, there is a low adoption of this new pedagogy amongst students and faculty in the participating midwifery schools, and worse still, those who do start to use the system opt out later (Liao & Lu, 2008). This trend of slow adoption to e-learning constrains government to improve the skill mix, competencies, and numbers of midwives in the country. A number of factors influencing e-learning adoption have been paraded in literature, for instance; technological factors (Kimwise et al, 2016); social cultural factors (Barton, 2010); individual factors (Rogers, 2003; Drent & Meetisson, 2008); and organisational characteristics (Bakkabulindi & Oyebade, 2011). However, there is scanty information about the analysis of organisational critical success factors for the adoption of e-learning in the midwifery school context. Thus, this study desired to satisfy this disparity by ascertaining the organisational critical success factors for improving the adoption of e-learning in midwifery schools.

## 1.3 Statement of the Problem

Ministry of Education and Sports (MOES) through the Business, Technical, Vocational Education and Training (BTVET) directorate is committed to using the e-learning approach to train midwives in the country (Amref, 2015). The e-learning approach was selected because of its envisaged capability of being able to train more midwives on a large scale as compared to the traditional approaches (Amref, 2015). This would subsequently improve the severe shortages of midwives in the country, hence bridging the gap of midwife to patient ratio from the current ratio of 6:100,000 to 2.5:100,000 as recommended by the World Health Organisation (WHO, 2014, Amref, 2015). The main focus of the Ministry has

been to support midwifery schools in terms of identifying and implementing cost reduction mechanisms for e-learning, training students and tutors on the ICT skills and distance education approach, providing support supervision, organising experience sharing sessions, and provision of technological equipment.

Despite of the aforementioned, efforts for fostering adoption of e-learning as an approach of large-scale training of midwives has not been realised. Routine data showed fewer schools (33%) taking up the approach, even in those few schools, student enrolment rates were low (22%), few staff were offering online support to students (18.8%) and low usage of the LMS/CD-ROM of up to 20% were observed (Amref, 2014; Koczorowski & Bigirwa, 2013). Worse still, even those who start to use the system dropout out later, with dropout rates of 20% (Anobe & Ojok, 2014). Continuing with the current low adoption of e-learning is likely to frustrate government's efforts to improve the strategy of training more numbers of midwives in the country so as to reduce the shortfalls. Exploring factors that inhibit this process could help better implement the approach and at the same time help the ministry better monitor and evaluate its support processes. Therefore, this research explored organisational critical success factors for improving the adoption of e-learning in midwifery schools in Uganda.

**1.4 Purpose of the Study**

The purpose of this study was to ascertain the organisational critical success factors for the adoption of e-learning and validate how they could be used to facilitate its improved use for learning in midwifery schools in Uganda.

**1.5 Research Objectives**

This study sought to achieve four objectives, and these included:

1) To examine the influence of technology leadership practices on the adoption of e-learning in midwifery schools in Uganda

2) To assess the influence of instructional design strategies on the adoption of e-learning in midwifery schools in Uganda

3) To analyse the influence of online quality management practices on the adoption of e-learning in midwifery schools in Uganda

4) To examine the influence of school financing mechanisms on the adoption of e-learning in midwifery schools in Uganda

## 1.6 Research Questions

The specific questions included:

(i) Do technology leadership practices influence the adoption of e-learning in midwifery schools in Uganda?

(ii) To what extent do instructional design strategies influence the adoption of e-learning in midwifery schools in Uganda?

(iii) Do online quality management practices influence the adoption of e-learning in midwifery schools in Uganda?

(iv) Do school financing mechanisms influence the adoption of e-learning in midwifery schools in Uganda?

## 1.7 Research Hypotheses

The study was guided by the following hypotheses, for each research question a null hypothesis was developed for testing.

(i) ($H_0$): Technology leadership practices do not significantly influence the adoption of e-learning in midwifery schools in Uganda

(ii) ($H_0$): Instructional design strategies do not significantly influence the adoption of e-learning in midwifery schools in Uganda

(iii) ($H_0$): Online quality management practices do not significantly influence the adoption of e-learning in midwifery schools in Uganda

(iv) ($H_0$): School financing mechanisms do not significantly influence the adoption of e-learning in midwifery schools in Uganda

## 1.8 Scope of the Study

Three aspects of the study scope are discussed here, specifically: geographical coverage, content coverage, and time.

### 1.8.1 Geographical Coverage

This study focused on selected midwifery schools in Uganda that were undertaking the e-learning programme and were being supported by MOES. There were 12 Midwifery schools offering e-learning in Uganda, and a representative sample of the schools comprising Government supported and Private-Not-For-Profit (PNFP) institutions were selected to participate in the study. The study population included majorly the current tutors and students on e-learning programme in the 12 schools. The selected tutors and students were selected because they were believed to have up-to-date experiences necessary for providing information needed for the analysis of the research problem.

### 1.8.2 Content Coverage

The study sought to ascertain organisational critical success factors that were essential for improving the adoption of e-learning in midwifery schools in Uganda. Four OCSF's were highlighted to be having varying contributions to the variances observed in the adoption of e-learning. These included: technological leadership practices, instructional design strategies, online quality management practices, and school financing mechanisms.

### 1.8.3 Time Coverage

The study focused on the period ranging from 2010 to 2019. This period was chosen because e-learning is a current development in midwifery schools in Uganda (Amref, 2015). The years before this period could not offer any meaningful information for the study.

**1.9 Justification of the Study**

Low adoption of e-learning in midwifery schools is likely to frustrate government's efforts to improve skills mix and the number of midwives in the country. The study aimed at adding new knowledge on the critical success factors that an institution like a midwifery school could focus on to improve the adoption of e-learning. Moreover, studies on the adoption of e-learning have tended to focus on individual, technical, and infrastructural factors with few of them if any, highlighting organisational critical success factors that need to be brought into play to aid the adoption of e-learning.

**1.10 Significance of the Study**

The study presents new understanding and knowledge in the realm of e-learning programming by highlighting a set of OCSF's which include technology leadership practices, instructional design strategies, online quality management aspects, and school financing mechanisms which can be used to improve e-learning adoption in midwifery schools in Uganda. These OCSF's can offer valuable benefits to government agencies particularly the MOES, which is mandated to provide stewardship to midwifery training institutions as these can be used to strengthen the management of designing, development, and implementation of e-learning programmes in the country. Additionally, OCSF's can also be used by MOES as a blueprint for setting up e-learning programmes to train other critical human resources in other vocations in the country.

At the policy level, the OCSF's can also be used to guide the policy making process for e-learning programmes in a sense that they can be used in formulating the e-learning programming policy, by strengthening the guidelines in terms of what needs to be considered before initiating any e-learning programme, and setting the roles and responsibilities for all the stakeholders

At the practice level, the study results will also benefit the relevant ministries engaged in midwifery training such as MOH and MOES to enhance the e-learning approach by making midwifery schools become globally engaged. This could make them much better since they can be enabled to engage with up-to-date knowledge in real time. The results will facilitate the opening of e-learning to go beyond immediate communities, engendering world-class scholarship and research information that will improve the practice of long-life learning.

Focusing on the OCSF's could help health training institutions to minimise costs related to accommodation, utility bills, and wear and tear of infrastructure since e-learning facilitates engagement of learners and tutors with minimal physical interaction as compared to the traditional face-to-face education practice.

## 1.11 Conceptual Framework

As a result of the constructs in the transformational leadership theory (Burns, 1997); situated learning theory (Lave & Wenger, 1989); diffusion of innovation theory (Lundblad, 2003), and the framework for promoting and assuring quality in virtual institutions (Masoumi & Lindström, 2012), including other reviewed literature, the following conceptual framework (Figure 1) was developed for this study. The framework shows the dimensions of organisational critical success factors, and how they act as social forces on midwifery trainees and faculty, to change behaviour (Latané, 1981). It is assumed that at the beginning all trainees and faculty within an institution have expectations towards e-learning, which include performance, effort, social influence, and learning preference (Pinpathomrat et al., 2013). However, these depend on the interplay of individual factors such as personal perceptions. Therefore, the OCSF's should be able to act as a total force, influenced by transformational leadership abilities to enable people to perform better through application of any of the five stages articulated by the diffusion of innovation theory and finally transcending to adopt e-

learning by ensuring that their expectations, intentions, and motivations are thoroughly addressed.

**Figure 1: The Relationship Across IV and DV**



Independent Variable (IV):
Organizational Critical Success Factors (OCSFs)

Dependent Variable (DV):

Technology leadership practices

Instructional design strategies

Online quality management practices

School financing mechanisms

The Adoption of E-learning
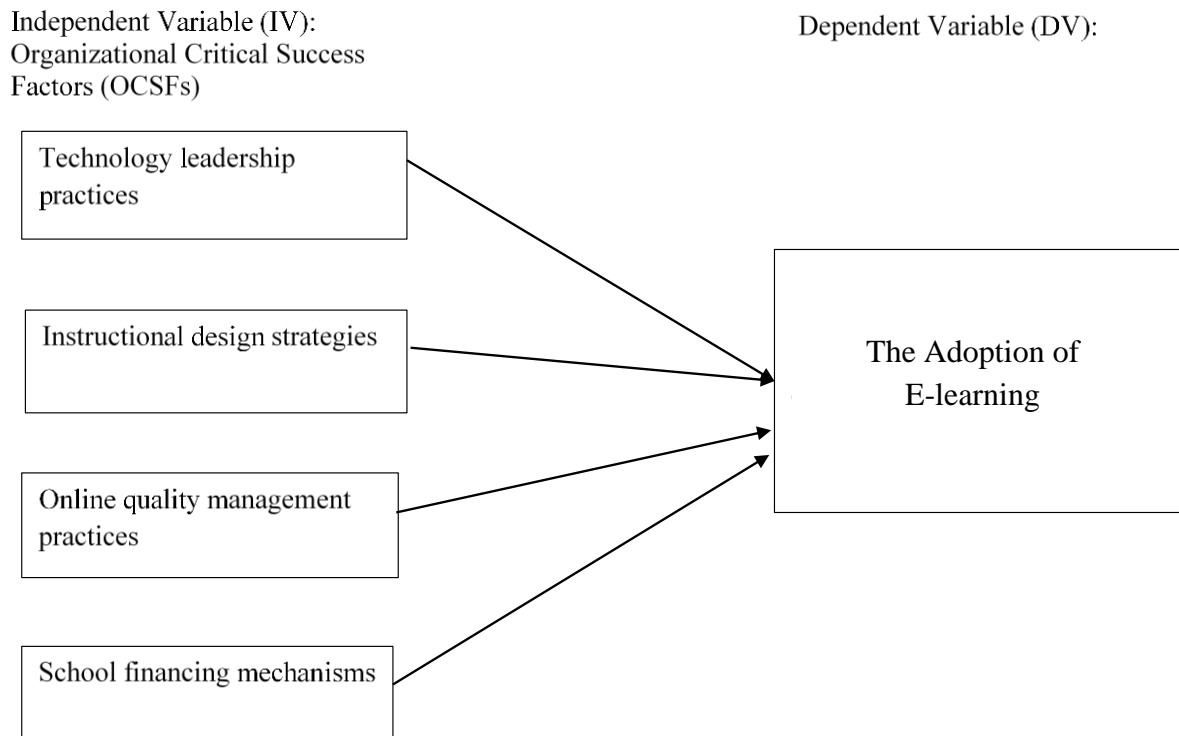
**Source:** Adapted from (Burns, 1997; Lave, & Wenger, 1989; Masoumi &Lindström, 2012; Lundblad, 2003, and Burns, 1997; Leithwood & Jantzi, 2000).

**1.12 Operational Definition of Key Concepts**

**E-learning:** This is the use of electronic media to provide compliant teaching and learning experiences, to a group of midwives. It incorporates gaining access to downloading and use of web, CD-ROM or computer-based learning materials in the lecture hall, office, or at home.

**Adoption of e-learning:** The number of people or schools taking on and using e-learning as an approach in their quest for knowledge and skills. It is measured in terms of number of students enrolled in the program; number of students and tutors using LMS/CD-ROM; and the number of Faculty offering online support to their learners.

**Organisational Critical Success Factors (OCSF's):** Defined as those handfuls of things within a manager's mandate which must go right for the organisation to flourish, indicating that these are factors that the manager should keep a firm grip on, and specifically for this study they include, technological leadership practices, instruction design strategies, online quality management practices, and school financing mechanisms.

**School financing mechanism:** A schools' system that is able to recognise the need for diversified sources of funds and cultivates a deliberate effort to expand its sources of funds, develops efficient coordination of the sources of funds, and puts in place an affordable payment system for e-learning students.

**Technology leadership practices of end users:** The acts of being committed to providing technological facilities and creating an enabling environment that can support their application in classroom teaching to promote learning among students (Akuegwu, 2015).

**Instructional design strategies:** Strategies that takes care of the teacher-student-content relationship, is based on a relevant instructional model, and develops appropriate instructional materials.

**Online quality management practices:** Online quality management in e-learning is quite elusive to define, as it has different perspectives, different levels, and different meanings. For this study, it is defined based on the learners' perspective, and it refers to the process of obtaining the best learning experience, together with something that is excellent in performance.

## 1.13 Summary of Chapter One

This chapter aimed at presenting the main background information about the adoption of e-learning as a problem variable within midwifery schools in Uganda, together with Organisational Critical Success Factors (OCSF's), as the solution variable. The chapter illustrated that although e-learning had gained high prominence in health training institutions,

and those institutions had heavily invested in it to manage the high demand for higher education, its adoption was still low, a situation that was likely to frustrate the bigger goal of increasing the numbers of midwives, ensuring development of appropriate competencies and the skill mix of midwives in Uganda.

The chapter also presented the main purpose of the research as being to ascertain the OCSF's and how they could be used to improve the adoption of e-learning in midwifery schools in Uganda and utilised an explanatory sequential mixed methods research design conducted in two phases. The first phase embracing a quantitative approach aimed at ascertaining the OCSF's to the adoption of e-learning. The second phase embraced a qualitative approach to validate the OCSF's with a group of selected stakeholders.

**CHAPTER TWO**

**LITERATURE REVIEW**

**2.1 Introduction**

In this section, a review of literature that is related to the theories, and the framework that guided this research is done. Also, literature review on the five main variables of this research which included: the adoption of e-learning, technology leadership practices, instructional design strategies, online quality management practices, and school financing mechanisms are done. Lastly, a summary of the literature reviewed is presented.

**2.2 Theoretical Review**

This research was guided by the transformational leadership theory (Burns, 1997; Leithwood & Jantzi, 2000); situated learning theory (Lave & Wenger, 1989), the framework for promoting and assuring quality in virtual institutions (Masoumi & Lindström, 2012); and the diffusion of innovation theory (Lundblad, 2003; Rogers, 2003; Sahin, 2006). These theories, and the framework contributed to the conceptualisation and refinement of the concepts in the dependent and independent variables respectively.

**2.2.1 Transformational Leadership Theory**

Scholars have not agreed on a definition for transformational theory. For example, Leithwood and Jantzi (2000) posits that transformational practices are those which facilitate a redefinition of a people's mission and vision, a renewal of their commitment and the restructuring of their systems for goal accomplishment. It is a relationship of mutual stimulation and elevation that converts followers into leaders and may convert leaders into moral agents. Hence, they argue that transformational leadership must be grounded in moral foundations. Spreitzer et al. (2005) argues that transformational leadership occurs when leaders broaden and elevate the interests of their employees; when they generate awareness and acceptance of the purposes and mission of the group; and when they stir employees to

look beyond their own self-interest for the good of the group. It is further asserted that the leader together with the led, achieve increased capacity in committing to strive for additional efforts towards greater productivity (Barbuto, 2005; Leithwood & Jantzi, 2000).

Transformational leadership has been argued to be so meaningful in the promotion of organizations. For example, it promotes the development of individual capacities and yields superior amounts of individual commitments amongst staff towards institutional goals. Leaders with transformational practices promote individuals from lower levels of aspirations hinged on survival to higher levels of needs (Kelly, 2003). They may also inspire their followers to transition from self-interests to collective or organisational interests (Feinberg, Ostroff & Burke, 2005), in so doing, they support their followers to gratify as many of their personal aspirations as much as possible, specifically alluring to the most significant higher needs such leaving a legacy.

Transformational leadership necessitates that a leader conceptualises their adherents holistically as individuals rather than as employees or workers. This inherently culminates into full actualisation of their followers (Rice, 1993). Changing of beliefs, values and engaging in self-reflection for both the adherents and their leader are key practices exhibited in transformational leadership. Other key attributes of transformational leadership include leaders and their followers getting involved in boosting each other's level of accomplishment, raising each other's levels of motivations and morality to levels which might have seemed impossible to achieve when acting singularly (Barnett, 2003; Chekwa, 2001; Crawford et al, 2003). Inherently, building trust, respect, loyalty, and admiration are other characteristics a transformational leader can instil in the adherents (Barbuto, 2005). These kinds of leadership traits are highly desired for e-learning programming because they can enhance its faster adoption

Some researchers, however, have gone on to add to the original common tenets identified by the earlier researchers (Barbuto, 2005; Hall et al, 2002; Judge & Piccolo, 2004; Kelly, 2003; Simic, 1998). Specifically, Leithwood and Jantzi (2000) identified two more transformational leadership tenets to make a total of six which include: idealized influence, characterised by captivating vision and actions that motivates adherents to emulate; inspirational motivation, characterised by the ability to stimulate adherents to oblige to the dream, intellectual stimulation, characterised by inspiring novelty and originality, individualized consideration characterised by mentoring to the explicit desires of adherents, and developing systems to enhance partaking in decision making processes. The technology leadership practices espoused as one of OCSFs and being proposed in this study as a solution to low e-learning adoption are aligned to the dimensions of transformational leadership as discussed below.

**2.2.1.1 Idealized Influence**

Idealized influence is one of the key dimensions of transformational leadership and concerns itself with developing confidence and trust and offering an exemplar that adherents pursue to follow (Bono & Judge, 2004; Simic, 1998; Stone et al, 2003). The concept of idealized influence further posits that leaders are admired, respected, and trusted (Bass et al, 2003), the trust, admiration and respect conferred to the leader by the adherents offers a basis for tolerating (radical) organizational change since adherents buy into the qualities of their leader and are not likely to battle against suggestions for change from their leader. Inherently, idealized influence is associated with charisma (Gellis, 2001). Charisma is an attribute of transformational leadership and is dependent on leaders as well as their adherents for its explicit representation (Kelly, 2003). The connection between transformational and charismatic leaders is explicitly vivid in situations of emergencies within organizations or institutions. For instance, when an organisation is facing extreme financial difficulties and in

such a scenario a frugal leader is likely to emerges to provide long lasting solutions for the organisation, the staff rally behind her efforts to streamline the organisation's financial challenges.

The four key concepts in idealised influence are; role model, respect, trust, and confidence. Based on these concepts we can say a leader is looked at as a role model, (she/he) is trusted, and followers exhibit confidence in following whatever he does within a school environment. These kinds of behaviours from leaders when exhibited towards the use of e-learning will encourage followers to put in practice whatever they are told to do including the use of e-learning. From the above understanding, idealised influence is linked to two aspects of technology leadership practices, specifically, (encouragement, or) encouraging those who excel at using the e-learning approach, and (institutionalisation) or institutionalising the usage of technology in all facets of the school. This dimension is linked to the aspect of institutionalising the usage of e-learning in all the aspects of the school. To institutionalise is to create something, usually a practice or activity as a rule or a norm in the organisation culture, in this case institutionalising the use of e-learning approach in all day-to-day aspects of the school.

**2.2.1.2 Inspirational Motivation**

Inspirational motivation and idealised influence are somewhat correlated, however, charisma one of the key attributes exhibited in idealised influence is focused on motivating individuals, whereas in inspirational motivation, motivation is premised on the entire organisation to adopt to a new innovation. Inspirational motivation posits that a transformational leader should appeal to the adherents to view the future of the organisation by offering the adherents with the prospect of conceptualising the meaning inherent in their obligations and getting challenged with the quality standards therein. The overall purpose is to facilitate encouragement within adherents to become part and partial of the overall

organisational environment and culture (Kelly, 2003; Stone et al, 2003). Several approaches can be used to achieve this, and some of these can include motivating teamwork, underscoring positive achievements of the adherents, engaging in conversations and public displays of enthusiasm and optimism, and crafting contextualised motivational speeches (Simic, 1998). Engaging in such endeavours enables transformational leaders to nurture their adherents to envision and participate to the advancement of alluring, alternate futures (Bass et al, 2003).

**2.2.1.3 Intellectual Stimulation**

Intellectual stimulation is focused on enhancing and shifting the adherents' understanding of the current organisational problems and challenges and fostering their capacity to craft solutions to solve the identified problems and challenges (Bano &Judge, 2004; Kelly, 2003). In this context therefore, transformational leaders should be able to question the current assumptions and beliefs and motivate their adherents to become creative and innovative in crafting solutions for the problems (Barbuto, 2005). They should capacitate their adherents through persuasion to enable them advance controversial and new solutions to the problems without fear of ridicule or punishment (Stone et al, 2003). On the contrary, the transformational leader should be able to judge the cost of imposing their own ideas on the adherents, and if it is to be done it should definitely be done with caution (Simic, 2003).

**2.2.1.4 Individualized Consideration**

Individualised consideration is premised on the understanding that adherents will always have their own needs which are specific and quite unique. It is therefore incumbent upon the transformational leader to always take cognisant of such issues and include them in the transformational process of the organisation (Simc, 1998). It is important to note that individual adherents will always have to be handled differently depending on their knowledge and exhibited talents (Shin &Zhou, 2003). The main aim of the transformational leader

should be to allow them to achieve the highest level of their potential (Chekwa, 2001; Stone et al, 2003). In order to achieve this, there needs to be a form of expression in terms of crafting professional and staff development activities, ensuring there is equitable workload distribution, and more so expressing words of affirmation to the outstanding adherents. It is also important for the transformational leader to conceptualise the overall view of the organisation and its growth path in addition to understanding those issues that can motivate adherents individually (Simic, 2003). It is important to emphasise that the above discussed elements of transformational leadership are highly correlated and they must be implemented concurrently so as to achieve a synergistic impact which can yield high performance over and above the expected (Gellis, 2002; Hall et al, 2002; Kelly, 2003).

**2.2.2 Situated Learning Theory**

Situated learning theory was originally suggested by Lave and Wenger in the later part of 1980s (Lave & Wenger, 1989). Three main concepts are highlighted in situated learning theory, and these are: activity, culture, and context. The theory presupposes that learning is an activity, and that this activity takes place within a given context, and culture, and more often the activity is widely unintentional. It further fronts the idea that whoever is involved in the activity of learning, learns better in a collaborative group setting, and in learning activities bearing resemblance to real life experiences (Dynack, 2020). Great impact has been made in the understanding of human learning since its inception especially when it was first expanded by Brown et al (1989) in their published article in the Educational Researcher titled Situated Cognition and the Culture of Learning.

Hinging on the concept of context, situated learning theory posits that the environment plays a critical part in human action and idea formation as these two are a simplification of the ongoing environment. The assumption is that what humans see, do, and are able to learn are situated in their positions as members of the community (Lave &

Wenger, 1991). The study of Lave and Wenger (1991) conducted among Yucatec midwives in mexico was able to show that learners attained a continuing acquisition of knowledge and skills from apprenticeship rather than formal/classroom teaching. This is because apprenticeship happened as a way of, and in the course of daily life. Much as apprenticeship, it was not being recognised as a teaching process, these midwives moved from novice to experts. Such learning was compared with lecture hall-based learning which frequently entails conceptual and out-of-context knowledge, and the outcome of the apprenticeship was much better (Lave & Wenger, 1991). Social interaction within an original context is important for the reason that novices come to be involved in a "community of practice" that exemplifies values and actions that must be acquired. As novices move from the outside edge of the community to its topmost layer, they come to be more involved and take part within the culture and, hence, take on the role of expert or old-timer, and more often, such learning processes are usually unintentional rather than deliberate.

Situated learning theory accepts that all learning happens in intricate social environments, even when the learner is alone (Greeno, 1997). For instance, a learner involved in self-study with a textbook, or a computer, may not have other learners in the same room at the time, but his actions are undoubtedly fashioned by the social arrangements that produced the textbook or computer and led to the learner being enrolled in the class (Greeno, 1997). From this standpoint, every step is adaptively re-coordinated from previous ways of seeing, moving, and talking. Situated learning theory further posits that knowledge in human develops in the course of activity and especially through the creation and interpretation of descriptions or representations of what they are doing (Clancey, 1995). It proposes that interactions between humans creates perceptual structures that are not individual perceptual representations, but rather "participation frames," which are flexible and more adaptive (Lave

and Wenger, 1991). Action is situated because it is generated by an individual's comprehension of his or her "location" in a social process (Clancey, 1995).

Opponents of situated learning theory argue that for the reason that knowledge is not referenced, retrieved, and applied, there are no internal accounts or no concepts in the mind to refer to (Clancey, 1995). However, the preposition from other researchers on this critique constructs "knowledge" as an analytic construct, akin to energy, and not a stuff that is physical. Subsequently, scholars cannot accurately stock the knowledge possessed by humans. Naturally, individual humans do not define what it means to realize a give pierce of work successfully, but rather it is the community (Suchman, 1987).

## 2.2.2.1 Application of Situated Learning Theory to E-Learning Environment

A plethora of theoretical underpinnings exists to steer instructional design strategies in the realm of e-learning milieu (Oliver & Herrington, 2000). However, the bulk of education theories directing e-learning instructional design currently are centred on constructivist principles which promote the responsibility of an active student in the learning process acting together with the already existing information to gain meaning and comprehension. In modern computer-based learning situations, activities are often entrenched in syllabus sequences, so that computers come to be a learning partner, instead of a method for unswerving teaching or a standard tool. The rationality and purpose behind this application of the technology stems from the need for active learning tools not to represent the world to the learner, but to assist the learner in identifying eloquent, individual understandings and illustrations of the world (Jonassen et al, 1993).

The concept of cognitive tools has been denoted to refer to computer-centred education applications which support learners demonstrate individual knowledge in their contexts (Jonassen and Reeves, 1996). It is argued that computer-centred learning, if aptly used has the potential to promote the learning of students at higher levels of learning, hence

offering prospects for the obtained knowledge to be shifted to different, and correlated places and environments.

Herrington and Oliver (2000) contextualised the three concepts of situated learning that is; activity, culture, and context into three dimensions; learner, implementation, and interactive multimedia. These which are referred to as structural dimensions of situated learning in e-learning programming. In the proceeding paragraphs, the three dimensions are further expanded into nine elements as summarized in Figure 2.1. discussions on the approaches for integrating each of them into e-learning programming ensue.

**Figure 2.1: Structural Dimensions of Situated Learning in E-Learning Programming**



5) Collaboration
6) Reflection
7) Articulation

1) Authentic content
2) Authentic activity
3) Expert performances
4) Multiple perspectives

Learner

Interactive Multimedia Program

Implementation

8) Coaching &Scaffolding
9) Authentic assessment
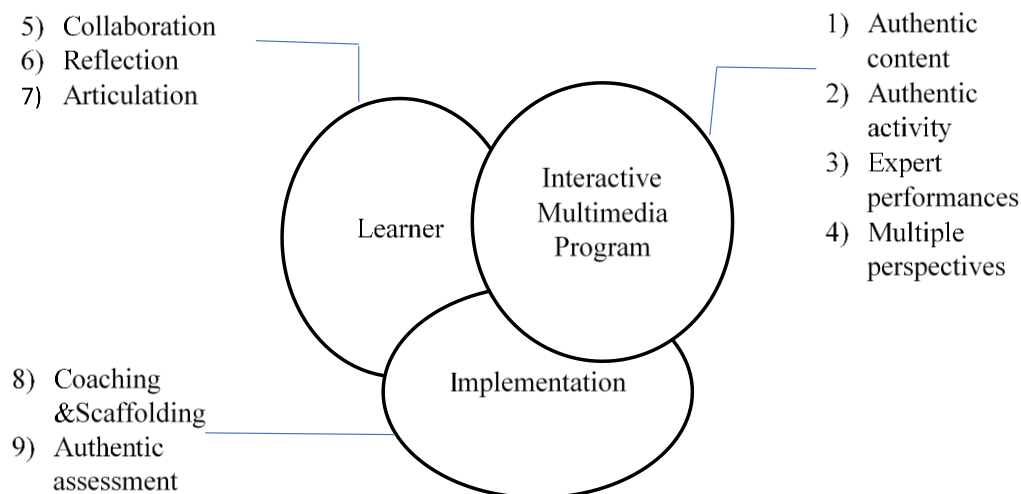
*Sources:* Oliver & Herrington, 2000

**2.2.2.2 Authentic Content**

In attempts to ensure multimedia interactivity, the content on each multimedia must be authentic, in a sense that the content must genuinely be of benefit to students and its thematic area devoid of attempting to manipulate its intended recipients. Situated learning circumstances mirror the various ways in which the results from learning, and knowledge acquisition are to be utilised in the real-life situations, away from the traditional classroom setting. Consequently, situated learning settings ought to offer a perspective which conserves

the complexity of the real-life situation by providing the audience with an opportunity to illustrate how it can or should be used. in terms of design, the setting ought to offer students with various multimedia resources portraying the various standpoints and to integrate a system that will not disintegrate or make simplistic the situated learning setting (Brown et al., 2000). In relation to this study, the aspect of authentic content is related to the instructional design strategy of allowing students to engage in more than one e-learning activity on the e-learning program.

**2.2.2.3 Authentic Activities**

Designed situated learning activities must represent real-life situations if they are to become relevant to the leaners. Precisely defined, instead of routinely used dogmatic activities, are preferred as they are deemed more relevant to students (Griffin, 2005). A compendium of disjointed tasks should be avoided but rather involve students to explore complex single tasks as this is believed to strengthen the authenticity of learning activities (Resnick, 2004). Tasks and sub-tasks required to accomplish an activity ought to be clearly defined by students as this enhances relevance and the processes of acquisition and application of knowledge by the learners (Tripp, 2006). A prolonged period of time is required to examine authentic tasks and learners deserve to be offered an opportunity to ascertain relevant information. In order to reflect the complex and non-structured nature of most real-life problems, there is need to integrate such tasks across subject areas in the learning process (Young, 2003). In this study, the aspect of authentic activity is also related to the instructional design strategy of allowing students to engage in more than one activity the e-learning program.

**2.2.2.4 Access to Expert Performances and the Modelling of Processes**

Experts and more experienced learners play a great role in enhancing the learning experiences of novice learners in real-life settings (Lave & Wenger, 2019). The interactions

between these groups provide learners with an opportunity to access the thinking of expertise and the role modelling processes exhibited by the more experienced learners (Collins, 2017). Such encounters facilitate more learning for novice learners especially through sharing of different stories and narratives (Resnick, 2018). Real-life scenarios are very important in the development of effective instructional activities in situated learning environments as these facilitates the direct participation and observation of learners in such scenarios, hence furthering effective learning (Collins et al, 2019). In relation to this study, the aspects of access to expert routines and the modelling of practices are linked to two instructional design strategies, ensuring interactivity of e-learning materials, and collaborative working while developing e-learning materials between the students and the tutors who are the experts on the program.

**2.2.2.5 Multiple Roles and Perspectives**

It is generally understood that the depth of knowledge gained from accessing different materials which are presented in various perspectives is relatively more as compared to single source materials (Brown et al., 2018). This system of learning endeavour is exemplified by students being required to handle information produced from a variety of points of view or being given the chance to articulate their ideas through teamwork (Bransford et al., 2019). Consequently, it is urged that when students are offered the chance to participate in the learning situation across numerous probes surrounded by a supply base adequately rich to endure frequent assessment (Collins et al., 2019). In relation to this study, the aspects of multiple roles and perspectives is linked to two instructional design strategies; ensuring that learners collaboratively engage in more than one activity and develop e-learning materials among themselves and the tutors who are the experts on the program; and participating in more than one e-learning activity.

**2.2.2.6 Collaborative Construction of Knowledge**

A great deal of the learning that ensues beyond the official organizations takes place via events and duties that are directed and endeavoured by a team rather than an individual (Bransford et al., 2019). Collective learning necessitates the organisation of learners into small groupings and includes suitable encouragement formations for entire group accomplishment (Brown et al., 2019; Young, 2019). Whereas previously many computer-based learning environments were deliberately designed for individuals working in isolation, situated learning environments are characterised by activities with learners learning with, and from, one another in cooperative and collaborative ventures (Collins et al., 2019; Resnick, 2018). In this study, the aspect of collaborative construction of understanding is linked to collaborative working while developing e-learning materials among students and tutors who are experts on the e-learning program, and engaging in more than one e-learning activity.

**2.2.2.7 Reflection to Enable Abstractions to be Formed**

Contemplation, a likened to reflection by other scholars is a learning scheme that promotes and facilitates learners to ponder and premeditate on both their studying and studying processes (Brown et al., 2018). Reflection is aided by chores and settings with elevated amounts of genuineness (Resnick, 2018). In computer-centred situations, reflection is accelerated when learners are able to come back to any component of the program if required, and to act on the products of their reflected thought or ideas (Collins et al., 2019). Additional approaches that can be utilized to inspire reflection consist of offering students with the occasion to contrast themselves with professionals and with other students in differing phases of achievement (Collins, 2017). In this study, this aspect of contemplation to facilitate abstractions to be developed is related to the practice of providing feedback as a strategy of instructional design. Feedback needs to be elicited and provided to all stakeholders involved in the e-learning program; this would enable a high level of reflection

to enable more ideas to be formed among the stakeholders so as to facilitate innovations and creativity.

**2.2.2.8 Articulation to Enable Tacit Knowledge to Become Explicit**

A learning strategy that is closely related to reflection is articulation. Articulation is critical to situated learning environments to make explicit the knowledge which has been gained. The purpose of the articulation is to create inherent, as opposed to constructed, opportunities for the learners to explain their varied understandings and constructed meanings. The tasks that are required to create the appropriate contexts for articulation are complex and involve collaborative groups, which enable, first social, then individual understanding. Strategies often used for this purpose include the public presentation of arguments by learners in an activity requiring articulation and defence of students' ideas and their learning (Bransford, et al., 1990; Collins, 1988; Collins et al., 1989). This aspect of articulation is again related to the practice of feedback as highlighted in the instructional design strategies.

**2.2.2.9 Coaching and Scaffolding by the Teacher at Critical Times**

Situated learning settings often provide distinct roles for teachers as facilitators and coaches for the learners. In these roles the teachers are able to provide different forms of support for learning, particularly support in the form of scaffolding (Bruner, 1966). The forms of design strategy that have been used for this purpose include the use of complex, open-ended learning environments where no attempt is made to provide intrinsic scaffolding and coaching. In such settings more able partners in collaborative environments often assist the less able others which is the scaffolding. Often designers of situated learning settings, involving computer-based applications, create opportunities for articulation by requiring the teachers implementing the program to provide coaching and scaffolding assistance for a significant portion of the period of use (Collins, 1988; Collins et al., 1989; Griffin, 1995;

Harley, 1993; Resnick, 1987; Young, 1993). This aspect is again linked to identifying an appropriate instructional design model, which will also highlight at what stage the issue of coaching and scaffolding will be handled. It is also related to collaborative working. When teachers and students collaborate, the aspects of teachers coaching students become part and parcel of the experience.

**2.2.2.10 Authentic Assessment of Learning within the Tasks**

The final characteristic of situated learning involves the ways in which the learning outcomes are assessed and evaluated. Many writers have argued the need for authentic assessment, which is characterised by fidelity of context where students have the opportunity, as they would in real life, to be effective performers with their acquired knowledge, and opportunities to craft polished performances or products. Authentic assessment requires significant student time and effort to collaboration with each other and, as in authentic learning activities; it requires complex and well-structured challenges that involve judgment and a full array of tasks with the assessment seamlessly integrated within the activity. Authentic assessments have multiple indicators of learning and require attention to the validity and reliability of the measures to enable appropriate criteria for scoring varied products (McLellan, 1993; Young, 1993; 1995). The aspect of authentic assessment of learning is also linked to collaboration. There should be collaboration between students and teachers during the assessment period. Additionally, the practice of feedback is also a critical ingredient of authentic assessment.

**2.2.3 Framework for Promoting and Assuring Quality in Virtual Institutions.**

The accountability movement in higher education and a number of less successful e-learning projects have amplified concerns about quality in e-learning (Connolly et al. 2005; Oliver, 2005). Enhancing and assuring quality is critical to the success of higher education institutions involved in e-learning (Inglis, 2005; Ehlers & Pawlowski, 2006). For instance,

McGorry (2003) advocates for improvement in the quality of e-learning in higher education, and Zhao (2003) recommends that institutions should implement a quality assurance plan aimed specifically at e-learning programmes. Oliver (2005), addressing these concerns in terms of 'quality agenda', states that, as more and more institutions seek to use e-learning as a mode of delivery for their units and courses, and as more and more they are being held accountable for the quality of the services they provide, the need grows for accepted standards and benchmarks against which performance can be judged.

A substantial number of models, frameworks, and guidelines have been developed for enhancing and assuring quality in e-learning (Phipps & Merisotis 2000; Watty 2003). In this study, the 'Framework for Promoting and Assuring Quality in Virtual Institutions,' developed by Masoumi and Lindström (2012) was utilised to inform online quality management processes as one of the OCSFs. Masoumi and Lindström (2012), argue that their e-quality framework (see figure 2.2) was developed through a comprehensive review of the practical knowledge (that is, models, guidelines, benchmarks,) used in practical quality work, as well as through examining the research on quality of e-learning in higher education. The analysis and synthesis of the literature in the field resulted in a comprehensive e-quality framework.

**Figure 2.2: E-Quality Framework**
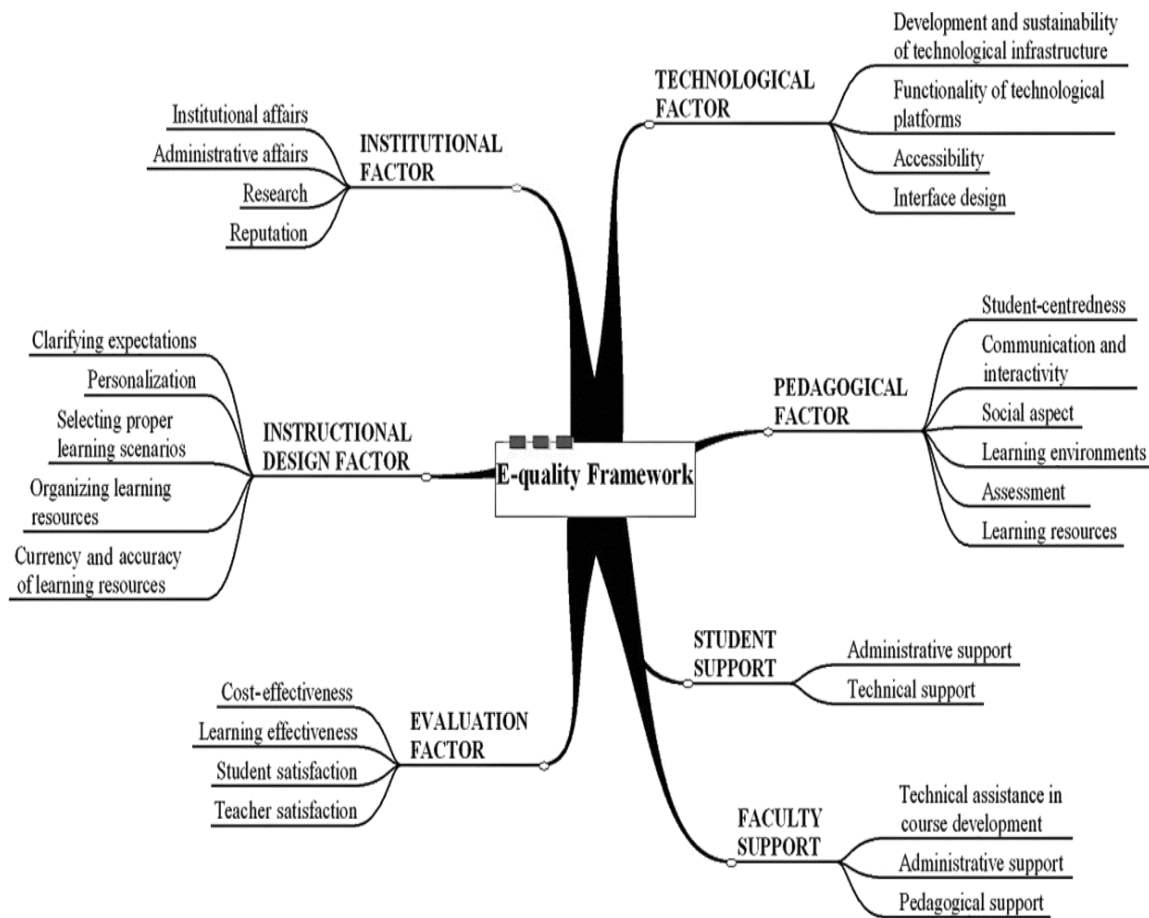


*Sources: Masoumi &Lindström, 2012*

Although the e-quality framework articulates seven main factors; technological factor, institutional, instructional design, pedagogical, student support, faculty support, and evaluation factor, this study relayed on the evaluation factor to inform the dimensions of online quality management. The evaluation factor articulated aspects of teacher and student satisfaction on the e-learning program which were also in tandem with infrastructure (LMS/CD-ROMS) meeting users' expectations and best online experience which is also an expectation from the e-learning program end users.

**2.2.3.1 Evaluation Factor**

This factor, as a meta-indicator, is used to stress the ability of an institution to produce the desired result by measuring criteria for how and the extent to which it meets the demands

at different levels. Similarly, performing such measures, which are closely connected to the output and outcomes of the activities, may uncover conflicting situations and areas for on-going updating and improvement using a holistic approach. Correspondingly, this factor centres on examining the effectiveness of the institution, programme, and course (how and to what extent learning objectives are met), as well as its cost-effectiveness from both institutional and educational perspectives. It also addresses the immediate stakeholders' satisfaction (students and teachers) with and standpoints concerning the services constructed and received.

**2.2.3.2 Student Satisfaction**

As the foremost role player in educational settings, students are able to provide reliable feedback on the quality and effectiveness of their academic experience, both directly and indirectly. Acknowledging students' feedback and perceptions regarding their learning experiences can be an effective way for institutions' on-going improvement (Phipps & Merisotis 2000; Zhao 2003; Moore, 2005). Similarly, this sub-factor concerns students' standpoints and satisfaction with regard to their educational experiences.

**2.2.3.3 Teacher's Satisfaction**

Although e-learning can provide a variety of potential advantages (for example anytime, and anywhere learning), the utilization of these possibilities, however, can be substantiated by teachers' supportive and reliable presence. Teachers' satisfaction and motivation are seen as important success indicators and can thus influence the quality of e-learning (Zhao, 2003; Moore, 2005; Marshall, 2006).

**2.2.4 Diffusion of Innovation Theory**

The Diffusion of Innovations theory (DOI) is a product of Rogers' doctoral study of the diffusion of agricultural innovations in 1957 at Iowa State University, USA (Singhal, 2012). Rogers (2003) related innovation diffusion and/or adoption to three categories of

factors, namely individual, innovation and social systems or organisational factors. According to this theory, an individual's tendency to adopt any innovation such as e-learning depends on personal characteristics such as age, gender, and level of training. The relative advantage of innovation influences the rate at which an individual adopts it. The nature of the social system or organisational factors, influence an individual's tendency to adopt an innovation (Rogers, 2003).

The theory has various names, depending on the author: Al-Hajri and Tatnall (2008) retained Rogers' naming "Diffusion of Innovations Theory"; Hung, Hung, Tsai and Jiang (2010) refer to it as "Classical Innovation Theory", while Zheng (2011) prefers "Innovation Diffusion Theory" (IDT), and Kelleher and Sweetser (2012) refer to it as "Diffusion Theory". Researchers such as Al-Hajri and Tatnall (2008), Kok, Kee and Ping (2011), Lin and Ho (2009) have used DOI as the theoretical frame for their studies. Al-Hajri and Tatnall (2008) conducted studies on the adoption of technological innovation of the Internet in Oman. Lin and Ho (2009) were interested in the adoption of Radio Frequency Identification (RFID) innovation for logistics service providers in China. Kok, Kee and Ping (2011) researched on predictors of internet adoption in Malaysian audit firms. Rogers' theory contributes to understanding factors that influence the adoption of an innovation, and innovation as a decision-making process (Botha & Atikins, 2005).

The diffusion of innovation theory posits four main elements that are critical for the adoption of e-learning to happen that is innovation, an idea, practice or project that is perceived as new by an individual or a group of adopters (Rogers, 2003); communication channels, which are processes for creating and sharing information with one another; the aspect of time, which is used to define the rate of innovation, for instance, number of individuals who adopt the innovation in a period of time; and lastly, social system, which is a set of interrelated units engaged in a joint problem solving to a accomplish a desired goal

(Sahin, 2006). The DOI theory was used to operationalise organisational critical success factors that generally affect the adoption of e-learning. However, a weakness of the DOI theory is that it does not consider the possibility of people accepting or rejecting an innovation. It would not ask how particular characteristics of an innovation would fit the adoption process (Al-Qeisi, 2009).

## 2.3 Review of Related Literature

This section reviews literature related to the variables under study, specifically, the adoption of e-learning, organisational critical success factors (OCSF's) espoused by this study which include technology leadership practices, instructional design strategies, online quality management practices, and school financing mechanisms.

## 2.3.1 The Adoption of E-learning

Adoption has been defined by the Oxford Dictionary as 'accepting or starting to use something new'. Nyeko and Ogenmungu (2017) and Thirtle and Ruttan (2014), define adoption as the spread of a new practice among people, where people can be regarded as adoption stakeholders. Similarly, the adoption of e-learning has been defined differently by researchers and institutions. For example, Kariuki (2008) defines e-learning adoption, "As process through which a party responsible for decision making undergoes from a) initial knowledge of an e-learning, b) to developing an opinion about e-learning that would determine the decision to use or reject it, c) to investing resources in e-learning and finally d) integrating the innovation into the daily life of the party (entrenchment and routine usage).

In this study, e-learning adoption is framed towards the last parts of Kariuki's definition spectrum. In this study it is defined as the number of people or schools taking on and using e-learning as their main approach for their quest for knowledge and therefore, e-learning adoption can be measured in terms of number of students enrolled in the program, number of students and tutors using Learning Management System (LMS) or Compact-Read-

Only Memory (CD-ROM), and the number of faculty offering online support to their learners at any given time.

The notion of success in adoption is an intricate phenomenon in innovations literature. A large number of success factors are actually not measurable (More, 2011). Adoption can be studied by looking at antecedents and characteristics, the adoption process and adoption outcomes (Kishore & Mclean, 1998). The notion of successful adoption can be studied at the process or the outcome level. At the process level, it can be referred to as success of adoption while at the outcome level it is termed as success from adoption. The success of adoption is when innovation is successfully adopted and used by most or all adopters. Success from innovation is the ability to realize the potential benefits of innovation by adopters. Success of adoption is a necessary requirement to achieve success from an innovation. In this particular study, successful adoption was perceived as the actual usage of technological gargets and artefacts in the transfer and acquisition of knowledge, skills and competencies translated in form of student enrolment on the e-learning program, usage of the Learning Management System (LMS) or Compact-Disc-Read-Only –Memory (CD-ROM), and faculty offering online support

Other scholars (Rogers, 2003; Lee et al; 2009; Singh &Haraker, 2014) have shown that adoption of innovations can be studied from a technological, individual, and organisational perspective (Rogers, 2003). The definition of e-learning is restricted to the interplay between the university learning environment (organisation) and individual (human agent), past studies on individual and organisational characteristics were considered. Lee et al. (2009) observes that research on country-specific e-learning phenomena is of great importance globally. Alharbi and Drew (2014) indicate that more research is required in relation to ICT adoption in teaching and learning. Singh and Hardaker (2014) call for studies that can combine individual and organisational perspectives in relation to the acceptance of e-

learning. While studying e-learning, it is important to understand the type of audience it can accommodate and whether or not it meets the needs of the users. This is because participants in the e-learning environment have varying backgrounds (Hrtonova et al, 2015).

In developing countries where students have limited exposure to learning technologies (Brown, 2002), it is important to understand factors that can assist them to adopt e-learning. E-learning has roots from the developed world where students have uninterrupted access to electricity and so do their teachers. It was found important to understand the adoption of e-learning in the developing world where e-learning has limited roots. A similar study in relation to this study was carried by Kimwise et al. (2016) in Uganda. Their interest was mainly in technological factors such as compatibility, triability and perceived usefulness, and perceived ease of use as determinants of behavioural intention to adopt e-learning. In their review, they revealed that limited research has been carried out on the adoption of e-learning in higher education institutions in Uganda. This implies that this study opens a way forward to closing the gap revealed by Kamwise et al. (2016).

The adoption of innovations such as e-learning takes place within organisations. It would be an interesting venture to understand the contribution of organisational characteristics to the adoption of e-learning. Bakkabulindi and Oyebade (2011) indicate that the ability to absorb change, culture, size, and leaders' change management style are organisational characteristics that influence the adoption of an innovation. Ssekakubo et al. (2011) argue that the failure of e-learning systems has less to do with technological issues but more with organisational issues. Organisational factors can increase the explanatory power of adoption of e-learning applications (Adukaite et al, 2017). Selim (2007) studied OCSF's for e-learning acceptance among university students at the College of Business and Economics in the United Arab Emirates University. Using a survey and with the help of confirmatory factor models, the study aimed at categorizing the e-learning OCSF's and specifying them in four

categories. These were: instructor characteristics, student characteristics, technology, and university support.

The proposition of grouping e-learning into four categories, however, was not supported by the results. Findings revealed eight categories for e-learning OCSF's, namely: instructors' attitude towards and control of technology; instructor's capacity (abilities, skills, and expertise) of teaching; student motivation and technical competency; student interactive collaboration; e-learning course content and structure; ease of on-campus internet access; effectiveness of information technology infrastructure; and university support of e-learning activities. With reference to organisational characteristics, his findings revealed that university support of e-learning activities is a OCSF for the acceptance of e-learning among students.

Drent and Meelissen (2008) studied factors that stimulate teacher educators to use ICT innovatively in the Netherlands. This study specifically aimed at identifying exogenous and endogenous factors at both school level and teacher level that influence innovative use of ICT. They used questionnaires and an interview guide for data collection, and Partial Least Squares (PLS) technique for data analysis. Findings of their study indicate that school level endogenous factors, such as goals of school ICT policies, availability of time to experiment, reflect and interact with ICT, availability of financial support, and commitment of school management did not affect innovative use of ICT among teachers. However, they recommended further research on these factors.

Tarus and Gichoya (2015) studied similar factors to those of Drent and Meelissen (2008) but in universities in Kenya. They found that such factors contribute to successful adoption of e-learning in the said universities. Barton (2010) studied social and cultural factors that impact on the adoption of e-learning in Asia and Australia. He was particularly interested in e-learning factors relating to social capital, attitudes, and patterns of behaviour

in leadership, entrepreneurialism, teaching, and to broader sets of attitudes that shape the general outlook. Using a case study approach, data collection was accomplished through the use of semi-structured interviews and observations. Findings of the study indicate that the adoption and uptake of e-learning technologies are strongly shaped by social and cultural aspects.

Hardaker and Singh (2011) studied the adoption and diffusion of e-learning in universities in the UK. Their study was propounded by Giddens Theory of Structuration adapted for technology by Orilowski (2000) to understand the role of individual (agency) and institutional mechanism (structure) that influence adoption and diffusion of e-learning. They used a qualitative exploratory case approach with the help of 36 semi-structured interviews between 2009 and 2010 at five universities in the UK. Thematic analysis from the interview indicated that the inability of management to control actions of lecturers leads to low adoption of e-learning in UK universities.

FitzPatrick (2012) carried out a study on the successful adoption of e-learning in an educational environment. The study was carried out among e-learning policy makers, education policy makers, e-learning instructors, and students. He used interview guides and questionnaires for data collection. FitzPatrick shows that support and evaluation are important factors for e-learning adoption. While e-learning has a recognised position in society, it is important to understand those individual traits that affect its adoption are important to study. Buabeng-Andoh (2012) presents these factors as personal characteristics while according to Schiler (2003) cited in Buabeng- Andoh, (2012) educational level, age, gender, experience with the computer for educational purpose and attitude towards computers are personal characteristics. Grunwald (2002) mentioned risk aversion, gender, potential adopter usage style, personal conviction, motivation, experience, self-efficacy, academic discipline, and age as adopter traits.

Teo et al. (2009) assessed the intention to use technology among pre-service teachers in Singapore and Malaysia. The study attempted to examine whether the Technology Acceptance Model (TAM) is a valid model to predict the Intention to Use (ITU) technology among pre-service teachers and also examine the validity of the TAM across the two sample cultures (Singapore and Malaysia). Their data were collected using a questionnaire and analysed using Structural Equation Modelling (SEM). Using TAM, their results indicated 8% and 53.7% of the intention to use a variable for the Singaporean and Malaysian samples respectively. Furthermore, the parameter estimates for path attitude toward computer use in relation to the intention to use was smaller for the Singaporean sample as compared to the Malaysian one. The results implied that attitude toward computer use was not as significant in the prediction of the intention of teachers to use computers in Singapore as compared to Malaysia.

Alharbi and Drew (2014) carried out a study on the adoption of e-learning in terms of behavioural intention to use LMS in Saudi Arabian public universities. They developed a theoretical framework using the Technology Acceptance Model. The predictive factors for behavioural intention to use the LMS included perceived ease of use, perceived usefulness, attitude toward usage and LMS usage experience. Their findings indicated that there is a positive relationship between attitude towards use and behavioural intention to use an LMS. A critical analysis of Drent and Meelissen (2008) also indicated that teacher-level endogenous dimension, namely: student-oriented pedagogical approach, positive ICT attitude and personal entrepreneurship were potential predictors of the innovative use of ICT.

Khasawneh (2015) studied the utilization of e-learning among academic staff in Jordanian universities. The most important challenge of the study was to fully understand the factors that affect ICT usage by applying the Decomposed Theory of Planned Behavior (DTPB). The predictor factors included Self-Efficacy (SE), Technology Facilitating

Condition (TFC), Resources Facilitating Condition (RFC) and Government Facilitating Condition (GFC). Using a quantitative approach, their findings indicated that self-efficacy positively affects behavioural intention to use e-learning.

Hrtonova et al. (2015) carried out a study in the Czech Republic on acceptance of e-learning among teachers. They used survey design and collected data using a questionnaire. A sample of 228 teachers was obtained from 68 primary and secondary schools. Their findings revealed that the demographic factors such as age, gender and prior experience with e-learning had no statistically significant impact on the acceptance of e-learning. Adukaite, Zyl, Er and Cantoni (2017) carried out a study among teachers on digital gamified learning in South Africa. Their study was interested but not limited to the impact of playfulness, curriculum fit and computer anxiety on the use of gamified technologies. Data were obtained from 209 respondents and analysed using Structural Equation Modelling (SEM) techniques. The available results indicated that the constructs of playfulness and curriculum fit correlated positively with behavioural intention to use the applications.

Brown (2000) studied the adoption of e-learning among students in South-Africa. He examined how both individual and technological factors affect the adoption of web-based technologies. Using a quantitative approach based on a sample of 78 respondents, his results indicated that self-efficacy and computer anxiety are potential predictors of the adoption of e-learning. Chang and Tung (2008) carried out an empirical investigation on behavioural intentions to use online learning course websites among undergraduate students in Taiwan. They used the TAM and the IDT to come up with possible explanatory factors. Data were collected using a questionnaire. Findings of their study revealed that computer self-efficacy was among the critical factors for students' behavioural intentions to use online learning course websites with computer self-efficacy as the most important predictor.

Yiong, Sam and Wah (2008) researched acceptance of e-learning technology among distance learners at the Open University of Malaysia. They used a cross-sectional survey design on a sample of 112 students and the students' data was collected using questionnaires. Their findings indicated that students had moderate levels of adoption of e-learning. Ssekakubo et al., (2011) carried out a study in relation to the adoption of LMS in Eastern and Southern Africa. Using an interview guide, they established that high ICT illiteracy rates among the student community and low comfort levels with technology led to low adoption of LMS. Becker, Newton and Sawang (2013) studied barriers to e-learning in Australia from a learner perspective. Using a quantitative methodology, their findings indicated that potential interruptions are a challenge to the adoption of e-learning among students in Australia.

Rhema and Miliszewska (2014) researched students' attitudes towards e-learning among engineering students in two Libyan universities. They assessed the impact of gender and age among other factors in students' attitude towards e-learning. Their findings revealed that female and male students held relatively similar positive attitudes towards e-learning. This implied that there was no significant difference between male and female students' attitudes towards the use of e-learning. Similarly, age did not have a significant effect on students' attitude towards e-learning.

Increasing number of students enrolment on any online program is a positive indicator of e-learning adoption. The higher the number of students enrolled, the higher the adoption (Abdel-Wahab, 2008; Allen & Seaman, 2011). However, there is limited literature on the African continent and Uganda in particular on the enrolment rates for e-learning programs. In the United States for instance, enrolment in 'for-credit' distance-education courses (a high proportion of which use online technology as a primary or supporting medium of instruction) more than doubled over a three-year period, from 1.3 million in 1997/98 to 2.9 million in 2000/01 with some 2.4 million enrolments in undergraduate distance education courses

(Curran, 2004). How significant is this enrolment relative to the tertiary sector as a whole? Placing the 2.9 million enrolments (in 'for-credit' distance education courses) in the context of the more than 15 million students enrolled in (relevant) U.S. institutions would be highly informative as an indicator of relative scale. Universities in the USA are currently reporting annual rates of enrolment-growth of 50-100% in their online programmes– an exceptional phenomenon, even allowing for the small number of institutions to which the data relates. What is impressive is the pace of growth and the pervasive spread of e-learning among traditional universities (OECD, 2005).

A Learning Management System (LMS) is a software that is designed specifically to create, distribute, and manage the delivery of educational content. The LMS can be hosted as a stand-alone product on the company server, or it can be a cloud-based platform that is hosted by the software firm. Think of a learning management system as technology that can improve learning, make it faster, productive, cost-effective, and what is more important trackable (Valamis, 2019). The basic LMS contains a core functional platform that enables administrators to upload learning content, deliver lessons to students, serve notifications, and share data with authorized users. An LMS often operates inside of a web-browser, behind a secure sign-on process. This gives all students and instructors easy access to courses on-the-go, while administrators and leaders can monitor student progress and make improvements. The modern learning management system often has built-in tools and resources that help administrators to develop course lessons, activities, and assessments. Administrators can assign new user credentials and schedule courses to be completed. They can also track learner progress with reporting features.

The LMS helps to make learning interesting and engages learners, so they take a more active role in their own development. An LMS should be simple to access and use in order to encourage learners to participate. The design of the LMS should be friendly in appearance

and functionality, based on user requirements. Increasing number of learners and students using the LMS as their main channel for teaching and learning is a positive indicator that e-learning is being adopted.

The CD-ROM technology, when used as a means for storing and sharing data, can ameliorate the current limitations of e-learning courses often viewed as a competitor to the Internet (Khouly, 2010). This view is perhaps based on the differences between both the content creation tools and the type of content normally associated with each medium. While CD-ROM production is normally the realm of professional content creators using complex tools, the Internet has developed as a medium for which almost anyone can create content. Over time, the public has confused the properties of the content normally associated with CD-ROMs with the properties of CD-ROMs as a delivery vehicle. It is the author's contention that, when CD-ROMs are used to deliver content made by tools used primarily for the Internet, the resulting hybrid has properties very advantageous to the e-learning instructor.

CD-ROMs can be viewed in Internet terms as packaged bandwidth delivered at ultra-high speeds. Clearly, CD-ROMs cannot replace all the interactivity of an Internet-based course, nor can the content be updated in real-time. On the other hand, most content in an e-learning course remains static for the duration of the course. Considering the poor connections available in most parts of Uganda, CD-ROMs become an attractive method for transporting static information, particularly if it is voluminous. As a complimentary method of delivering content worldwide, the CD-ROM is more than a convenience in many parts of the country; it may be the only realistic means by which Internet-based courses can be made fully available for many students. DVD disks are natural successors to CD-ROM but are not yet in wide enough use in Uganda to be a viable alternative at this point in time. A CD-ROM can be used to browse the web offline as it has the capacity to store vast amounts of textual content, including entire web sites. The more the number of students and teachers using this

type of technology in any given midwifery school, the more the adoption and continued use of e-learning.

While many institutions have been quick in recent years to adopt online education to support institutional growth and student needs, it is essential for institutions to also realize that, for faculty, teaching online is a new skill that must be developed (Vaill, 2012). It is unreasonable to expect that faculty can enter the online classroom without any preparation and still be successful. When teaching online, faculty find themselves in the role of learning facilitator rather than lecturer and this change is one for which many faculty members find themselves unprepared (Bair & Bair, 2011; Palloff & Pratt, 2011).

A quality professional development experience can help faculty enter the online classroom with the skills, experience, and confidence they need to provide students with a valuable learning experience. Faculty development specifically designed to meet the needs of both the novice and experienced online instructor is key to the success of an online program (Debra et al, 2010). Organized faculty development programs are a critical factor in the successful transition to online teaching, and on-going support, as well as continued professional development opportunities, allows experienced instructors to keep their skills current (Fish, 2009). Well-trained and supported faculty carry their skills into the online classroom resulting in an improved student experience and increased student satisfaction (Ihde, 2011). The success of an institution's online program is the direct result of the positive training and support provided to faculty (Jones & Moller, 2002). A high number of faculty supporting students online is a positive indicator of the adoption of e-learning within an institution.

**2.3.2 Organisational Critical Success Factors (OCSFs) for the Adoption of E-Leaning.**

This section elaborates on the Organisational Critical Success Factors (OCSFs) envisaged to greatly influence the adoption of e-learning in midwifery schools in Uganda.

And these include technology leadership practices of end users, online quality management aspects, Instruction design processes, and School financing mechanisms.

The seminal work of McPherson and Nunes (2006), had shown that the analysis of OCSFs was a broadly applied managerial approach for investigating factors that influence technological innovations. In most cases this approach is applied as a measure of ascertaining key information about vital factors that must be focused on by an organisation in order to improve the management of adopting to any new innovation (McPherson & Nunes, 2003). broadly, CSFs are referred to as those handful of things that are within the leaders' job which must go right for the organisation to flourish (Robson, 1997), signifying that these are factors that the administrator should constantly watch over. In strategic terms, Johnson and Scholes termed these as those components of strategy where the organisation must excel to outperform competition (Johnson & Scholes, 1998).

In the study of Ritchie et al. (1998) as cited by Jackson (2000), it was highlighted that the analysis of CSFs in particular circumstances, such as those characterised by change including e-learning, are a critical tool for acquiring comprehensive conceptualisation of the entire process of introducing innovations and are therefore an important tool for eliciting strategies for successful implementation of the innovations. Furthermore, Riddy and Fill (2003) have presented the analysis of CSFs as the most important approach that an organisation must undertake to ensure the successful implementation of e-learning programmes. Consequently, it is implied that the analysis of CSF's should be considered as an exceptionally appropriate practice for managing the design, planning, and implementation of e-learning programmes in any organisation. Testa and de Freitas (2003) further agrees to this assertion, by suggesting that strategies embraced by the organisation in implementing e-learning programmes must be collaborated with the identified CSF's. Subsequently,

successful adoption of e-learning within an organisation is highly likely facilitated by the timely identification and continuous implementation of the identified CSF's.

In the realm of e-learning, the underlying concern in the analysis of CSFs is how can this be achieved owing to the relatively new field of e-learning coupled with its seemingly limited sphere, and yet, if appropriately done, it could facilitate the identification of critical factors that are crucial to the successful management of e-learning, which meets specific standards. Nevertheless, Bendell *et al.* (1998) proposes that CSFs, represent a small number of key indicators such that if they are showing satisfactory progress towards targets, the organization generally will be perceived as being successful on its path to successful adoption of innovations (Bendell et al. 1998)

In this respect, CSF analysis can be regarded as a useful method for converting abstract views of the design, development, and implementation of e-learning programmes into an explicit strategic statement (McPherson and Nunes, 2004). In this study, the CSF analysis started with a characterisation of four fundamental aspects of e-Learning: technology leadership practices; instructional design processes; online quality management aspects; and finally, school financing mechanisms.

**2.3.2.1 Technology Leadership Practices and the Adoption of E-Learning**

Technology leadership, has been defined as a process of committing to provide technology infrastructure, and ensuring that there is a suitable environment that allows the total usage of these facilities, so as to ease classroom teaching and subsequently enhance learning achievement among learners (Ali Rıza, 2015). This process, among others ensures that teachers are well prepared in terms of training, and that they are provided with the necessary technological facilities, and they are adequately supported to ensure they utilise the facilities to achieve their teaching objectives. The definition has two important aspects, the act of commitment to provide an 'enabling environment' and the 'technological

infrastructure'. School administrators have to perform a critical role to ensure that these two vital ingredients are made available at all times. This is also affirmed by Mwawasi (2014), who indicated that school administrators should be prepared to finance technological infrastructure costs, in addition to providing moral and psychosocial support to all stakeholders within and outside the school environment, so as to actualise the full usage of ICTs in education.

It is important to realise that in this definition, the focus of technology leadership is on the school administrators and respective teachers. However, in main stream leadership literature, leadership is not about the position one holds in the organisation, but it is about motivating and inspiring people to challenge and defeat their difficult situations (Altunisik, 2012). The belief is that in most times, leadership develops from difficult situations. Although managers and administrators are expected to exhibit leadership practices, leadership and management have different purposes.

Because of the enormous challenges encountered by several schools on the African continent, and Uganda in particular, related to low adoption rates of e-learning, technology leadership is central at this stage in the education systems of developing countries. However, technology leadership should not be narrowly confined to school administrators, it should also be understood to include the wider stakeholders like students, and their teachers. Because, they too have a central role in exhibiting technology leadership practices. This perspective can also be a likened to Davis et al. (2015) study, where they ascertained that building strong relationships with teachers, students and the wider community facilitated innovative changes and better outcomes for e-learning. Although, in their study they referred to such practices as transformational leadership (Davis et al., 2015).

Anderson and Dexter (2005) examined the different technology leadership practices in American schools and related them to the National Educational Technology Standards for

Administrators (NETS-A). In their findings, they suggest that at that time, NETS-A were the only comprehensive educational technology standards available to guide technology practitioners including principals. These guidelines include specific sections on what school leaders ought to know and be able to do in relation to educational technology. Currently, it is not clear how widespread NETS-A guidelines are, globally, but the fact remains that most e-learning programs especially in the developing world have been initiated without any prolific standard guidance on technology leadership like what is prescribed in the NETS-A.

However, what is widely acknowledged in literature is that technology leadership plays a critical role in e-learning programming (Anderson & Dexter, 2005; Chang et al., 2008; Davis et al., 2015; Flanagan & Jacobsen, 2003; Mwawasi, 2014). The absence of widespread guidelines on technology leadership, and the varying definitions assigned to the concept clearly indicates that it is conceptualised differently by different researchers. And subsequently, the defining dimensions of technology leadership are also varied and only determined based on context and the scope of e-learning programs.

Despite of the differences exhibited in the definition and dimensions of the concept technology leadership, its importance in e-learning programs has been widely documented and recognised. For instance, Chang et al (2008) suggest that principals who embraced the idea of technology leadership were able to provide appropriate technological resources to boost the engagement of students in learning. The study further opined those principals needed to grasp five aspects so as to become effective technology leaders and these include commitment to provide infrastructure support, vision for technology, staff development, and monitoring and evaluation. Additionally, skills to communicate effectively, strong and genuine relationships with stakeholders, were also found to be critical in enhancing principal's technology leadership effectiveness (Flanagan & Jacobsen, 2003).

Rupp (2016) opines that leadership practices in schools are becoming more collaborative, and inclined to distributed leadership. Likewise, technology leadership is also likely not to be spared, as voices that agitate for all-inclusive leadership practices are increasing. A case in point is where some researchers are insisting that leadership contributed by different groups of people such as teachers, students, administrators and school principals has more influence on schools and student's achievement, than when endorsed by a traditional single leader (Futrell, 2011; Leithwood et al., 2020). In their seven strong claims about successful school leaders, Leithwood et al. (2008) indicated that some patterns of distribution are more effective than others (Leithwood et al., 2008).

Under this claim, they argued that student achievement was highly linked to levels of influence from all sources of leadership. Given the challenging situations inherent in most e-learning programs of low-income countries, such kind of leadership practices become meaningful as all sources of leadership become ignited to confront the challenges at hand. Futrell (2011) also illustrated that under challenging circumstances the most successful school leaders have been found to be open-minded, ready to learn from others, flexible rather than dogmatic in their thinking within a system of core values, persistent in pursuit of high expectations, resilient, and optimistic (Futrell, 2011). Rupp (2016) argues that effective leadership qualities included being firm and purposeful, having shared vision and goals, promoting teamwork and collegiality, and frequent monitoring and feedback. The link of leadership to the culture of the school is explained as preserving focus on learning and creating a positive school climate. It is also emphasised that school leadership is as important as teacher quality.

The question to ask here is, are all these leadership practices desired in technology leadership? If your answer is yes as the researcher's, it might be that technology leadership is transitioned towards a distributed perspective which frames leadership as a product of

interactions of school administrators, students, teachers and the situation at hand (Spillane, 2005). Based on these revelations, there can be several technology leadership practices aligned, depending on the context and educational goals you espouse. In this study, technology leadership practices for e-learning included: commitment to provision and use of e-learning facilities, enabling a supportive environment for using e-learning facilities, a culture of appreciating those who excel at using e-learning facilities, and a culture of grooming e-learning champions. More discussions on these practices are continued below.

Commitment to provide and use e-learning facilities, has two important technology leadership practices that are rarely talked about in most literature of technology leadership. First, commitment to provide e-learning facilities within a school is more related to school administrators like principals and all those involved in decision making. Whereas commitment to use e-learning facilities encompasses more stakeholders including administrators, the students as well as their tutors. Commitment is one of the leadership practices highly desired in aspects which require teamwork, like in most e-learning programs.

Literature has shown that effective leadership within a team cannot happen without the commitment of a team leader and the entire team members (TBAE, 2015). All successful leaders we have witnessed in several parts of the world have been committed to their cause of action. Therefore, commitment is conceptualised as a leadership value that motivates and inspires people (Maxwell, 2007). It demonstrates the conviction held by the leader towards a particular phenomenon, in this case the provision and use of e-learning facilities. It has also been shown elsewhere that more often team members get to buy into the conviction of executing an activity together with their leader before they buy into the vision of the activity itself. Commitment to provide and use e-learning facilities is an important element of improving e-learning adoption. Implementation of e-learning programs

in low-income countries like Uganda involves several challenges, with committed leaders some of these challenges can be mitigated by commitment.

Managers of institutions often find difficulties and resistance to acquire and establish e-learning facilities due to the enormous financial inputs required. Therefore, such managers need to have commitment in order to establish e-learning in their institutions. Also, commitment can enable e-learning team leaders to continue with their aspirations even if they get flawed. Moreover, provision of e-learning facilities requires committed leaders (Keengwe et al., 2008).

Provision of supportive environment for using e-learning facilities is another technology leadership practice that is scarcely discussed in the current literature. A supportive environment is characterised by developing a vision for technology, collaboratively with key stakeholders including administrators, teachers, students, and selected members of the community where the school is located. The idea of developing a vison for technology for the school is also a quality standard recommended by NETS-A (ISTE, 2002). Under section one "Leadership and Vision", NETS-A, indicates how technology leaders should cultivate a school wide collective vision for technology and avail the coordination mechanisms, suitable environment and financial resources required to implement it (ISTE, 2002). When the technology vision is collaboratively developed, it is likely to succeeding better than one that is developed by a few people. The vision for technology use has to be effectively communicated with all those involved, communicating the vison of e-learning with all stakeholders creates an environment where everyone get to know what role they would play towards its achievement (Zane & Lenora, 2008).

Furthermore, to enhance supportive environment for using e-learning facilities, key administrators including teachers have to act as role models in using e-learning facilities. Role modelling is not a new concept in teaching and learning spheres, particularly for e-

learning, it is important to emphasise that administrators and teachers alike need to be cognizant of the visible and invisible facets of learning from role modelling, so as to make the overall effect of the practice more constructive (Cruess et al., 2008). The role modelling process is an influential teaching tool for transferring knowledge, skills, and values of any profession to the young generation. However, it is important to note that some studies especially in the medical field have revealed that its net effect on the behaviour of students can sometimes be negative, rather than positive. It is against this background that in the e-learning sphere, administrators and teachers have to be cautious as they aspire to become role models to others. They need to carefully analyse their own performance as role models and adapt strategies that can allow them to improve their modelling experiences.

There are several strategies that can help them become better role models including an aspect of becoming cognizant of the impact of what they are modelling, setting aside time to engage in dialogue, reflection, and debriefing with their students, and creating feasible efforts of communicating what they are modelling, and to make clarifications on their intended vison for modelling. Notwithstanding, teachers and administrator's role modelling practices can create a supportive environment for using e-learning facilities hence improving the adoption of e-learning in any school environment.

Administrators also have to initiate, and support changes within the school environment, including practices, and policies geared towards supporting the use of e-learning facilities. Changing school policies and practices has been identified as one way of making the school environment more supportive in using e-learning facilities. Anderson and Dexter (2005) suggest that technology leaders have a duty to establish and refine school policies which embrace equity of access. Anderson and Dexter also emphasize safety of users, and compliance of administrators, staff, and students with legal and ethical guidelines for technology use. The issue of enabling a supportive environments to promote the use of e-

learning facilities in schools has also been recognised in other countries were efforts to established e-learning policies at international and national levels has evolved over time and have yielded positive results related to e-learning adoption (Kong et al., 2014).

Literature indicates that there are several schemes that technology leaders can use to motivate stakeholders to adopt and continue to use the e-learning approach (Adrienne, 2015). One such scheme is the culture of rewarding those who excel at using e-learning facilities. This becomes important especially where teachers, students and administrators who are innovative with technology, receive incentives such as stipends, waivers, special opportunities including sponsorship arrangements. In some instances, non-material incentives like special appreciation and public recognition have also been given. All these are in tandem with the notion that good leaders reward. All these aspects play a big role in motivating stakeholders and help in creating a supportive environment and hence improving adoption of e-learning (Arjun, 2019).

Grooming and promoting champions in e-learning programs is another vital technology leadership practice (Alekha, 2018; Gachago et al., 2017). This can be achieved when school administrators hire teachers and recruit new students on the e-learning program. They can consider technology literacy, and leadership for technology in their assessment. This helps to segment teachers and students either as novices, or ones with basic capabilities for using e-learning facilities. The segmentation can help them to deliver tailored support to respective groups, while observing the early adopters or ICT enthusiasts (Bart, 2011). Subsequently, the early adopters can easily be groomed to become e-learning peer mentors.

### 2.3.2.2 Instructional Design Strategies and the Adoption of E-Learning

According to Siemens (2002) instructional design is a process of analysing education desires and objectives and the development of a transfer system to meet those desires. It includes crafting of teaching materials and activities, and evaluation of all instruction and

learner activities (Berger & Kam, 1996). Instructional design is similar to lesson planning, but more elaborate and more detailed. In e-learning, instruction design is a process where learning, not technology, is at the centre of e-learning development (Siemens, 2002). Petty (2005) argues that a teaching plan for e-learning entails that teachers possess a comprehensive framework of teaching design for both the traditional and virtual classrooms.

The traditional framework intellectualises content to knowledge objectives to delivery and to assessment as a more or less static process. The e-learning teaching framework should assume content to knowledge and objectives from the traditional framework (Petty, 2005); however, it prioritises reconceptualising delivery to evaluation rather than dynamic process for online learners. Consequently, the knowledge of sound instructional design and understanding of research-based e-learning pedagogy is critical in instruction design for e-learning (Brown, 2007). Therefore, instructional design is like a roadmap for learning. Based on the designer's experience various models can be used in the instructional design process (Siemens, 2002). However, it is important to emphasise that, at best, an instructional model is a representation of actual occurrences; therefore, it should be applied only to the degree that it is practicable for the specific situation or task. This implies that health training institutions have to select a model that is not only easy to comprehend and implement but also fits their learning desires and aspirations. In other words, instruction must determine the choice of educational technology, and not the other way round (Chizmar & Walbert, 1999).

Instructional design is very important in e-learning because whereas many traditional classroom activities do not leave a visible mark that can be traced by others, accomplishments of alumni of a program can be assessed and the relevance of courses measured. Online learning is far more transparent. Classroom discussion is generally not achieved (though certain lectures can be taped and shown to students); hence, every aspect of e-learning is traceable and can be used as teaching aids for follow on courses. Content,

discussions, interactions, and other elements of learning can all be evaluated and reviewed by persons other than the instructor (Siemens, 2002). Consequently, quality can be assessed more objectively in e-learning. Instructional design is a process which improves quality, it follows to warrant those critical concepts are explored through content presentation and learning activities. In addition to quality and transparency matters, the greatest value that instructional design offers to students of online programs is the essence of integrating their learning needs and successes through effective presentation of content and fostering of interaction (Gustafson & Branch, 2002).

The development and success of e-learning is meticulously connected to the design of quality learning, mediated by the use of educational technology. Instructional design acts as a bridge of connecting these different fields, for the benefit of students, instructors, and the training institutions. Many of the concerns of e-learning dropout rates, learner resistance, and poor learner performance are solved by relying on a robust instruction design process. Some of the benefits include minimised design costs, an appealing look and feel, transparency, quality control and standardization. There are a number of instructional design models that have been used in developing e-learning programs and the commonly used instructional design models include the ADDIE model, Dick and Cary Model, Robert Gagne's ID model, including the e-book approach, among others (Siemens, 2002). However, for e-learning education approach and more specifically the technology driven distance education paradigm, these models have been found to have shortfalls (Santally et al., 2012).

The components of instruction design linked to e-learning adoption are several, and some of these include: choosing an appropriate instructional design model to guide the entire E-learning process (Pappas, 2016), interactivity of e-learning materials (Gutierrez, 2016). Collaborative working in developing and updating e-learning materials (Franceschi et al., 2008; Vandenhouten et al., 2014), eliciting feedback on instructional materials (Brown &

Voltz, 2005), providing feedback on e-learning program (Reeves et al., 2002), and engaging in more than one e-learning activity (Yengin et al., 2010).

There are a number of decision-making processes involved in choosing an appropriate Instructional Design (ID) model to guide the e-learning process. According to Pappas (2016) there are eight decision making processes. When assessing the list of ID models, the first step is to find out what makes an ID model stand out from the others? Therefore, it is important to research more on the ID models to ascertain the suitable model for the e-learning program in question. However, it is important to be cautious so as to balance opinions, personal beliefs and experiences in order to make a balanced choice for the ID model to use. Another guidance on choosing a relevant ID model for an e-learning program includes using the learning objectives, goals and desired outcomes as reference point, as discussed earlier, an ID model is used to achieve the learning objectives, goals and outcomes and not the other way round.

It is also important to evaluate every aspect of the ID model since each has its own behavioural reasoning. Also, involve the e-learning team to evaluate various ID models you have paraded, consider the preferences, and needs of the e-learning users when choosing the ID model, ensure you have all the resources required to implement the ID model, and the basic question to pose is: do we have everything we need to uphold the integrity of this ID model? Additionally, review each ID model with a contemporary logic especially ensuring that the ID model will be able to provide a dynamic, interactive, and engaging e-Learning experience for the current and future learners. The future learners need to be considered when choosing an ID model because, the ID model must be tech-forward and flexible so that it stands the test of time (Pappas, 2016).

Interactivity of e-learning materials is another important component of instruction design with a significant bearing on e-learning adoption. However, interactivity is define

variously, and scholars differ on the amount of interactivity that should be allowed on any e-learning program (Gutierrez, 2016). Rodriguez-Ardura and Meseguer-Artola (2016) define interactivity as the extent to which e-learners perceive their communication or interaction in the virtual education environment as bi-directional and responsive to their actions, and is controllable (Rodríguez-Ardura & Meseguer-Artola, 2016). Steuer (1992) defines interactivity as the extent to which users can participate in modifying the form and content of a mediated environment in real time. Gutierrez (2016) defines it as a mutual action between a learner, learning system, and material. Gutierez further asserts that more interactivity does not essentially transform into more engagement, and that there is a small but definitely existent line between an e-learning course being richly interactive, and one that baffles the learners by having them jump through endless footraces and encounters, disordering the 'flow' of their learning. He further argues that just like food or any drinks for human consumption, interactivity is best enjoyed in moderation (Gutierrez, 2016).

It is generally accepted that interactive media makes e-learning faster and gives learners a better attitude towards learning. However, a good way to determine the right amount of interactivity in e-learning is in answering the following four key questions: What kind of course are you developing and why? In this case the objectives and goals of your course are considered, more interactivity will depend on whether you intend to change behaviour, impart new skills or just information sharing. Additionally, consider whether the learner needs to be passive or active in the entire learning process. The second question to consider is:  What do you want and what do the learners want? In this case knowledge of the interactivity will enhance the experience for the end-user, and how adding interactivity will get them what they want, and in turn, what you want (good results from your learning program).  The third question is what device (s) will the learners be using to access the learning materials? In this case emphasis is laid on the details about learners' technological

infrastructure and technical limitations before creating the course and plan accordingly. And the last question is about the budget? Simple interactions like click-through animations can be created relatively cheaply, but courses with high-end 'top-shelf' activities cost more in terms of time, effort, and emotional investment. It is important to ensure that if you undertake a richly interactive e-learning project, and you think that it is pedagogically worth, it is always necessary to check whether it also makes sense financially (Gutierrez, 2016).

Collaborative working in developing and updating e-learning materials is critical in e-learning programming. According to Vandehouten et al. (2014), e- learning necessitates the talents of several team members from a variety of departments, and use of different teaching and learning strategies as compared to the traditional form of learning. Instruction as well as team configurations must change when moving to the online environment. As a result, collaboration is a key component in creating quality e- learning (Ellis & Phelps, 2000).

Brown and Voltz (2005) have argued that experience develops into knowledge through reflection, which is enhanced by timely and appropriate feedback. Effective e-learning design must embrace provisions for feedback that amplifies the learning from the experience and enables students to increase their level of skill and knowledge. The choice of available feedback approaches should be as vast as possible, including reflective responses to prescribed questions, semi-automated responses by the system to student actions and work, shared comments in online forums and blogs, and personal responses via email, telephone, and post. Timeliness of feedback must also be prioritised. Timeliness may be enhanced through automation in some cases, or it might be delayed, such as where email responses replace tutorial question and answer sessions. Effective use of feedback will enable an e-learning design to set up a dialogue within which the student participates, without which designs may simply become plans for broadcasting content (Brown & Voltz, 2005).

Additionally, the e-learning program should provide feedback that is contextual and relevant to the problem or task in which the learner is engaged. And in this regard, Reeves et al (2002), have suggested a number of questions which should be posed and answered at this stage of instruction design, and these include: Is the feedback given at any specific time tailored to the content being studied, problem being solved, or task being completed by the learner? Does feedback provide the learner with information concerning his/her current level of achievement within the program? Does the e-learning program provide learners with opportunities to access extended feedback from instructors, experts, peers, or others through e-mail or other Internet communications? (Reeves et al., 2002).

Engaging students in more than one e-learning activity is synonymous with active learning. Making students to play an active role in their learning is a plea for engaging students into their progress. Active learning strategies suggest putting students into the centre of their learning (Dewey, 1998). E-learning programs should develop more self-regulated activities so as to harness avenues for full participation of students in their learning endeavours. The broad range of learning activities will be helpful because the students would become responsible for their learning and they will get involved in the teaching and learning rather than just receiving simple lectures such as tutorials or presentations (Yengin et al., 2010). Khan et al., (2017), have enumerated six strategies for incorporating active learning in an online course design, development and delivery that include: building a community, clearly outlining course expectations, utilizing online tools for interaction, promoting exchange of ideas, providing timely and relevant feedback and creating an environment that is student centred (Khan et al., 2017).

**2.3.2.3 Online Quality Management Practices and the Adoption of E-Learning**

Online quality is a multifaceted and complex phenomenon (Jung, 2011), partly because it evolves from the main stream concepts of quality in the business service sector. In

the mainstream literature of quality, the concept is interpreted differently by different people. Much as there are agreed upon conventional principles of judging service quality (Cuthbert, 1996; Hughey et al., 2003; Parasuraman et al., 1985; Parasuraman et al., 1988; Stodnick & Rogers, 2008), the question to posse here is should online quality be judged based on these canons? The answers to this question are varied with some arguing that the same conventional principles used to judge the quality of face-to face education should apply (Frydenberg, 2002; McNaught, 2001). while others prefer to consider the value judgements of the end-users of the online education approach (Ehlers, 2004), and more still, others argue that a middle line should be toed especially where the quality perspectives of all stakeholders are considered. I expound more on the issues of online quality in the proceeding sections.

The quality of e-learning is conceptualized as gaining the finest learning accomplishment, in conjunction with 'something that is excellent in performance (Ehlers et al., 2005). However, quality in e-learning is enhanced by accepting to reassess the globally accepted standards and notions of quality to allow flexible progression of compromise through negotiations on the perspectives of quality espoused by both the student and the teacher. In this study, it was also recommended that to improve e-learning quality, students ought to play a critical role in shaping the quality of e-learning activities; and quality improvement must be designed jointly by all those involved. These aspects have a great influence on the adoption and continued use of e-learning because they revolve at the nexus of beliefs and motivations for e-learning (Ehlers & Goertz, 2006).

The aspect of involving learners in determining the quality of e-learning is very critical. Jung (2011) suggests that the dimensions of online quality management are sometimes conceptualized differently between learners and faculty and the assessment is also sometimes one-sided, especially skewed on e-learning providers, donors and government agencies. This contradiction is likely to affect the adoption and continued use of e-learning.

suffice to mention that e-learning quality cannot be provided to the student but rather it should be co-developed by the student and the teacher in the interactive phase of instruction and learning, predominantly in a collaborative e-learning milieu (Ehlers, 2004).

Jara and Mellar (2007) have argued that improvement endeavours of e-learning quality have to consider the perspective of the student, and this might include determining the needs of the student in concrete terms before starting an e-learning endeavour. Subsequently, e-learning quality has to empower and enable the student to verbalize what seems not to be going on well, along the e-learning trajectory. The student has to be given an opportunity to define what e-learning quality means to them at the onset of the e-learning trajectory, in so doing, the teacher also takes note of what is supposed to be improved. In such circumstances, quality in e-learning becomes to be constructed as a co-production progression between the learning-milieu and the student. Inherently, therefore, it becomes known to the learner that she too has a role to play in shaping the quality of the e-learning program. Quality development from a student's point of view refers to the considering the students' inclinations as the basis of quality enhancement in the proceeding e-learning activities. However, this should not mean that the student's viewpoint and inclinations by themselves should be the only ones to be considered, the economic, organizational, regulations and legal considerations should also be considered (Jara & Mellar, 2007).

While there are different perspectives of online quality, the learner's perspective of quality is the most critical in relation to the adoption and continued use of e-learning in a particular school. Research on online quality management indicates that there are seven most common fields of leaner preferences that eventually guide their judgment on the quality of e-learning; they include, teacher support, effective collaboration and communication on the program, technological infrastructure, expectations on costs, value judgement, transparent information flow, structure of the program, and teaching methods (Ehlers, 2004).

The common understanding is that online learning is unique in a sense that it is more inclined to distributed-learning (Jung & Latchem, 2007). The learners have access to vast open resources, and most importantly, online learning relies to a greater extent on the learner's commitment to interact and collaborate with others, and his or her own motivation to study (Jung, 2011). It is against this background that this study aimed at eliciting the online quality management aspects that would facilitate a fair judgement on the learner's motivation and commitment to collaborate and interact with others on the e-learning program. Both students and tutors on the e-learning program were construed as learners, and the online quality management aspects evaluated included: CD-ROM materials meets the expectation of users, collaborative improvement of online quality, Learning Management System meets expectations of users, providing the best online experience, e-learning program being described as an excellent online learning experience, and guidelines for improving online quality. More literature on these online management aspects is discussed next.

Compact Disc –Read –Only-Memory (CD-ROM), has been the main avenue of providing access to online content in distance and e-learning programs in low income countries (El-Khouly, 2008). The e-learning program we assessed, started by using CD-ROMs, the content would be developed by different subject matter expert, it would be subjected to a rigorous review process, thereafter it would be given to an expert to convert it to CD-ROMs and the CD-ROMs would be provided to students to access the different content which would supplement their phased face to face sessions. The major preference for CD-ROMs by then was the limited coverage of internet services in the country, coupled with its prohibitive costs. However, the questions that any e-learning sympathizer would wish to be answered, would be: what do users say about the quality of CD-ROMs? Does the CD-ROM meet the expectations of the user? Literature has shown that a CD-ROM played many functions including browsing the web off line as it has the capacity to store vast amounts of

textual content, including entire web sites (El-Khouly, 2008). Indeed, the program we assessed, CD-ROMs were being used to host voluminous content, including power point presentations, text files, and test questions for the entire course.

Additional preferences for using CD-ROMs were that the content developer did not need to have access to an expensive server, since videos can directly run CD-ROMs without any Internet connection. Moreover, the quality of a video played from a CD-ROM is believed to be better than the quality offered by an Internet connection. Others have also emphasised that using a CD-ROM should not stop one to use the internet because the two complement each other, and CD-ROM is a convenient alternate for transmitting fixed content. Any important characteristic of Internet not contained in CD-ROM technology, like discussion groups and email, can always be allocated in other more developed systems like the LMS (Weber & Hamlaoui, 2018).

For a student to use a CD-ROM, having access to a computer is essential, but the learner doesn't need to own one because access to computer can often be found in libraries, workplaces, and Internet Cafes, including homes of friends. The advantages of using Internet-based CD-ROM are several, including, no need of installing new programs on the computer a leaner wish to use. This detail is important, owing to the fact that computers in public places sometimes are configured not to install any new programs because of fear of malware. The important fact to note is that, to use a CD-ROM on any particular computer, that computer should have an Internet browser. Data from the CD-ROM will be read directly as if it were on a website. This is an advantage because the computer does not need to be connected to the Internet while using a CD-ROM, hence, no additional costs incurred (Rodrigues et al., 1999). As time went by, the e-learning program under study, acquired a Learning Management System (LMS), however, because the LMS was heavily inclined to Internet connection, the CD-ROM approach of delivering content continued alongside the LMS.

In line with technological advancement, Learning Management Systems (LMS), have tended to replace the massive use of CD-ROMs on most e-learning programs on the African content and Uganda in particular. It is believed that prolific use of LMS might have begun in 1997, with the release of Blackboard and Web CT 1.0 on the market, and these fascinated millions of users (Muhsen et al., 2013). Although the current market is flooded with several open source software (OSS), such as Ilias, eduplone, Claroline, SAKAI, WebCT and Bscw, Modular Object Oriented Dynamic Learning Environment (Moodle), which was introduced in 1998, and released on market in 2001, seems to be the commonly used LMS (Al-Ajlan & Zedan, 2008). Our interest with the LMS on this study was to answer the question, does the LMS meet expectations of users?

Several studies have documented experiences of users with the LMS, a case in point is Udo et al.'s (2010) study, which looked at the perceptions and expectations of e-customers on web service quality, this study indicated that the developers of the website need to be cautious so that the website does not make e-customers run away because of difficulties of navigation. Their recommendations to LMS/website developers were to develop websites/LMS that can be navigated easily, integrating user-friendliness and top-notch usability design principles. And the LMS/website should comprise modest and easily understood instructions. Basically, the main aim is to offer the user with an exciting experience and evade user frustration which, not only can result in terminating the session but earnestly reducing the probability of LMS/website avoidance (Udo et al., 2010).

Likewise, Martinez-Arguelles and Batalla-Busquets (2016) have asserted that, today's e-learners have become vital customers of Universities and higher educational institutions. Subsequently, Universities and higher learning institutions have to develop strategies of satisfying the needs of these e-learners so as to enable them to become loyal customers of the e-learning services.

One of the strategies of achieving this is having a robust LMS/websites which meets most of the needs of an e-learner (Martínez-Argüelles & Batalla-Busquets, 2016). Many universities have designed student caring strategies similar to traditional business strategies for retaining customers (Pham et al., 2019). In the realm of e-learning this directly relates to e-learning perceived quality. Relatedly, one of the e-learning perceived quality dimensions is the quality of the user interface which is directly related to the quality of the LMS (Martínez-Argüelles et al., 2013). Albeit there are several researchers who have developed e-learning service quality dimensions (Dursun et al., 2014; Jun & Cai, 2001; Machado-Da-Silva et al., 2014; Martínez-Argüelles et al., 2013; Pham et al., 2019; William & Ephraim, 2003). The online quality dimensions espoused in this research was more inclined to the dimensions of Martinez-Arguelles et al., (2013).

According to Martinez-Arguelles et al., (2013) study, there are four dimensions of e-learning service quality: administrative or facilitative services, supportive services, core business – teaching services and user interface services, each having several indicators. In the dimension of core business or teaching services, there are about ten indicators, however, factor analysis showed that knowledge, pedagogical capacity and experience, feedback received by learners from tutors, and the speed of solving student queries were the most significant dimensions (Martínez-Argüelles et al., 2013).

On the administrative services, there are six aspects but the most significant included: speed of solving administrative queries, delivery of documents, clarity of guidelines and administrative procedures and IT problem solving. Generally, these services were referred to as responsiveness by other researchers (Parasuraman et al., 2005; Zeithaml et al., 2002).

In the supportive or supplementary services, four quality aspects were found to be critical including: extra curricula activities, synchronous activities as chats, video conferences, and virtual spaces for group discussions and group forums. The user interface

indicator included four critical quality aspects: speed of navigating and web page loading, speed of file uploads and downloads, simplicity, and intuitiveness of navigating to campus, and connecting to campus at all times and quickly. Parasuraman et al., 2005, and Zeithamle et al., 2002, summarised this dimension as system availability or reliability, translated as always available and operating.

It is acknowledged that due to methodological, logistical and time constraint, this study did not divulge much in all the dimensions of e-learning service quality as enshrined in Martinez et al., (2013) seminal work. However, it hinged on a few issues of e-learning service quality for the e-learning program under review, such as perceived quality of the CD-ROMs and LMS which fall under the user interface domain, providing the best online experience, and e-learning program being described as an excellent online learning experience, these two fit into the core business-teaching service, and collaborative improvement of online quality together with guidelines for improving online quality which fit into the administrative services.

**2.3.2.4 School Financing Mechanisms and the Adoption of E-Learning**

The World Health Report of 2006 (WHO, 2006), indicate that health training institutions undertake six key functions: stewardship or institutional governance; provision of educational services; selection and employment of staff members; financing of training; development and maintenance of infrastructure and technology; and generation of information and knowledge. The particular interest of this study is the financing role of midwifery schools, and how they can be enhanced to produce the desired outputs including adoption of innovations to improve their long-term survival (Sirmon & Hitt, 2003).

There is limited information on the African content and specifically on Uganda on the amounts the country and development agencies invest in pre-service and in-service training of the health workforce. However, it is clear that the level of financing and the way in which

it is disbursed to health training institutions have important implications for the size, skills and diversity of the health workforce, and subsequently the adoption of new training innovations such as the e-learning approach (Clark, 1989). In this regard, for any midwifery school to be able to adopt new innovations of training there is need to ensure adequate levels of financing, fair financing for student access and efficient coordination of sources of funds. To achieve these, there must be deliberate efforts at the institutional management level to figure out how this ought to be accomplished while considering the interests of different stakeholders.

Guo (2006) argues that this calls for an entrepreneurial mind-set of the institutional management. In the financing role of a school, there are three questions that should be answered. What should the institution do to have adequate finances? How can an institution adopt a fair financing strategy for students to be able to access their education through e-learning? How can an institution achieve efficient coordination of its sources of funds? It is evidently clear that answering these questions requires a school to take an entrepreneurial approach to enhance its financial and social value (Guo, 2006).

According to Guo et al (2014), social entrepreneurship is believed to be one of the categories of entrepreneurship, and hence this creates room for understanding systems and processes that are designed to achieve social change and to generate surplus to support activities that cannot generate revenue (Austin et al., 2012). Social entrepreneurship is critical for generating social impact and assuring financial sustainability. Entrepreneurial orientation with a social focus is a tool that allows the leadership team to proactively strategize to anticipate environmental changes and to lead the social movements that have policy implications (Guo et al., 2014).

Despite the growing worldwide recognition that e-learning initiatives are vital to future economic development, governments and educators are still struggling with the

question of how to fund them within constrained national and education budgets. According to Intel (2012), what is clear though is that for e-learning to succeed there are about four funding models: 1) Public-Private Partnerships, which include government-backed loans, bundled service agreements, seed funding, support from religious institutions, NGOs, and micro-financing. 2) Technology Grants, including public funding and private grants for hardware, software, and training. 3) Bonds, Leasing and Universal Service Fees, including community bonds, technology leasing, and the use of telecommunications access fees. 4) Parent or Individual Financing, which include Bring Your Own Device options, tax relief, and user fees (Intel, 2012).

Based on the Intel's highlighted models above, models 1 and 4 are the most common in Uganda. Although for the case of model 1, it is more inclined to seed funding support from religious institutions and NGOs. Whereas model 4, is more focused on 'bring your own device' options and user fees inform of tuition fees paid by e-learning students to their respective schools where they are enrolled for studies.

Relatedly, Easter and Ewins (2010) argue that in order to achieve sustainable e-learning programming, initiators of e-learning programs should consider to appraise four funding models and decide which one is more suitable: The Government model, The Foundation model, The consultancy model, and the Fee-paying model. The foundation model is where e-learning programs seek to be backed by large multinational companies. The funding of e-learning programs comes directly from profits made by the global for-profit sectors of the company. An example in this regard is the Uganda e-learning upgrading project for midwives which was being funded by GlaxoSmithKline (GSK) a pharmaceutical company based in the UK but with several global offices. GSK had an arrangement with Amref Health Africa to plough back 20% of its profits into low-income countries where it

was operating. The 20% reinvestment was being used to fund e-learning projects across several countries in Africa (Amref, 2015).

Another model as per Easter and Ewins (2010) study is the Government model. A great number of e-learning projects in Uganda are relaying on this model, here initiators seek for arrangements with their respective governments to secure economic sustainability. The funding at times comes in various approaches including paying salaries for faculty, subsidizing operational costs for the school, and securing technological facilities for the school. To exemplify this funding model, one of the administrators in one of the midwifery schools had the following:

> The Government pay my wages and also those of the tutors at my school. This is the best way for our school to be run because it means no one is trying to make money out of it; it's just a good investment for the Government, on behalf of the future of our country. I don't think anyone really has a problem with them spending money on education, especially ICT, as this is very up and coming. The Government also procures technological infrastructure for our schools, so I guess that shows an investment of sorts.

To epitomise this, the Government of Uganda through its National ICT Infrastructure initiatives, and in financial year 2014/2015, they were able to support over seven Public Universities and other tertiary institutions to be connected to the National Backbone Infrastructure (NBI) to enable access to high speed internet connectivity and facilitate e-learning and research (GOU, n.d.)

The consultancy model is another model which is becoming increasingly popular way to maintain e-learning project funding, where the focus is to sell the expertise of those being trained. The consultancy model works by training a first generation of e-learning users who then train and provide consultancy services to other local businesses motivated by the success

of the first-generation learners. This model can continue almost indefinitely, until the local market becomes saturated with e-learning users (Easter & Ewins, 2010). The consultancy model is also in tandem with what Mendling et al (2005) were able to extensively elaborate on, much earlier, in their seminal work coined as revenue models for e-learning at Universities (Mendling et al., 2005).

While many African e-learning projects have so far cautiously approached the fee-paying structure adopted by many universities and schools around the world, this model can be successful. The main arguments against it are that it limits access to an elite and does not promote development, in line with the "poverty trap" scenario (Sachs, 2005) whereby generations of disadvantaged people cannot afford the education to climb out of poverty. However, this is contested by Easterly (2006), in addition to several other implementors. In Uganda, especially on the Uganda e-learning upgrading midwives project, this model seems to have worked well because all the upgrading midwives are self-sponsored students and have posted several success stories (Amref, 2015).

**2.4 Summary of Chapter Two**

The reviewed literature indicates that the two variables of OCSFs and e-learning adoption are explained by multiple theories. OCSFs are majorly guided by the transformational leadership theory, situated learning theory, and the framework for promoting and assuring quality in virtual institutions. On the other hand, e-learning adoption is guided by the Diffusion of Innovations theory. Literature has also made it clear that the level of financing and the way in which it is disbursed to health training institutions have important implications for the size, skills and diversity of the health workforce produced, and subsequently the adoption of new training innovations such as the e-learning approach (Clark, 1989). it is implied therefore that for any midwifery school to be able to adopt new

innovations of training such as e-learning requires that there are adequate levels of financing, fair financing for student access, and efficient coordination of sources of funds.

To achieve these, there must be deliberate efforts at the institutional management level. Furthermore, technology leadership treated as a significant school characteristic is responsible for major technological outcomes such as net use for e-mail and Web, technology integration, and student tool use, which are the main dimensions of e-learning adoption (Mwawasi, 2014). Although, much of the literature reviewed in this chapter tends to portray that the four OCSFs earmarked by this study might determine e-learning adoption, however, none of the studies reviewed above ascertained whether these four dimensions were relevant to e-learning adoption. This is a major gap which this study intends to bridge.

**CHAPTER THREE**

**METHODOLOGY**

## 3.1 Introduction

This chapter highlights the philosophical orientation, research design, study population, sample size, sampling techniques, research methods, instruments, data collection, processing, and analysis. It also highlights the ethical considerations and limitations of the study.

## 3.2 Philosophical Orientation

This study was guided by the pragmatic world view, and pragmatists argue that there are different ways of interpreting the world and undertaking research (Creswell, 2015; Kaushik & Walsh, 2019), and that no single point of view can ever give the entire picture and that there may be multiple realities (Dudovskiy, 2018; Nomalungelo, 2012; Saunders et al., 2012). Therefore, they see meaning and truth in the lens of mixed methods research (Collis & Hussey, 2009; May & Williams, 2002). Truth is not "ready-made", but rather, made jointly by us and reality (Creswell, 2014). It concerns itself with what works to find solutions to problems "something is true only insofar as it works" (Bernie, 2018, pp 40). Instead of focusing on methods, as it is with other philosophical stances, pragmatism emphasises the research problem and the use of all approaches available to understand the problem (Creswell, 2015; Nomalungelo, 2012; Saunders et al., 2012), and derive knowledge about the problem (Morgan, 2007; Tashakkori & Teddlie, 2010). Inherently, adoption of e-learning warrants a pragmatic approach to understand it and derive knowledge about it.

## 3.3 Research Design

This study used an explanatory sequential mixed methods design (Creswell, 2013) to ascertain Organisational Critical Success Factors (OCSFs) for e-learning adoption in a real-world scenario. An explanatory sequential mixed methods research design was preferred

because it allows a combination of quantitative and qualitative approaches to provide a better understanding of a research problem better than using a single approach (Creswell, 2013). Data integration was made at analysis phase where qualitative data was used to provide a thick explanation of the quantitative findings (Ivankova, et al. 2006).

The aim of this study was to ascertain Organisational Critical Success Factors (OCSF's) that can be used to improve e-learning adoption in midwifery schools. In this regard, data collection and analysis were conducted in two phases. The first phase entailed quantitative data collection and analysis to ascertain OCSFs for e-learning adoption. The second phase embraced a qualitative in-depth data collection and analysis to validate the OCSF's and relayed on selected respondents from the participating midwifery schools.

## 3.4 Study Population

The study population majorly comprised of tutors in midwifery schools as key stakeholders on the midwifery program, and students undertaking the e-learning program were also involved in the study. These target groups were selected because they were involved in the implementation of e-learning for a reasonable time, therefore, they had relevant information that could be used to ascertain OCSFs for improving adoption of e-learning. Additionally, some officials from MOES were involved as key informants.

## 3.5 Sampling Design

Sampling design is a working plan that specifies in detail the population frame, sample size, sample selection, and estimation method (Lavrakas, 2013). The objective of the sampling design is to know the characteristic of the population. The sampling design will include discussion of the sample size, and sampling techniques.

## 3.5.1 Sample Size

There are two population groups that were considered in this study as key stakeholders on the e-learning program. Midwifery schools were the entry point for the study.

Students on the e-learning program and the tutors in these midwifery schools formed the first and second population groups. There were twelve midwifery schools offering the e-learning program in Uganda. The first sampling process begun with the schools.

**Table 3.1 Study Population and Sample Size**

| Category | Population (N) | Sample size determination technique | Sample size (S) |
|----------|---------------|-------------------------------------|-----------------|
| Tutors | 120 | Morgan &Krejcie table (1970) | 92 |
| Students | 169 | Morgan &Krejcie table (1970) | 118 |

**Source:** *Amref, 2014; Morgan and Krejcie, 1970.*

### 3.5.2 Sampling Techniques

Twelve midwifery schools which were implementing e-learning program at the time of the study were targeted as an entry point to reaching out to students and tutors. However, only ten schools accepted to participate in the study. The total population of tutors and students was ascertained from the principals of the midwifery schools, and this was subjected to the Morgan and Krejcie technique (Krejcie & Morgan, 1970), to determine a representative sample size of students and tutors to participate in the study see table 3.1. Secondly, Probability Proportional to Size (PPS) sampling (Skinner, 2016) was used to select the proportionate sample size of students and tutors from each of the selected midwifery schools, proportionate to their population (Table 3.2). Thirdly, simple random sampling was used to select individual tutors and students to participate in the study from the determined sample size.

**Table 3.2: Showing PPS Sampling for Tutors and Students in the Twelve Schools**

| # | Selected Midwifery schools | Population of tutors | PPS Sampling for tutors (S=92) | Population of Students | PPS Sampling for Students (S=118) |
|---|---|---|---|---|---|
| 1 | A | 12 | 9 | 16 | 11 |
| 2 | B | 14 | 11 | 18 | 13 |
| 3 | C | 10 | 8 | 14 | 10 |
| 4 | D | 10 | 8 | 16 | 11 |
| 5 | E | 13 | 10 | 17 | 12 |
| 6 | F | 20 | 15 | 20 | 14 |
| 7 | G | 9 | 7 | 17 | 12 |
| 8 | H | 12 | 9 | 14 | 10 |
| 9 | I | 10 | 8 | 17 | 12 |
| 10 | J | 10 | 9 | 20 | 14 |
| | **Total** | **120** | **92** | **169** | **118** |

**Source:** Primary data 2019

## 3.6 Data Collection Procedure

A data collection team of five people was identified and trained. These then traversed the ten selected schools and collected data. Whenever the team reached a school, with assistance of school management, they identified students and tutors to participate in the study. A self-administered questionnaire was provided to the selected tutors and students within the school. Once the filled in questionnaires were returned to members of the research team, they continued to another school until the first phase of data collection was completed. After the first phase data had been analysed, and the second phase data collection process started. The second phase of data collection was organized by arranging FGDs, conducting Key Informant Interviews (KII) and one member of the team was tasked to review the documents of the school using the developed documents review guide (see Appendix 3).

## 3.7 Data Collection Methods

Three data collection methods were employed for this study, two for qualitative data and one for quantitative data.

**3.7.1 Data Collection Methods for Quantitative Data**

Quantitative data was collected using a questionnaire for tutors and students (see Appendix 1).

**3.7.2 Data Collection Methods for Qualitative Data**

Two data collection methods for qualitative data were used in this study, these included: interviews and review of records.

**3.8 Data Collection Instruments**

In total, four research instruments were utilised in this study, namely self-administered questionnaire, in-depth interview guide, focus group discussion guide, and document review guide (see summary of data collection methods and instruments in table 3.3 below.

**3.8.1 Data Collection Instruments for Quantitative Data**

**Self -Administered Questionnaire:** The self-administered questionnaire as a tool captured primary data on six aspects, a structured questionnaire was preferred because of its advantage of capturing systematic similar information from all respondents, and it was also preferred because of its advantage of posing similar questions to students and tutors and thus a good way for eliciting random responses and minimising bias. It contained a total of 32 items and one questionnaire was used to capture views of both students on e-learning program and tutors (see appendix 1).

**3.8.2 Data Collection Instruments for Qualitative Data**

**In-Depth Interview Schedule:** A key informant interview guide was used as a tool to elicit responses from the key informants. According to Carter and Beaulieu (1992), the key informant interview tool/guide typically contains an outlined script and a list of open-ended questions relevant to the topic of discussion (see appendix 2). This tool targeted school administrators including some officials from the school management board and MOES

specifically the BVET directorate. KII guide was chosen because of its advantage of providing an opportunity for respondents to elicit issues under investigation unrestricted and hence it generated more information to enrich the data from structured questionnaire.

**Focus Group Discussion Guide:** A focus group discussion guide was developed and used as a tool for guiding the entire discussion exercise. A FGD guide/tool is defined as a write-up which includes all the information that facilitators need in order to conduct a FGD, a FGD guide was preferred in this study because of its advantage of enabling respondents and interviewer to have a flowing discussion without unnecessarily limiting ideas from respondents (Omar, 2018) (see Appendix 3). In total 4 FGDs were held at four selected schools two targeting students and two for tutors respectively.

**Documents Review Guide:** A document review guide was also used to review a variety of existing documents at the ten visited schools. The documents reviewed included: strategic plans, reports to MOES, student support reports, and other written artefacts. The intention was to collect independently verifiable data and information to supplement the other tools in answering the research questions (see Appendix 4).

**Table 3.3: Summary of Data Collection Methods/Instruments and Target Population**

| # | Data Collection Methods/Instruments | Target Population | Sample Size | Sampling Techniques |
|---|---|---|---|---|
| 1 | Questionnaire | Students | 118 | PPS sampling followed by simple random sampling |
|   |   | Tutors | 92 | PPS sampling followed by simple random sampling |
| 2 | Interviews (KII guide) | Key informants (students/tutors/ School administrators &MOES officials | 25 | Purposive |
| 3 | Focus group discussions (FGD guide) | Students | 2 group discussions (5-8 members) | Purposive |
|   |   | Tutors | 2 group discussions (5-8 members) | Purposive |
| 4 | Records review (records review guide) | 4 schools | Three key documents were reviewed per school<br>— Annual school financial reports,<br>— Annual schoolwork plans,<br>— School policy on ICT use or e-learning program annual meeting minutes | Purposive |

**Source:** Primary data 2019

### 3.9 Measurement of Variables

The data collected was assumed to be normally distributed and therefore the ratio level of measurement was preferred in this study, thus parametric measurements such as correlation, regression, and analysis of variance (ANOVA) were performed between OCSFs and e-learning adoption. The specific OCSFs measured included technology leadership practices, instructional design processes, online quality management aspects, and school financing mechanisms against e-learning adoption. Both bivariate and multivariate regression and correlation analysis were performed using the Pearson correlation coefficient, to test the

relationship between the variables. Thereafter, the OCSFs were further validated by the qualitative study in the second phase of the study.

**3.10 Data Quality Control**

Data quality control procedures for both quantitative and qualitative data were employed with an aim of ensuring that reliability and validity aspects of the research were being adhered to. Reliability and validity are important concepts in research because they are used for enhancing the accuracy of the assessment of research work (Tavakol & Dennick, 2011).

**3.10.1 Validity of the Instruments**

Validity is the extent to which any measuring instrument measures what it is intended to measure (Mohajan, 2017). The validity of the questionnaire was established using the content validity index (CV1) (Yusoff, 2019). Six experts were requested to rate each of the items of the questionnaire based on relevance, clarity, simplicity, and ambiguity on the four-point scale as indicated in table 3.4 below. The results of the content validity of the scale were analysed. Items that scored a CVI of over 0.70 were retained and those scoring below 0.70 were discarded (Polit et al., 2007). The retained items were further modified based on the experts' opinion.

**Table 3.4: Content Validity Index**

| Items | Number of items | Content validity index |
|---|---|---|
| Technology leadership practices | 6 | 0.87 |
| Instructional design strategies | 7 | 0.83 |
| Online quality management practices | 6 | 0.87 |
| School financing mechanisms | 6 | 0.87 |
| E-learning adoption | 8 | 0.84 |

**Source:** Primary data, 2019

**3.10.2 Reliability of the Instruments**

Mohajan (2017) defines reliability as the degree of consistency that the instrument demonstrates. This was done by testing reliability of the items of the questionnaire based on the Cronbach Alpha method provided by Statistical Package for Social Sciences (SPSS). The researcher chose the Cronbach Alpha method because it was expected that some items or questions would have several possible answers, and hence the Cronbach Alpha method was assumed to be the best method for determining consistency of the items or questions. Items that scored coefficients between 0.6 -0.8 were retained (Nunnally & Bernstein, 1994).

**Table 3.5: Reliability Indices**

| Items | Number of items | Cronbach Alphas |
|---|---|---|
| Technology leadership practices | 6 | 0.681 |
| Instructional design strategies | 7 | 0.735 |
| Online quality management practices | 6 | 0.886 |
| School financing mechanisms | 6 | 0.785 |
| E-learning adoption | 8 | 0.746 |

**Source:** Primary data, 2019

**3.10.3 Validity for Qualitative Data**

Validity in qualitative research is referred to as trust worthiness. Qualitative researchers prefer the use of words such as credibility, trustworthiness, applicability, consistency, and conformability instead of validity and reliability (Brink, 1993). In this study, credibility, trustworthiness, applicability, consistency and conformability were ensured by being transparent about the nature of the research, building a trust-relationship with the research participants, keeping accurate and detailed field notes and research journal, transcribing verbatim accounts of information from respondents, engaging participants in

reviewing of transcriptions (member check), peer debriefing, and rigorous training for interviewers (Brink, 1993; Glaser & Strauss, 2017; Leininger, 2007; Lincoln & Guba, 1985).

**3.11 Data Analysis**

Data analysis was performed per objective. Quantitative and Qualitative data were analysed separately; thereafter, they were merged using a side-by-side comparison approach (Creswell, 2014). The unit of analysis was the school; aggregates were used in the analysis of individual students and tutors as participants of the study.

**3.11.1 Quantitative Data Analysis**

Quantitative data was analysed by performing both descriptive and inferential analysis. Various inferential and descriptive analyses were performed. Descriptive analysis involved frequencies, percentages, means and standard deviation.

The inferential analysis was largely focused on four data analysis techniques: Correlation by determining the Pearson's correlation coefficient. The purpose of the correlation coefficient was to determine the strength and direction of the relationship between two continuous variables, i.e., each OCSF on e-learning adoption. The assumption was that the variables under investigation were continuous. Regression analysis was also employed because it helped to determine the functional relationship between each of the OCSFs and e-learning adoption, this helped in estimating the contributions of each of the OCSFs in the variances observed in e-learning adoption.

Even though regression and correlation analysis are studied together, the assumption in this study was that there are obvious differences and similarities between correlation and regression. In instances where the interest was to predict a key response, regression was used, and in instances where a quick summary of the direction and strength of a relationship was required, correlation was used. The ANOVA, which stands for analysis of variance, was used to test the differences between two or more groups on a continuous variable, i.e., the

difference between each of the OCSF's and e-learning adoption. The researcher used Statistical Package for Social Sciences (SPSS), Version 23 to perform the aforementioned techniques.

**3.11.2 Qualitative Data Analysis**

The thematic analysis of Corbin and Strauss (2014) was used in qualitative analysis. Qualitative data analysis commenced with data collection, data was recorded in field notes and supported by audio recorders, transcription was done verbatim, and some samples referred back for cross reference. Data was also coded, categorized, and themed. The process of open coding, axial, and selective coding based on Corbin and Strauss (2014) was utilized in data analysis. Coding procedures also used the comparative sampling method, a technique that allows thick collection of data due to its iterative potential. During the coding process an expert was also consulted to provide or check on adequacy of the major codes developed. NVivo software was used in the coding process to aid in the management of the large amount of data and to facilitate the data reduction process. This helped to generate additional data, and this triangulation of data sources provided a thick and deep description of OCSFs and e-learning adoption in midwifery schools in Uganda.

**3.12 Anticipated Limitations to the Study**

The study was mainly an explanatory research of the OCSFs for e-learning adoption, consequently, some systematic biases might have been introduced along the way, but these were mitigated by using multiple methods of data collection and analysis.

Since the study employed a mixed research method, basing on two stages of data collection and analysis, time to complete the entire research within the agreed time was a bit limiting. However, this was mitigated by designing and implementing realistic actions putting in mind the time available to complete the entire research process.

**3.13 Ethical Considerations**

Ethical consideration in this research were ensured by adhering to the following: Seeking clearance from the Faculty of Education, Kyambogo University review board by presenting the research proposal for their review and subsequent endorsement. Seeking for ethical approval from Gulu University Research Ethics Committee (GUREC) and Uganda National Council for Science and Technology (UNCST) (see approval letters in appendix)

Seeking permission from relevant authorities including school administration of the midwifery schools; this was done by visiting the selected schools and discussing with the top management of the school on the aims of the study and how they stand to benefit. The management of the school was presented with an opportunity of deciding on whether to participate or opt out of the study.

Seeking consent from all respondents before filling in the questionnaire and participating in key informant interviews and focus group discussions. Informed consent was obtained by reading out a consent statement to the participate explaining what the research is all about, the benefits she stands to gain from it and how the findings will be used. Thereafter, the participant was asked if she is willing to participate or not and if she is not willing, she was freely allowed to opt out and if she decided to participate, she was given a consent form to sign. The participants were also availed an option to participate or reject to participate in the study (see consent forms in appendix).

Confidentiality was ensured by concealing the names of the participants in the research documents. The names of participating schools were also made anonymous in all the writings of the research.

**3.14  Summary of Chapter Three**

This chapter outlined how the research was carried out and why it was carried out the way it was carried out. The study was guided by the pragmatic world view, which recognises

different realities instead of focusing on methods, as it is with other philosophical stances, pragmatism emphasises the research problem and the use of all approaches available to understand the problem (Creswell, 2015; Nomalungelo, 2012; Saunders et al., 2012), and derive knowledge about the problem (Morgan, 2007; Tashakkori & Teddlie, 2010). There are several stakeholders in e-learning programs and each with a different reality, inherently, adoption of e-learning warrants a pragmatic approach to understand it and derive knowledge about it.

The study used an explanatory sequential mixed method design to ascertain the OCSFs in a real-world scenario with the help of participants from selected midwifery schools. An Explanatory Sequential Mixed Methods research design was preferred because of its central premise that a combination of quantitative and qualitative approaches provides a better understanding of a research problem than using a single approach (Creswell, 2013).

The study was undertaken in ten out of the twelve midwifery schools offering e-learning program in Uganda and involved both students and tutors in the ten sampled schools. The main aim of the study was to ascertain OCSFs which could be used to improve e-learning adoption in midwifery schools. In this regard, data collection and analysis were conducted in two phases. The first phase used a questionnaire survey to elicit views of tutors and students so as to assess the OCSFs, and the second phase employed focus group discussions, key informant interviews to validate the OCSFs for e-learning adoption.

Quantitative data analysis focused on both descriptive (frequency counts, percentages, and means) and inferential statistics (correlation and regression analyses) for the first phase of data analysis. Whereas qualitative data analysis commenced with commencement of data collection, data was recorded in field notes and supported by audio recorders, transcription was done verbatim, and some samples referred back for cross reference. Data was also coded, categorized, and themed (Corbin & Strauss, 2014).

**CHAPTER FOUR**

**PRESENTATION OF FINDINGS, ANALYSIS, AND INTERPRETATION**

**4.1 Introduction**

This chapter presents key findings of the study, starting with response rate, demographic findings, findings on technology leadership practices of end users and e-learning adoption; instructional design and adoption of e-learning; online quality management and e-learning adoption; school financing mechanism and the adoption of e-learning. Furthermore, it intertwines the analyses and interpretation of the findings.

**4.2 Self- Administered Questionnaire Response Rate**

Respondents comprised of students and tutors from (10) midwifery schools in Uganda as shown in the table 4.1. A total of two (210) questionnaires were distributed and (167) were completed and returned. The response rate for questionnaires was therefore 79.5 percent as per details shown in the table 4.1 below. Note that the names of the particular schools are anonymised by assigning specific letters A to J.

**Table 4.1: Response Rate of the Questionnaire**

| Number | School | Sample size | Actual respondent | Response rate |
|:------:|:------:|:-----------:|:-----------------:|:-------------:|
| 1 | A | 19 | 16 | 84.2 |
| 2 | B | 21 | 19 | 90.5 |
| 3 | C | 18 | 16 | 88.9 |
| 4 | D | 19 | 14 | 73.7 |
| 5 | E | 20 | 15 | 75.0 |
| 6 | F | 25 | 20 | 80.0 |
| 7 | G | 15 | 15 | 100.0 |
| 8 | H | 19 | 17 | 89.5 |
| 9 | I | 18 | 18 | 100.0 |
| 10 | J | 17 | 17 | 100.0 |
| **Total** | | **210** | **167** | **79.5** |

**Source:** Primary data

The above response rate was good and offered a reasonable ground to make a case for any recommendations or observations. In addition, a high response rate is desirable in educational research because it shows the enthusiasm of the stakeholders in a particular phenomenon and offers an unbiased estimate (Dillman, 2000; Heberlein & Baumgartner, 1978). Similarly, according to Mugenda and Mugenda (2003) a response rate of 50 per cent is adequate for analysis and reporting; a rate of 60 per cent is good and a response rate of 70 per cent and above is excellent.

## 4.3 Background Characteristics

In this section, the background characteristics of the respondents that answered the questionnaires are presented. The characteristics sought were gender, age, highest level of education and the role of the respondents in the school. These characteristics were collected to assist the researcher understand whether they have a bearing to e-learning adoption.

### 4.3.1 Gender of Respondents

Respondents were also requested to indicate their gender, so as to assess gender representation amongst the respondents and the findings are presented in figure 4.1.

**Figure 4.1: Gender of Respondents**
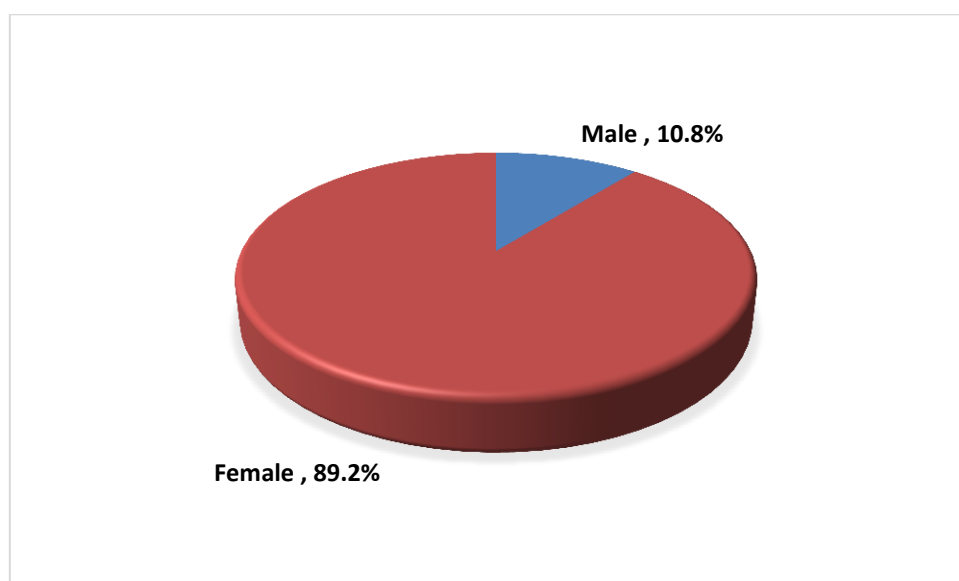


**Source**: Primary Data

Figure 4.1 shows that although both male and female respondents participated in the study, the majority 149 (89.2%) were females as compared to only 18 (10.8%) males. The females dominated in number because the midwifery profession is generally dominated by females for both students and staff.

### 4.3.2    Age of Respondents

Respondents were requested to indicate their age to establish their maturity to give objective responses to the questions put before them and the findings are presented in figure 4.2.

**Figure 4.2: Age of respondents**
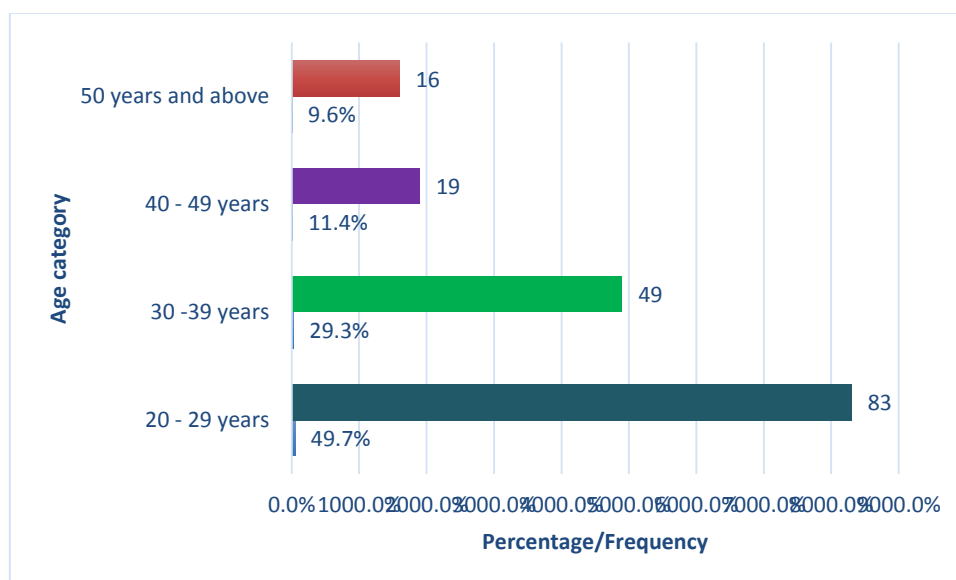


**Source: Primary Data**

Figure 4.2 shows that the highest number of respondents, that is to say 83(49.7%) were aged 20-29 years and 49(29.3%), were aged 30 - 39 years, 19(11.4%) were aged 40 - 49 years, and only 16(9.6%) were aged 50 years and above. This meant that the majority, (79.0%) were below 40years. This was because the majority of the respondents were students that attended midwifery training at the sampled midwifery schools. However, all the respondents that participated in the study were of mature age and thus able to give objective responses to the questions put before them.

### 4.3.3 Education Level of Respondents

Respondents were also requested to indicate their highest levels of education. The aim was to determine their ability to understand the study and the findings are presented in table 4.2 below.

**Table 4.2: Highest Level of Education of Respondents**

| Highest level of education | Frequency | Percent |
|---|---|---|
| Post Graduate Diploma | 8 | 4.8 |
| Bachelor's degree | 49 | 29.3 |
| Master's degree | 6 | 3.6 |
| Certificate | 104 | 62.3 |
| **Total** | **167** | **100.0** |

**Source: Primary Data**

Table 4.2 shows that the highest number of respondents, that is to say 104(62.3%) were of certificate level of education, whereas 49(29.3%) were of Bachelors' degree, 8(4.8%) only were of Postgraduate level and 6(3.6%) only were of Masters' degree level. Respondents who possessed certificates were majorly certificate midwives who had enrolled on to the e-learning program to upgrade to the diploma level in midwifery studies. While respondents with Postgraduate diplomas, Bachelors' and Masters' degrees were either tutors or administrators. The above findings suggest that all the respondents had sufficient education to give objective answers to the questions raised in this study.

**4.3.4 Role of Respondents in the School**

Respondents were also requested to indicate their role in the school to establish whether all stakeholders were involved in the research study and the findings are presented in the table 4.3.

**Table 4.3: Role of Respondents in the School**

| Role | Frequency | Percent |
|------|-----------|---------|
| Tutor | 53 | 31.7 |
| Student | 91 | 54.5 |
| Administrator | 8 | 4.8 |
| Clinical instructors | 15 | 9.0 |
| **Total** | **167** | **100.0** |

**Source: Primary Data**

Table 4.3 shows that the majority of the respondents, 91(54.5%) were students, whereas 53(31.7%) were tutors, while 8(4.8%) were administrators and 15(9.0%) were clinical instructors. The above findings are an indication that all stakeholders on the e-learning program within the school participated in the study with the biggest number of stakeholders being represented by the students.

**4.4 E-learning Adoption in Midwifery Schools in Uganda.**

E-learning adoption was measured on the questionnaire using eight statements to which the respondents were required to indicate their level of agreement or disagreement and the findings are presented in table 4.4.

**Table 4.4: Views of Participants on the Adoption of E-Learning**

| E-learning adoption | SD | SWD | NAD | SWA | SA | Mean |
|---|---|---|---|---|---|---|
| The number of students on e-learning has been increasing from the time the program was initiated | 6 (3.6) | 15 (9.0) | 11 (6.5) | 49 (29.3) | 86 (51.5) | 4.2 |
| The number of logins on the Learning Management System has been increasing over time. | 10 (6.0) | 28 (16.8) | 40 (24.0) | 58 (34.7) | 31 (18.6) | 3.4 |
| Online support mechanisms to e-learning students on e-learning have been diversifying since the inception of the e-learning program | 12 (7.2) | 29 (17.4) | 43 (25.7) | 70 (41.9) | 13 (7.8) | 3.3 |
| Different e-learning program activities have been introduced overtime | 19 (11.4) | 30 (18.0) | 41 (24.6) | 58 (34.7) | 19 (11.4) | 3.2 |
| Tutors provide timely e-feedback to their students | 24 (14.4) | 24 (14.4) | 21 (12.6) | 68 (40.7) | 30 (18.0) | 3.3 |
| Students provide timely e-feedback to their tutors | 10 (6.0) | 19 (11.4) | 28 (16.8) | 79 (47.3) | 31 (18.6) | 3.6 |
| The quality of the e-learning program has improved with time | 9 (5.4) | 21 (12.6) | 24 (14.4) | 73 (43.7) | 40 (24.0) | 3.7 |
| The e-learning program is exciting | 11 (6.6) | 14 (8.4) | 8 (4.8) | 66 (39.5) | 68 (40.7) | 4.0 |
| **Average Rating of E-learning Adoption** | 13 (7.6) | 23 (13.5) | 27 (16.25) | 65 (39.0) | 40 (23.8) | 3.6 |

**Source:** Primary data

**Key:** SD: Strongly Disagree, SWD: Somewhat Disagree, NAD: Neither Agree nor Disagree, SWA: Somewhat Agree, SA: Strongly Agree

In the table 4.4 above the mean between 1.0 and 2.4 indicates disagreement and the mean between 3.5 and 5.0 indicate agreement, whereas the mean between 2.5 and 3.4 indicates neither agree or disagree to the statement. The findings from table 4.4 show that the average mean was 3.6. These findings suggest that the respondents were generally in agreement with the statement on E-learning adoption.

Additionally, Table 4.4 shows that respondents agreed on (6) out of the (8) statements used to measure the adoption rate of e-learning in midwifery schools in Uganda as detailed; on whether the number of students on e-learning had been increasing from the time the program was initiated, (29.3%) somewhat agreed and (51.5%) strongly agreed. This means that the majority, (80.8%) were of the view that the number of students on e-learning had been increasing from the time the program was initiated.

In respect to whether the number of logins on the Learning Management System (LMS) had been increasing over time, (34.7%) somewhat agreed and (18.6%) strongly agreed. This implies that the majority, (53.3%) were of the view that the number of logins on the Learning Management System had been increasing over time. It was revealed by most key informants that although the number of logins on the LMS had been increasing over time, the system later collapsed, and they were now relying on mostly e-mails and WhatsApp as the means of communication between the students and the tutors.

In regard to whether tutors provided timely e-feedback to their students, (40.7%) somewhat agreed and (18.0%) strongly agreed. This suggests that the majority, (58.7%) were of the view that tutors provided timely e-feedback to their students. Asked further whether students provided timely e-feedback to their tutors, (47.3%) somewhat agreed and (18.6%) strongly agreed. This means that the majority, (65.9%) were of the view that students provided timely e-feedback to their tutors.

In respect to whether the quality of the e-learning program had improved with time, (43.7%) somewhat agreed and (24.0%) strongly agreed. This means that the majority, (67.7%) were of the view that the quality of the e-learning program has improved with time. In regard to whether the e-learning program was exciting, (39.5%) somewhat agreed and (40.7%) strongly agreed. This implies that the majority (80.2%) were of the view that the e-learning program was exciting.

Table 4.4 further shows that the majority of the respondents had mixed reactions on (2) out of the (8) statements used to measure e-learning adoption in midwifery schools in Uganda as detailed; on whether online support mechanisms to students on e-learning had been diversifying since the inception of the e-learning program, (7.2%) strongly disagreed, whereas (17.4%) somewhat disagreed, (25.7%) neither agreed nor disagreed, while 41.9% somewhat agreed and 7.8% strongly agreed. This means that there were mixed reactions on whether online support mechanisms to the students on e-learning have been diversifying since the inception of the e-learning program, with (24.5%) in disagreement, (25.7%) neither agreed nor disagreed and (49.7%) in agreement. Online support mechanisms to the students on e-learning were interrupted when the LMS failed, and tutors and students resorted to using of either e-mails or WhatsApp as the only means of communication.

Furthermore, on whether different e-learning program activities had been introduced overtime, 11.4% strongly disagreed, whereas 18.0% somewhat disagreed, 24.6% neither agreed nor disagreed, while 34.7% somewhat agreed and 11.4% strongly agreed. This means that there were mixed reactions on whether different e-learning program activities had been introduced overtime, with 29.4% in disagreement, 24.6% neither agreed nor disagreed and 46.1% in agreement.

**4.4.1 Average Rating of E-Learning Adoption**

On average, (3.6%) of the respondents strongly disagreed to all the statements used to measure e-learning adoption, whereas (4.8%) somewhat disagreed, (30.5%) neither agreed nor disagreed, (46.1%) somewhat agreed and (15.0%) strongly agreed. This is an indication that generally the respondents agreed to all the statements used to measure the adoption of e-learning in midwifery schools in Uganda.

**4.5 Technology Leadership Practices and the Adoption of E-Learning**

This study also sought to ascertain what the relationship between technology leadership practices of end users and e-learning adoption was. The hypothesis here was that technology leadership practices do not significantly determine e-learning adoption in midwifery schools in Uganda.

**4.5.1 Views of Participants on Technology Leadership Practices**

In order to understand the views of the respondents on technology leadership practices, so as to evaluate whether they determine e-learning adoption in midwifery schools in Uganda, the study used (6) statements on the questionnaire to which the respondents were required to show their level of agreement or disagreement and the findings are presented in table 4.5. Qualitative findings collected from interview guides, FGD's and document reviews were used to supplement the quantitative findings.

**Table 4.5: Views of Participants on Technology Leadership Practices**

| Technology Leadership Practices | SD | SWD | NAD | SWA | SA | Mean |
|---|---|---|---|---|---|---|
| 1) Our school administration is committed at providing most of the technological facilities we require on our e-learning program. | 21 (12.6) | 29 (17.4) | 23 (13.8) | 67 (40.1) | 27 (16.2) | 3.3 |
| 2) In our school, tutors and students are always encouraged to use technological facilities inside and outside classroom to supplement our learning | 20 (12.0) | 17 (10.2) | 13 (7.8) | 65 (38.9) | 52 (31.1) | 3.7 |
| 3) At our school, there is a culture of appreciating those who take an extra mile in using technology to improve the teaching and learning process | 40 (24.0) | 29 (17.4) | 17 (10.2) | 53 (31.7) | 28 (16.8) | 3.0 |
| 4) At our school, there are people that we can visibly refer to as 'champions' that advocate for the use of technology in our teaching and learning processes. | 28 (16.8) | 17 (10.2) | 21 (12.6) | 73 (43.7) | 28 (16.8) | 3.3 |
| 5) Our school provides an ambient and supportive environment for the use of technology in our teaching and learning processes. | 15 (9.0) | 18 (10.8) | 18 (10.8) | 74 (44.3) | 42 (25.1) | 3.7 |
| 6) Our e-learning program is seen as an opportunity for embedding technology in all our learning programs in our school | 10 (6.0) | 15 (9.0) | 34 (20.4) | 65 (38.9) | 43 (25.7) | 3.7 |
| **Average Rating of Technology Leadership Practices** | 22 (13.4) | 21 (12.5) | 21 (12.5) | 66 (39.6) | 37 (22.0) | 3.4 |

**Source:** Primary data

**Key:** SD: Strongly Disagree, SWD: Somewhat Disagree, NAD: Neither Agree nor Disagree,

SWA: Somewhat Agree, SA: Strongly Agree

Table 4.5 shows that respondents agreed on (5) out of the (6) statements used to

measure technology leadership practices in midwifery schools in Uganda as detailed; on

whether the school administration was committed to providing most of the technological

facilities students and staff required on the e-learning program, (40.1%) somewhat agreed and (16.2%) strongly agreed. This means that the majority (56.3%) were of the view that the school administration is committed at providing most of the technological facilities students and staff require on the e-learning program.

It was established that all the schools have a budget towards support of technological facilities used on the e-learning program. A key informant from midwifery school "C" revealed as thus.

The school shares the internet facilities with the hospital, and it is the hospital that pays all bills related to Internet that students and tutors use.

In respect to whether tutors and students are always encouraged to use technological facilities inside and outside classroom to supplement their learning, (38.9%) somewhat agreed and (31.1%) strongly agreed. This implies that the majority, (70.0%) were of the view that tutors and students are always encouraged to use technological facilities inside and outside classroom to supplement their learning. A number of schools have set up WIFI to encourage tutors and students to use technological facilities both inside and outside classrooms as a way of supplementing their learning.

On whether there are people that students and staffs can visibly refer to as 'champions' that advocate for the use of technology in their teaching and learning processes, (43.7%) somewhat agreed and (16.8%) strongly agreed. This suggests that the majority, (60.5%) were of the view that there are people that students and staffs can visibly refer to as 'champions' that advocate for the use of technology in their teaching and learning processes.

In regard to whether schools provide an ambient and supportive environment for the use of technology in their teaching and learning processes, (44.3%) somewhat agreed and (25.1%) strongly agreed. This means that the majority, (69.4%) were of the view that schools provide an ambient and supportive environment for the use of technology in their teaching

and learning processes. Most of the schools have very conducive environments that support the use of technology in their teaching and learning processes. For example, some of them have desks under trees where students can sit and use their laptops using WIFI to connect to the Internet.

Furthermore, on whether the e-learning program is seen as an opportunity for embedding technology in all their learning programs in the school, (38.9%) somewhat agreed and (25.7%) strongly agreed. This implies that the majority, (64.6%) were of the view that the e-learning program is seen as an opportunity for embedding technology in all their learning programs in the school.

Table 4.5 further shows that there were mixed reactions on (1) out of the (6) statements used to measure technology leadership practices in midwifery schools in Uganda as detailed; on whether there is a culture of appreciating those who take an extra mile in using technology to improve their teaching and learning process, (24.0%) strongly disagreed, whereas (17.4%) somewhat disagreed, (10.2%) neither agreed nor disagreed, while 31.7% somewhat agreed and (16.8%) strongly agreed. This means that there were mixed reactions on whether there is a culture of appreciating those who take an extra mile in using technology to improve their teaching and learning process, with 41.4% in disagreement, (10.2%) neither in agreement nor in disagreement and (48.5%) in agreement. It was revealed that most of the schools do not have a culture or even policy on appreciating those who take an extra mile in using technology to improve their teaching and learning process. However, amongst both tutors and students there is unofficial recognition of those that are good at using technology to improve their teaching and learning process.

### 4.5.2 Average Rating of Technology Leadership Practices

On average (3.0%) of the respondents strongly disagreed to all the statements used to measure technology leadership practices, whereas (13.8%) somewhat disagreed, (27.5%)

neither agreed nor disagreed, (39.5%) somewhat agreed and (16.2%) strongly agreed. This is an indication that generally the respondents agreed to all the statements used to measure technology leadership practices in midwifery schools in Uganda, with an average of (16.8%) in disagreement, (27.5%) neither in agreement nor in disagreement and (55.7%) in agreement.

### 4.5.3 Correlation Analysis for Technology Leadership Practices and the Adoption of E-Learning.

In order to assess whether there is a relationship between technology leadership practices and e-learning adoption in midwifery schools in Uganda, Pearson's product-moment correlation coefficient was generated at (95%) confidence level to compute the degree and direction of the relationship between the two variables and the results are presented in table 4.6.

**Table 4.6: Correlation Matrix for Technology Leadership Practices and the Adoption of E-Learning.**

|  |  | Technology leadership practices | E-learning adoption |
|---|---|---|---|
| Technology leadership practices | Pearson Correlation | 1 | .691[*] |
|  | Sig. (2-tailed) |  | .000 |
|  | N | 167 | 167 |
| E-learning adoption | Pearson Correlation | .691[*] | 1 |
|  | Sig. (2-tailed) | .000 |  |
|  | N | 167 | 167 |
| *. Correlation is significant at the 0.05 level (2-tailed). |  |  |  |

**Source:** Generated from primary data

Table 4.6 shows that there is a moderate positive relationship between technology leadership practices and e-learning adoption in midwifery schools in Uganda, (r = 0.691, p = 0.000, n = 167). The relationship is statistically significant at 95% confidence level since p-value (Sig.) equal 0.000 (<0.050). This means that improvements in technology leadership

practices shall be related to improvements in e-learning adoption in midwifery schools in Uganda. Similarly decline in technology leadership practices shall be related to decline in e-learning adoption in midwifery schools in Uganda.

**4.5.4 Regression Analysis for Technology Leadership Practices and the Adoption of E-Learning**

Regression analysis was used to evaluate whether technology leadership practices have a significant influence on e-learning adoption in midwifery schools in Uganda. The coefficient of determination (R Square) under regression analysis is presented in table 4.7.

**Table 4.7: Model Summary of Regression Analysis for Technology Leadership Practices and the Adoption of E-Learning**

| Model | R | R Square | Adjusted R Square |
|-------|---|----------|-------------------|
| 1 | .691[a] | .478 | .475 |

a. Predictors: (Constant), Technology leadership abilities

**Source:** Generated from primary data

Table 4.7 shows Pearson's correlation coefficient (R = 0.691), Coefficient of determination or R Square of 0.478 and Adjusted R Square of 0.475. An adjusted R Square of 0.475 means that technology leadership practices account for 47.5% of the variance in e-learning adoption in midwifery schools in Uganda. This means that apart from technology leadership practices there are other factors that influence e-learning adoption in midwifery schools in Uganda.

To assess the overall significance of the regression model for technology leadership practices and e-learning adoption in midwifery schools in Uganda, Analysis of Variance (ANOVA) and regression coefficients were generated, and the results are presented in table 4.8.

**Table 4.8: ANOVA and Regression Coefficients for Technology Leadership Practices and the Adoption of E-Learning**

| | ANOVA | | | Coefficients | | |
| --- | --- | --- | --- | --- | --- | --- |
| Model | Df | F | Sig. | Standardized Beta Coefficient | T | Sign |
| Regression | 1 | 151.083 | 0.000[a] | 0.691 | 12.292 | 0.000[b] |

a. Dependent Variable: E-learning adoption

b. Predictors: (Constant), Technology leadership practices

**Source:** Generated from primary data

In determining whether a regression model is significant, the decision rule is that the calculated p-value (level of significance) for ANOVA must be less than or equal to 0.05. Since the calculated p-value of 0.000[a] is less than 0.05, the regression model was found to be statistically significant (F=151.083, df = 1, p<0.05 (=0.000)). This means that technology leadership practices have a statistically significant contribution to e-learning adoption in midwifery schools in Uganda.

Furthermore, to establish whether technology leadership practices are predictors of e-learning adoption in midwifery schools in Uganda and determine the magnitude to which technology leadership practices influence e-learning adoption in midwifery schools in Uganda, Standardized Beta and t Coefficients were generated. For the magnitude to be significant the decision rule is that the t value must not be close to 0 and the p-value must be less than or equal to 0.05. Since the t – value of 12.292 is not close to 0 and p-value<0.05 (=0.000), the study confirmed that technology leadership practices are predictors of e-learning adoption in midwifery schools in Uganda. A standardized Beta coefficient of 0.691 means; every 1-unit increase in technology leadership practices will lead to an increase of 0.691 units of e-learning adoption in midwifery schools in Uganda.

Research findings from correlation analysis established that technology leadership practices have a moderate positive statistically significant relationship with e-learning adoption in midwifery schools in Uganda. Findings from regression analysis confirmed that technology leadership practices have a statistically significant positive influence on e-learning adoption in midwifery schools in Uganda. The study therefore rejected the null research hypothesis that was stated as thus: (H0) - Technology leadership practices do not significantly determine e-learning adoption in midwifery schools in Uganda.

## 4.6 Instructional Design Strategies and the Adoption of E-Learning

This section of the study was interested in ascertaining the influence of instructional design processes on e-learning adoption. The hypothesis advanced was that instructional design processes do not significantly determine e-learning adoption in midwifery schools in Uganda. The first part of this section presents the results in the order of views of participants on instructional design processes, correlation, and regression analysis of instructional design processes and e-learning adoption including analysis of variance (ANOVA).

### 4.6.1 Participants Views on Instructional Design Strategies

In order to apprehend the views of the respondents on instructional design processes, so as to evaluate whether it has influence on e-learning adoption in midwifery schools in Uganda, the study used seven (7) statements on the questionnaire to which the respondents were required to show their level of agreement or disagreement and the findings are presented in table 4.9. Qualitative findings collected from interview guides, FGDs and document reviews were used to supplement the quantitative findings.

**Table 4.9: Views of Participants on Instructional Design Strategies**

| Instructional design Strategies used | SD | SWD | NAD | SWA | SA | Mean |
|---|---|---|---|---|---|---|
| 1) In our school, the instructional materials for e-learning program are interactive | 22 (13.2) | 36 (21.6) | 14 (8.4) | 70 (41.9) | 25 (15.0) | 3.2 |
| 2) At our school, tutors and students always work together in updating the e-learning materials | 25 (15.0) | 18 (10.8) | 17 (10.2) | 74 (44.3) | 33 (19.8) | 3.4 |
| 3) At our school, we go through a process of analysis, design, development, implementation and evaluation as we develop our e-learning content | 30 (18.0) | 27 (16.2) | 25 (15.0) | 64 (38.3) | 21 (12.6) | 3.1 |
| 4) At our school, there is a routine of eliciting feedback from tutors and students on the e-learning instructional materials | 17 (10.2) | 27 (16.2) | 28 (16.8) | 70 (41.9) | 25 (15.0) | 3.4 |
| 5) At our school, tutors and students collaboratively develop the e-learning materials for our program | 26 (15.6) | 32 (19.2) | 26 (15.6) | 67 (40.1) | 16 (9.6) | 3.1 |
| 6) At our school, both tutors and students are given an opportunity to provide feedback on our e-learning program | 15 (9.0) | 22 (13.2) | 15 (9.0) | 73 (43.7) | 42 (25.1) | 3.6 |
| 7) At our school, we engage in more than one e-learning activity on our e-learning program (examples of e-learning activities are CD-ROMS, video clips, audio clips, small group work, chat, debate, discussion, Facebook link, etc.) | 30 (18.0) | 16 (9.6) | 17 (10.2) | 61 (36.5) | 43 (25.7) | 3.4 |
| **Average Rating for instructional design Strategies** | 24 (14.1) | 25 (15.2) | 20 (12.1) | 68 (41.0) | 29 (17.5) | 3.3 |

**Source:** Primary data

**Key:** SD: Strongly Disagree, SWD: Somewhat Disagree, NAD: Neither Agree nor Disagree,

SWA: Somewhat Agree, SA: Strongly Agree.

In the table 4.9 above a mean between 1.0 and 2.4 indicates disagreement and a mean between to 3.5 and 5.0 indicates agreement, whereas a mean between 2.5 and 3.4 means neither agree or disagree to the statement. The table shows that the average mean was 3.3. These findings suggest that the respondents were generally neither in agreement or disagreement with the statement on instructional design. Table 4.9 further shows that respondents agreed on (6) out of the (7) statements used to measure instructional design strategies in midwifery schools in Uganda as detailed; (41.9%) somewhat agreed that instructional design strategies materials for e-learning programs are interactive (41.9%) somewhat agreed and (15.0%) strongly agreed. This means that the majority, (56.9%) were of the view that the instructional materials for eLearning program are interactive. A participant in a FGD observed that:

The instruction materials for e-learning program are interactive since they use a lot of audio and video clips.

In respect to whether tutors and students always work together in updating the e-Learning materials, (25.8%) somewhat agreed and (19.8%) strongly agreed. This implies that the majority, (64.1%) were of the view that tutors and students always work together in updating the e-learning materials. In line with the above findings a key informant explained that tutors always call upon their students to help whenever there is need to update e-learning materials especially on the computers that the tutors use for facilitation of face-face sessions.

On whether students go through a process of analyse, design, develop, implement, and evaluate as they develop the e-learning content, (38.3%) somewhat agreed and (12.6%) strongly agreed. This suggests that the majority, (50.9%) were of the view that students go through a process of analyse, design, develop, implement, and evaluate as they develop the e-learning content.

On whether there is a routine of eliciting feedback from tutors and students on the e-learning instruction materials, (41.9%) somewhat agreed and (15.0%) strongly agreed. This means that the majority, (56.9%) were of the view that there is a routine of eliciting feedback from tutors and students on the e-learning instruction materials. During one of the FGDS it was revealed that students get a lot of follow-up e-mails from tutors regarding course works.

Furthermore, on whether both tutors and students are given an opportunity to provide feedback on the e-learning program, (43.7%) somewhat agreed and (25.1%) strongly agreed. This implies that the majority, 68.8% were of the view that both tutors and students are given an opportunity to provide feedback on our e-learning program. A key informant explained that students are encouraged to give feedback whenever they turn up for the face-face sessions and tutors usually hold meetings at the end of each semester to discuss the challenges the e-learning students are facing.

Asked further whether they engage in more than one e-learning activity on their e-learning program, (36.5%) somewhat agreed and (25.7%) strongly agreed. This suggests that the majority, (61.2%) were of the view that they engage in more than one e-learning activity on their e-learning program. Amongst the e-learning activities are CD-ROMS, video clips, audio clips, small group work, chat, debate, discussion, Facebook link, etc.

Table 4.9 further shows that there were mixed reactions on one (1) out of the seven (7) statements used to measure school instructional design in midwifery schools in Uganda as detailed; on whether tutors and students collaboratively develop the e-learning materials for their programs, (15.6%) strongly disagreed, whereas (19.2%) somewhat disagreed, (15.6%) neither agreed nor disagreed, while (40.1%) somewhat agreed and (9.6%) strongly agreed. This means that there were mixed reactions on whether tutors and students collaboratively develop the e-learning materials for their programs, with (34.8%) in disagreement, (15.6%) neither in agreement nor in disagreement and (49.7%) in agreement.

**4.6.2 Average Rating of Instructional Design Strategies**

On average (7.8%) of the respondents strongly disagreed to all the statements used to measure instructional design, whereas (16.2%) somewhat disagreed, (24.0%) neither agreed nor disagreed, (40.1%) somewhat agreed and (12.0%) strongly agreed. This is an indication that generally the respondents agreed to all the statements used to measure instructional design strategies in the selected midwifery schools in Uganda, with an average of (24.0%) in disagreement, a similar number neither in agreement nor in disagreement and (52.1%) in agreement.

**4.6.3 Correlation Analysis for Instructional Design Strategies and the Adoption of E-Learning**

In order to assess whether there is a relationship between instructional design processes and the adoption of e-learning in the selected midwifery schools in Uganda, Pearson's product-moment correlation coefficient was generated at 95% confidence level to compute the degree and direction of the relationship between the two variables and the results are presented in table 4.10.

**Table 4.10: Correlation Matrix for Instructional Design Strategies and the Adoption of E-Learning**

|  |  | Instructional design | E-learning adoption |
|---|---|---|---|
| Instructional design | Pearson Correlation | 1 | .625[*] |
|  | Sig. (2-tailed) |  | .000 |
|  | N | 167 | 167 |
| E-learning adoption | Pearson Correlation | .625[*] | 1 |
|  | Sig. (2-tailed) | .000 |  |
|  | N | 167 | 167 |
| *. Correlation is significant at the 0.05 level (2-tailed). |  |  |  |

**Source:** Generated from primary data

Table 4.10 shows that there is a moderate positive relationship between instructional design strategies and adoption of e-learning in midwifery schools in Uganda, (r = 0.625, p = 0.000, n = 167). The relationship is statistically significant at 95% confidence level since p-value (Sig.) equal 0.000 (<0.050). This means that improvements in instructional design shall be related to improvements in e-learning adoption in midwifery schools in Uganda. Similarly decline in instructional design shall be related to decline in e-learning adoption in midwifery schools in Uganda.

## 4.6.4 Regression Analysis for Instructional Design Strategies and E-Learning Adoption

Regression analysis was used to analyse whether instructional design has a significant influence on e-learning adoption in midwifery schools in Uganda. The coefficient of determination (R Square) under regression analysis is presented in table 4.11.

**Table 4.11: Model Summary for Regression Analysis for Instructional Design Strategies and the Adoption of E-Learning**

| Model | R | R Square | Adjusted R Square |
|-------|-----|----------|-------------------|
| 1 | .625[a] | .390 | .387 |

a. Predictors: (Constant), Instructional design

**Source:** Generated from primary data

Table 4.11 shows Pearson's correlation coefficient (R = 0.625), Coefficient of determination or R Square of 0.390 and Adjusted R Square of 0.387. An adjusted R Square of 0.387 means that instructional design account for 38.7% of the variance in e-learning adoption in midwifery schools in Uganda. This means that apart from instructional design there are other factors that contribute to e-learning adoption in midwifery schools in Uganda.

To assess the overall significance of the regression model for instructional design and e-learning adoption in midwifery schools in Uganda, Analysis of Variance (ANOVA) and regression coefficients were generated, and the results are presented in table 4.12.

**Table 4.12: ANOVA and Regression Coefficients for Instructional Design and the Adoption of E-Learning**

| | ANOVA | | | Coefficients | | |
|---|---|---|---|---|---|---|
| Model | Df | F | Sig. | Standardized Beta Coefficient | T | Sign |
| Regression | 1 | 105.685 | 0.000[a] | 0.625 | 10.280 | 0.000[b] |

a. Dependent Variable: E-learning adoption

b. Predictors: (Constant), Instructional design

**Source:** Generated from primary data

In determining whether a regression model is significant, the decision rule is that the calculated p-value (level of significance) for ANOVA must be less than or equal to 0.05. Since the calculated p-value of 0.000[a] is less than 0.05, the regression model was found to be statistically significant (F=105.685, df = 1, p<0.05 (=0.000)). This means that instructional design has a statistically significant influence on e-learning adoption in midwifery schools in Uganda.

Furthermore, to establish whether instructional design processes are a predictor of e-learning adoption in midwifery schools in Uganda and determine the magnitude to which instructional design influences e-learning adoption in midwifery schools in Uganda, Standardized Beta and t Coefficients were generated. For the magnitude to be significant the decision rule is that the t value must not be close to 0 and the p-value must be less than or equal to 0.05. Since the t – value of 10.280 is not close to 0 and p-value<0.05 (=0.000), the study confirmed that instructional design is a predictor of e-learning adoption in midwifery schools in Uganda. A standardized Beta coefficient of 0.625 means; every 1-unit increase in instructional design will lead to an increase of 0.625 units of e-learning adoption in midwifery schools in Uganda.

Research findings from correlation analysis established that instructional design has a moderate positive statistically significant relationship with e-learning adoption in midwifery schools in Uganda. Findings from regression analysis confirmed that instructional design has a statistically significant positive influence on e-learning adoption in midwifery schools in Uganda. The study therefore rejected the null hypothesis that was stated as thus: ($H_0$) - Instructional design processes do not significantly determine e-learning adoption in midwifery schools in Uganda.

## 4.7 Online Quality Management Practices and the Adoption of E-Learning

This part of the study was interested in ascertaining the influence of online quality management practices on e-learning adoption, and as such the hypothesis set was that online quality management aspects are not significantly relevant to e-learning adoption in midwifery schools in Uganda.

### 4.7.1 Views of Participants on Online Quality Management

In order to elicit the views of the respondents on online quality management, so as to analyse whether it has influence on e-learning adoption in midwifery schools in Uganda, the study used six (6) statements on the questionnaire to which the respondents were required to show their level of agreement or disagreement and the findings are presented in table 4.13. Qualitative findings collected from interview guides, FGDs and document reviews were used to supplement the quantitative findings.

**Table 4.13: Views of Participants on Online Quality Management Practices**

| Online Quality Management | SD | SWD | NAD | SWA | SA | Mean |
|---|---|---|---|---|---|---|
| 1) Our e-learning program provides the best online learning experience | 26 (15.6) | 36 (21.6) | 26 (15.6) | 63 (37.7) | 16 (9.6) | 3.0 |
| 2) Our Learning Management System (LMS) meets most of my online learning expectations | 31 (18.6) | 36 (21.6) | 23 (13.8) | 69 (41.3) | 8 (4.8) | 2.9 |
| 3) The CD-ROMS we use on our e-learning program meets my online learning expectations | 29 (17.4) | 27 (16.2) | 40 (24.0) | 62 (37.1) | 9 (5.4) | 3.0 |
| 4) Our e-learning program can be described as an excellent online learning experience | 21 (12.6) | 41 (24.6) | 25 (15.0) | 63 (37.7) | 17 (10.2) | 3.1 |
| 5) Our school, has set guidelines for improving the quality aspects of our e-learning program | 21 (12.6) | 26 (15.6) | 29 (17.4) | 66 (39.5) | 25 (15.0) | 3.3 |
| 6) The quality aspects of our e-learning program are collaboratively worked upon together with tutors, students, and the school administrators | 22 (13.2) | 22 (13.2) | 22 (13.2) | 62 (37.1) | 39 (23.4) | 3.4 |
| **Average Rating of online quality Management Practices** | 25 (15.5) | 31 (18.8) | 28 (16.5) | 64 (38.4) | 19 (11.4) | 3.1 |

**Source:** Primary data

**Key:** SD: Strongly Disagree, SWD: Somewhat Disagree, NAD: Neither Agree nor Disagree, SWA: Somewhat Agree, SA: Strongly Agree

In the table 4.13 above a mean between 1.0 and 2.4 indicate disagreement and a mean between 3.5 and 5.0 indicate agreement, whereas a mean between 2.5 and 3.4 means neither agree or disagree to the statements, Table 4.13 further shows that respondents agreed on two (2) out of the six (6) statements used to measure Online quality management in midwifery schools in Uganda as detailed; on whether the school has set guidelines for improving the quality aspects of the e-learning program, 39.5% somewhat agreed and 15.0% strongly

agreed. This means that the majority, 54.5% were of the view that the school has set guidelines for improving the quality aspects of the e-learning program.

In respect to whether the quality aspects of the e-learning program are collaboratively worked upon together with Tutors, Students, and the school administrators, 37.1% somewhat agreed and 23.4% strongly agreed. This implies that the majority, 60.5% were of the view that the quality aspects of the e-learning program are collaboratively worked upon together with Tutors, Students, and the school administrators.

Table 4.13 further shows that there were mixed reactions on four (4) out of the six (6) statements used to measure online quality management in midwifery schools in Uganda as detailed; on whether the eLearning program provides the best online learning experience, 15.6% strongly disagreed, whereas 21.6% somewhat disagreed, 15.6% neither agreed nor disagreed, while 37.7% somewhat agreed and 9.6% strongly agreed. This means that there were mixed reactions on whether the e-learning program provides the best online learning experience, with 37.2% in agreement, 15.6% neither in agreement nor in disagreement and 47.3% in agreement. During a FGD it was observed that younger students find it much more interesting using online learning than their counterparts the older ones.

In regard to whether the Learning Management System (LMS) meets most of their online learning expectations, 18.6% strongly disagreed, whereas 21.6% somewhat disagreed, 13.8% neither agreed nor disagreed, while 41.3% somewhat agreed and 4.8% strongly agreed. This implies that there were mixed reactions on whether the Learning Management System (LMS) meets most of their online learning expectations, with 40.2% in disagreement, 13.8% neither in agreement nor in disagreement and 46.1% in agreement. A key informant noted that the LMS will only meet students' online learning expectations when the tutors have put in an effort to take care of the learning expectations of the students and include them in the materials uploaded on the LMS.

On whether the CD-ROMS they use on the e-learning program meets their online learning expectations, 17.4% strongly disagreed, whereas 16.2% somewhat disagreed, 24.0% neither agreed nor disagreed, while 37.1% somewhat agreed and 5.4% strongly agreed. This suggests that there were mixed reactions on whether the CD-ROMS they use on the e-learning program meets their online learning expectations, with 33.6% in disagreement, 24.0% neither in agreement nor in disagreement and 42.5% in agreement. The above findings are similar to that regarding students' expectations on the LMS, it shall also depend on the effort put in by tutors to ensure that they take care of the learning expectations of the students and include them in the materials provided on CD-ROMS.

In respect to whether the e-learning program can be described as an excellent online learning experience, 12.6% strongly disagreed, whereas 24.6% somewhat disagreed, 15.0% neither agreed nor disagreed, while 37.7% somewhat agreed and 10.2% strongly agreed. This means that there were mixed reactions on whether the e-learning program can be described as an excellent online learning experience, with 37.2% in disagreement, 15.0% neither in agreement nor in disagreement and 47.9% in agreement. This is similar to online learning experience and as it was observed, younger students may describe online learning experience as excellent, while their counter may not describe it in the same way.

### 4.7.2 Average Rating of Online Quality Management Practices

On average 7.2% of the respondents strongly disagreed to all the statements used to measure online quality management, whereas 18.6% somewhat disagreed, 29.3% neither agreed nor disagreed, 36.5% somewhat agreed and 8.4% strongly agreed. This is an indication that generally the respondents had mixed reactions to all the statements used to measure online quality management in midwifery schools in Uganda, with on average 25.8% in disagreement, 29.3% neither in agreement nor in disagreement and 44.9% in agreement.

**4.7.3 Correlation Analysis for Online Quality Management Practices and the Adoption of E-Learning**

In order to assess whether there is a relationship between online quality management and e-learning adoption in midwifery schools in Uganda, Pearson's product-moment correlation coefficient was generated at 95% confidence level to compute the degree and direction of the relationship between the two variables and the results are presented in table 4.14.

**Table 4.14: Correlation Matrix for Online Quality Management Practices and the Adoption of E-Learning**

| | | Online quality management practices | E-learning adoption |
|---|---|---|---|
| Online quality management practices | Pearson Correlation | 1 | .747[*] |
| | Sig. (2-tailed) | | .000 |
| | N | 167 | 167 |
| E-learning adoption | Pearson Correlation | .747[*] | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 167 | 167 |
| *. Correlation is significant at the 0.05 level (2-tailed). | | | |

**Source:** Generated from primary data

Table 4.14 shows that there is a strong positive relationship between online quality management and e-learning adoption in midwifery schools in Uganda, (r = 0.747, p = 0.000, n = 167). The relationship is statistically significant at 95% confidence level since p-value (Sig.) equal 0.000 (<0.050). This means that improvements in online quality management shall be related to improvements in e-learning adoption in midwifery schools in Uganda. Similarly decline in online quality management shall be related to decline in e-learning adoption in midwifery schools in Uganda.

**4.7.4 Regression Analysis for Online Quality Management Practices and the Adoption of E-Learning**

Regression analysis was used to analyse whether online quality management has a significant influence on e-learning adoption in midwifery schools in Uganda. The coefficient of determination (R Square) under regression analysis is presented in table 4.15.

**Table 4.15: Model Summary for Regression Analysis for Online Quality Management Practices and the Adoption of E-Learning**

| Model | R | R Square | Adjusted R Square |
|---|---|---|---|
| 1 | .747[a] | .558 | .555 |

a. Predictors: (Constant), Online quality management practices

**Source:** Generated from primary data

Table 4.15 shows Pearson's correlation coefficient (R = 0.747), Coefficient of determination or R Square of 0.558 and Adjusted R Square of 0.555. An adjusted R Square of 0.555 means that online quality management accounts for 55.5% of the variance in e-learning adoption in midwifery schools in Uganda. This means that apart from online quality management there are other factors that contribute to e-learning adoption in midwifery schools in Uganda.

To assess the overall significance of the regression model for online quality management and e-learning adoption in midwifery schools in Uganda, Analysis of Variance (ANOVA) and regression coefficients were generated, and the results are presented in table 4.16.

**Table 4.16: ANOVA and Regression Coefficients for Online Quality Management Practices and the Adoption of E-Learning**

| | ANOVA | | | Coefficients | | |
|---|---|---|---|---|---|---|
| Model | Df | F | Sig. | Standardized Beta Coefficient | T | Sign |
| Regression | 1 | 208.186 | 0.000[a] | 0.747 | 14.429 | 0.000[b] |
| a. Dependent Variable: E-learning adoption | | | | | | |
| b. Predictors: (Constant), Online quality management practices | | | | | | |

**Source:** Generated from primary data

In determining whether a regression model is significant, the decision rule is that the calculated p-value (level of significance) for ANOVA must be less than or equal to 0.05. Since the calculated p-value of 0.000[a] is less than 0.05, the regression model was found to be statistically significant (F=208.186, df = 1, p<0.05 (=0.000)). This means that online quality management has a statistically significant influence on e-learning adoption in midwifery schools in Uganda.

Furthermore, to establish whether online quality management is a predictor of e-learning adoption in midwifery schools in Uganda and determine the magnitude to which online quality management influences e-learning adoption in midwifery schools in Uganda, Standardized Beta and t Coefficients were generated. For the magnitude to be significant the decision rule is that the t value must not be close to 0 and the p-value must be less than or equal to 0.05. Since the t – value of 14.429 is not close to 0 and p-value<0.05 (=0.000), the study confirmed that online quality management is a predictor of e-learning adoption in midwifery schools in Uganda. A standardized Beta coefficient of 0.747 means; every 1-unit increase in online quality management will lead to an increase of 0.747 units of e-learning adoption in midwifery schools in Uganda.

Research findings from correlation analysis established that online quality management has a strong positive statistically significant relationship with e-learning adoption in midwifery schools in Uganda. Findings from regression analysis confirmed that online quality management has a statistically significant positive influence on e-learning adoption in midwifery schools in Uganda. The study therefore rejected the null research hypothesis that was stated as thus: (H0) - Online quality management aspects are not significantly relevant to e-learning adoption in midwifery schools in Uganda.

**4.8 School Financing Mechanisms and the Adoption of E-Learning**

This part of the study investigated the relationship between school financing mechanisms and e-learning adoption, and the hypothesis posed was that school financing mechanisms are not significantly relevant to e-learning adoption in midwifery schools in Uganda.

**4.8.1 Views of Participants on School Financing Mechanisms**

In order to understand the views of the respondents on school financing mechanisms, so as to analyse whether they had a contribution to e-learning adoption in midwifery schools in Uganda, the study used six (6) statements on the questionnaire to which the respondents were required to show their level of agreement or disagreement and the findings are presented in table 4.17. Qualitative findings collected from interview guides, FGDs and document reviews were used to supplement the quantitative findings.

**Table 4.17: Views of Participants on School Financing Mechanism**

| School Financing Mechanism | SD | SWD | NAD | SWA | SA | Mean |
|---|---|---|---|---|---|---|
| 1) Our school has diversified sources of funds | 31 (18.6) | 29 (17.4) | 41 (24.6) | 57 (34.1) | 9 (5.4) | 2.9 |
| 2) In our school, there are deliberate efforts for expanding sources of funds. | 30 (18.0) | 28 (16.8) | 41 (24.6) | 54 (32.3) | 14 (8.4) | 3.0 |
| 3) At our school, there is good coordination mechanisms for our sources of funds | 32 (19.2) | 32 (19.2) | 42 (25.1) | 49 (29.3) | 12 (7.2) | 2.9 |
| 4) At our school there is a good school fees structure relevant to each study program | 27 (16.2) | 35 (21.0) | 17 (10.2) | 48 (28.7) | 40 (24.0) | 3.2 |
| 5) The school fees structure for e-learning program is affordable. | 38 (22.8) | 37 (22.2) | 25 (15.0) | 40 (24.0) | 27 (16.2) | 2.9 |
| 6) The school fees payment system for e-learning program is convenient | 25 (15.0) | 35 (21.0) | 44 (26.3) | 52 (31.1) | 11 (6.6) | 2.9 |
| **Average Rating of School Financing Mechanism** | 31 (18.3) | 33 (19.6) | 35 (21.0) | 50 (29.9) | 19 (11.3) | 3.0 |

**Source:** Primary data

**Key:** SD: Strongly Disagree, SWD: Somewhat Disagree, NAD: Neither Agree nor Disagree, SWA: Somewhat Agree, SA: Strongly Agree.

In the table 4.17 above a mean between 1.0 and 2.4 indicate disagreement and a mean between to 3.5 and 5.0 indicate agreement, whereas a mean between 2.5 and 3.4 means neither agree or disagree to the statement. The findings further show that the average mean was 3.0 These findings suggest that the respondents were generally neither in agreement or disagreement with the statement on school financing mechanisms.

Table 4.17 shows that respondents agreed on only one (1) out of the six (6) statements used to measure school financing role in midwifery schools in Uganda as detailed; on whether at the school there a good school fees structure is relevant to each study program, 28.7% somewhat agreed and 24.0% strongly agreed. This means that the majority, 52.7% were of the view that there is a good school fees structure relevant to each study program in

their schools. In line with the above quantitative findings a key informant when asked how convenient the school fees payment system is for e-learning program, she said.

The fees payment system is very friendly; students first pay a deposit then pay as and when they get some money up to the time of examinations. A 3$^{rd}$ year diploma is midwifery e-learning student added as thus.

The school fee's structure is quite relevant and convenient to us since we're allowed to pay in instalments.

Table 4.17 further shows that the majority of the respondents had mixed reactions on five (5) out of the six (6) statements used to measure school financing role in midwifery schools in Uganda as detailed; on whether schools have diversified sources of funds, 18.6% strongly disagreed, whereas 17.4% somewhat disagreed, 24.6% neither agreed or disagreed, while 34.1% somewhat agreed and 5.4% strongly agreed. This suggests that there were mixed reactions on whether schools have diversified sources of funds, with 36.0% in disagreements, 24.6% neither in agreement nor in disagreed and 39.5% in agreement. The major sources of funds for the schools include government conditional grants, school fees and tuition. A key informant explained that these sources of funds are not sufficient for the day today running of the institutions.

In respect to whether there are deliberate efforts for expanding sources of funds in the schools, 18.0% strongly disagreed, whereas 16.8% somewhat disagreed, 24.6% neither agreed nor disagreed, while 32.3% somewhat agreed and 8.4% strongly disagreed. This implies that there were mixed reactions on whether there are deliberate efforts for expanding sources of funds in the schools, with 34.8% in disagreement, 24.6% neither in agreement nor in disagreement and 40.7% in agreement. Asked further whether there is good coordination mechanisms for sources of funds in the schools, 19.2% strongly disagreed, whereas a similar number somewhat disagreed, 25.1% neither agreed nor disagreed, while 29.3% somewhat

agreed and 7.2% strongly agreed. This suggests that there were mixed reactions on whether there are good coordination mechanisms for sources of funds in the schools, with 38.4% in disagreement, 25.1% neither in agreement nor in disagreement and 36.5% in agreement. A key informant explained that although they would have liked to expand the sources of funds in the schools, they have a lot of limitations because the schools do not have authority to expand school fees without approval from government.

On whether the school fees structure for e-learning program is affordable, 22.8% strongly disagreed, whereas 22.2% somewhat agreed, 15.0% neither agreed nor disagreed, while 24.0% somewhat agreed and 16.2% strongly agreed. This means that there were mixed reactions on whether the school fees structure for e-learning program is affordable, with 45.0% in agreement, 15.0% neither in agreement nor in disagreement and 40.2% in agreement. Furthermore, on whether the school fees payment system for e-learning program is convenient, 15.0% strongly disagreed, whereas 21.0% somewhat agreed, 26.3% neither agreed nor disagreed, while 31.1% somewhat agreed and 6.6% strongly agreed. This suggests that there were mixed reactions on whether the school fees payment system for e-learning program is convenient, with 36.0% in disagreed, 26.3% neither in agreement nor in disagreement and 37.7% in agreement. During a FGD participants noted that although the school fees payment system appears to be convenient because of being able to pay in instalments, the actual fees is rather high. For instance, in Mengo School of Nursing and Midwifery, e-learning students are required to pay 2m shillings per semester whereas the full-time students are required to pay 2.8m. One of the FGD participants explained.

> The fees for e-learning are quite high especially when you're not being sponsored by your employers. The situation is even more complicated given the fact that you have to meet transport and accommodation expenses, procurement of a laptop and internet access fees.

**4.8.2 Average Rating of School Financing Mechanisms**

On average 6.0% of the respondents strongly disagreed to all the statements used to measure school financing mechanisms, whereas 21.6% somewhat disagreed, 40.1% neither agreed nor disagreed, 27.5% somewhat agreed and 4.8% strongly agreed. This is an indication that generally the respondents had mixed reactions to all the statements used to measure school financing role in midwifery schools in Uganda, with on average 27.6% in disagreement, 40.1% neither in agreement nor in disagreement and 32.3% in agreement.

**4.8.3 Correlation Analysis for School Financing Mechanism and the Adoption of E-Learning.**

In order to assess whether there is a relationship between school financing mechanisms and e-learning adoption in midwifery schools in Uganda, Pearson's product-moment correlation coefficient was generated at 95% confidence level to compute the degree and direction of the relationship between the two variables and the results are presented in table 4.18.

**Table 4.18: Correlation Matrix for School Financing Mechanisms and the Adoption of E-Learning.**

|  |  | School financing mechanisms | E-learning adoption |
|---|---|---|---|
| School financing mechanisms | Pearson Correlation | 1 | .402$^*$ |
|  | Sig. (2-tailed) |  | .000 |
|  | N | 167 | 167 |
| E-learning adoption | Pearson Correlation | .402$^*$ | 1 |
|  | Sig. (2-tailed) | .000 |  |
|  | N | 167 | 167 |

*. Correlation is significant at the 0.05 level (2-tailed).

**Source:** Generated from primary data

Table 4.18 shows that there is a moderate positive relationship between school financing role and e-learning adoption in midwifery schools in Uganda, (r = 0.402, p = 0.000, n = 167). The relationship is statistically significant at 95% confidence level since p-value (Sig.) equal 0.000 (<0.050). This means that improvements in school financing role shall be related to improvements in e-learning adoption in midwifery schools in Uganda. Similarly decline in school financing role shall be related to decline in e-learning adoption in midwifery schools in Uganda.

**4.8.4 Regression Analysis for School Financing Mechanisms and the Adoption of   E-Learning.**

Regression analysis was used to analyse whether school financing mechanisms have a significant contribution to e-learning adoption in midwifery schools in Uganda. The coefficient of determination (R Square) under regression analysis is presented in table 4.19.

**Table 4.19: Model Summary of Regression Analysis for School Financing Mechanisms and the Adoption of   E-Learning.**

| Model | R | R Square | Adjusted R Square |
|---|---|---|---|
| 1 | .402[a] | .162 | .157 |
| a. Predictors: (Constant), School financing mechanisms | | | |

**Source:** Generated from primary data

Table 4.19 shows Pearson's correlation coefficient (R = 0.402), Coefficient of determination or R Square of 0.162 and Adjusted R Square of 0.157. An adjusted R Square of 0.157 means that school financing role accounts for 15.7% of the variance in e-learning adoption in midwifery schools in Uganda. This means that apart from school financing role there are other factors that contribute to e-learning adoption in midwifery schools in Uganda.

To assess the overall significance of the regression model for school financing role and e-learning adoption in midwifery schools in Uganda, Analysis of Variance (ANOVA) and regression coefficients were generated, and the results are presented in table 4.20.

**Table 4.20: ANOVA and Regression Coefficients for School Financing Mechanisms and the Adoption of   E-Learning.**

| | **ANOVA** | | | **Coefficients** | | |
|---|---|---|---|---|---|---|
| Model | Df | F | Sig. | Standardized Beta Coefficient | T | Sign |
| Regression | 1 | 31.869 | 0.000[a] | 0.402 | 5.645 | 0.000[b] |

a. Dependent Variable: E-learning adoption
b. Predictors: (Constant), School financing mechanisms

**Source:** Generated from primary data

In determining whether a regression model is significant, the decision rule is that the calculated p-value (level of significance) for ANOVA must be less than or equal to 0.05. Since the calculated p-value of 0.000[a] is less than 0.05, the regression model was found to be statistically significant (F=31.869, df = 1, $p<0.05$ (=0.000)). This means that school financing role has a statistically significant contribution to e-learning adoption in midwifery schools in Uganda.

Furthermore, to establish whether school financing mechanisms are a predictor of e-learning adoption in midwifery schools in Uganda and determine the magnitude to which school financing role contributes to e-learning adoption in midwifery schools in Uganda, Standardized Beta and t Coefficients were generated. For the magnitude to be significant the decision rule is that the t value must not be close to 0 and the p-value must be less than or equal to 0.05. Since the t − value of 5.645 is not close to 0 and p-value<0.05 (=0.000), the study confirmed that school financing role is a predictor of e-learning adoption in midwifery schools in Uganda. A standardized Beta coefficient of 0.402 means; every 1-unit increase in

school financing role will lead to an increase of 0.402 units of e-learning adoption in midwifery schools in Uganda.

Research findings from correlation analysis established that school financing mechanisms had a moderately positive statistically significant relationship with the adoption of e-learning in midwifery schools in Uganda. Findings from regression analysis confirmed that school financing role had a statistically significant positive contribution to e-learning adoption in midwifery schools in Uganda. The study therefore rejects the null research hypothesis that was stated as thus: (H0) - School financing mechanisms are not significantly relevant to e-learning adoption in midwifery schools in Uganda.

## 4.9 Salient Practices in Each of the Four OCSFs

The salient practices in each of the four OCSF's were analysed at two levels. First, in phase one of the research using the quantitative approach and then analysing responses from the self-administered questionnaire. These results were validated by the second phase of the research which embraced a qualitative approach.

In the qualitative approach, four focus group discussions (FGDs) were held, i.e., two for students and two for tutors. A total of twenty-five (25) key informant interviews (KIIs) were conducted for example; five KIIs were held with students, another five were held with selected tutors, ten KIIs were held with administrators specifically selected principals of the midwifery schools and five KIIs were held with selected officials from Ministry of Education and Sports. Additionally, three key documents were reviewed from a selection of four participating schools, and these documents included annual school financial reports, annual schoolwork plans, and school policy on ICT use or e-learning program annual meeting minutes. Key findings about the salient practices are presented in the proceeding paragraphs.

### 4.9.1 Salient Technology Leadership Practices

Based on this study, there are six salient technology leadership practices for the management apparatus of a midwifery schools to critically look out for, and these are highlighted in Figure 4.3 below:

**Figure 4.3: Salient Technology Leadership Practices**
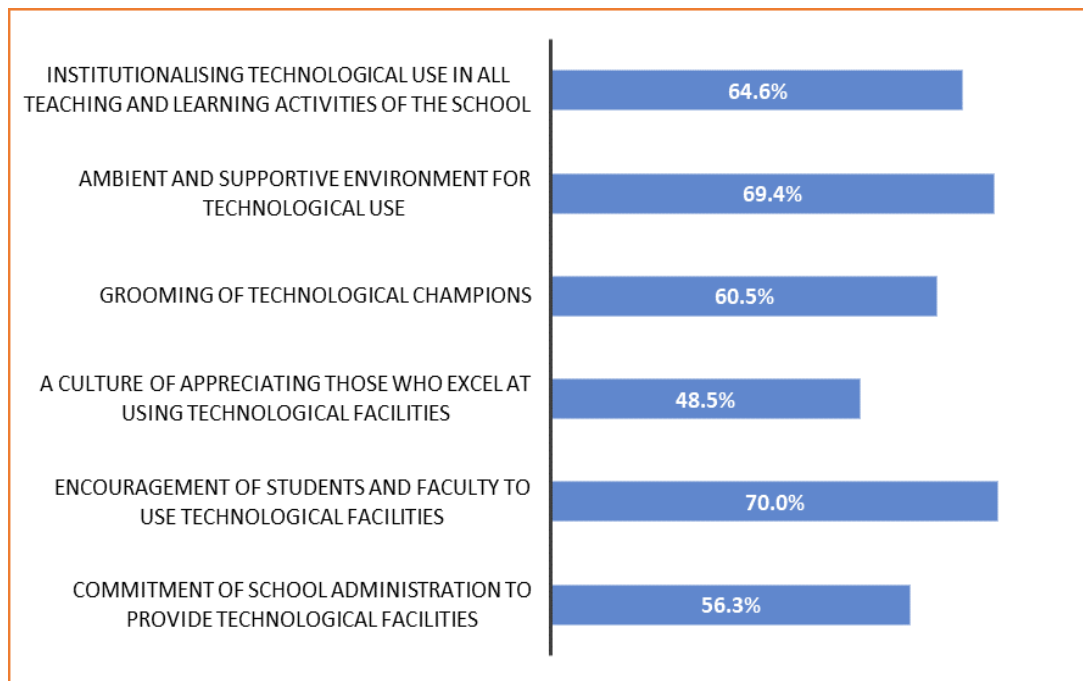


**Source:** Primary data

**Commitment of School Administration to Provide Technological Facilities**

56.3% of the respondents agreed that commitment of school administration to provide technological facilities was a significant technological leadership practice. Information from KIIs and FGDs indicated that commitment to provide and use e-learning facilities, had two aspects which needed to be emphasised. First, commitment to provide e-learning facilities within a school was more related to school administrators like principles and all those involved in decision making. Secondly, commitment to use e-learning facilities encompassed more stakeholders including administrators, the students as well as their tutors.

Commitment was one of the leadership practices highly desired in aspects which required teamwork, like in most e-learning programs. Respondents of KIIs and FGDs were of the view that even if technological infrastructure required high sums of money, if school administrators were committed to it, that commitment would drive them to look for resources from all those concerned to be able to acquire the technological infrastructure required by the school. They argued that commitment was the state or quality of being dedicated to a cause, or activity, if all the stakeholders get committed to the cause of providing technological infrastructure, they would do all that is within their mandate to ensure that the cause is achieved.

Information from KII's and FGD's also emphasised that the learners also needed to take an initiative to ensure they used the available technological infrastructure, it is through their usage that those in decision making positions can get to know which technological garget is working well and those that are not working well so that a remedy can be pursued without any delays.

**Encouragement of Students and Faculty to Use Technological Facilities**

70% of the respondents generally agreed that encouraging students and tutors to use the available technological gargets for e-learning was a salient technological leadership practice that required to be promoted. Information from KIIs and FGDs indicated that most stakeholders on the e-learning program i.e., tutors and students alike were experiencing the technological gargets used on the e-learning program for their first time. Imminently these gargets such as computers, CD-ROMs, microphones, projectors, and the other gargets were relatively new innovations in their own way, as such they required that constant encouragement to continue interfacing with them for effective familiarisation so as to achieve the best learning experience out of them.

Relatedly, one of the Key informants observed the following:

This e-learning program has provided an opportunity for me to use a computer for the first time in my life. All along I used to hear about computers. However, the challenges I experienced at the beginning were getting used to the different buttons…and knowing exactly how to navigate to the different reading materials I needed. I however went on horning my skills with the support of colleagues (KII no.6)

**A Culture of Appreciating Those Who Excel at Using Technological Facilities**

48.5% of the respondents generally agreed that appreciating those who excel at using technology was a motivating factor for continuing to use the e-learning gargets, and subsequently fostering e-learning adoption.

Information from KIIs and FGDs indicated that appreciating those who excel at using technology has several advantages and some of them include; it builds self confidence in the individual user, it also motivates the individual user to continue using the e-learning approach, it also creates a sense of belonging within the users and this sense of belonging can enable users to seek for support in circumstances when they get challenged or extend support to others who might seem to be stranded.

**Grooming of Technological Champions**

60.5% of respondents agreed that grooming of technological champions was a salient technology leadership practice which needed to be promoted in all midwifery schools offering e-learning program. Information from KIIs emphasised that grooming of technological champions was akin to having tutorial assistants who could be able to support their colleagues with issues pertaining to using and accessing e-materials for learning.

In one of the discussions, members asserted that to groom technology champions within the school would entail a deliberate effort of the school administration to identify students who mastered the usage of technology much faster and assigned them to support other students in form of tutorial groups. This would encourage peer to peer learning

especially for those students who were challenged slow at grasping and using technology in their learning endeavours. One of the group discussants had the following to say:

When I had just joined this e-learning program I was about to give up because I used to find difficulties in starting a computer and open the reading materials, even I used to face difficulties in submitting my assignments online, until one of my friends offered to support me especially in the evenings by going through all the steps of starting a computer, opening pages for assignments and contributing to online discussions (FGD, no.2)

**Ambient and Supportive Environment for Technological Use**

69.4% of the respondents generally agreed that creating an ambient and supportive environment for using technological facilities was key in fostering the adoption of e-learning. Emphasis from KII's and FGD's was that this kind of environment was characterised by developing a vision for technology, collaboratively with key stakeholders including administrators, teachers, students, and selected members of the community where the midwifery schools were located.

This was also in line with the recommendation of collaborative learning, made by some KII's, who argued that the school administration needed to take a deliberate effort to enhance collaborative learning. They argued that students learnt by talking to either themselves or a friend. Wherever there is an opportunity of getting students to talk about what they know should be emphasised. Through talking, students suddenly realised what they are saying and in so doing they progressed quickly to identify solution(s) their own problem(s)/solution. By working in pairs, students could coach each other through critical listening.

**Institutionalising Technological Use in All Teaching and Learning Activities of the School**

64.6% of the respondents indicated that institutionalising technological use in all activities of the schools would foster a quicker adoption and continued use of e-learning.

Information from KII's and FGD's recommend that the issue of institutionalisation could be achieved through school administrators making deliberate efforts of developing a technology plan for the school, collaboratively with the key stakeholders such as teachers, students, and some selected community members. They also recommended to midwifery schools to consider using technology in all their communication endeavours. For instance, communicating and collaborating with the wider stakeholders in relation to school activities of teaching and learning including communication related to school co-curricular activities.

In general terms, KII's and FGD's recommended several ways of implementing the salient technological leadership practices and these included to involve students in forming a school technological committee.  Students can be invited to apply for membership of the school's technological team. Examples of their responsibilities may include creating learning materials such as a video tutorial to teach their peers about the good habits that can be adopted to prevent malnutrition. Their production would be used in teaching other classes.

However, the findings emphasised that in such instance's students need to be taught the technical skills of filming, uploading, managing the software, and editing video clips. Students also need to be given basic information and resources to develop their scripts. Teachers can facilitate the production and subsequently develop health lessons based on the tutorial. This committee can also act as the cross-school ICT crew to set up equipment and trouble-shoot to ensure it is operational for the event or classroom. Other improvement avenues include benchmarking, and continuous assessment to ascertain whether the technology is meeting the learning outcomes.

**4.9.2 Salient Instructional Design Strategies**

Based on the findings in this study, there are six salient instructional design practices, as highlighted in figure 4.4 below:

**Figure 4.4: Salient Instruction Design Strategies**
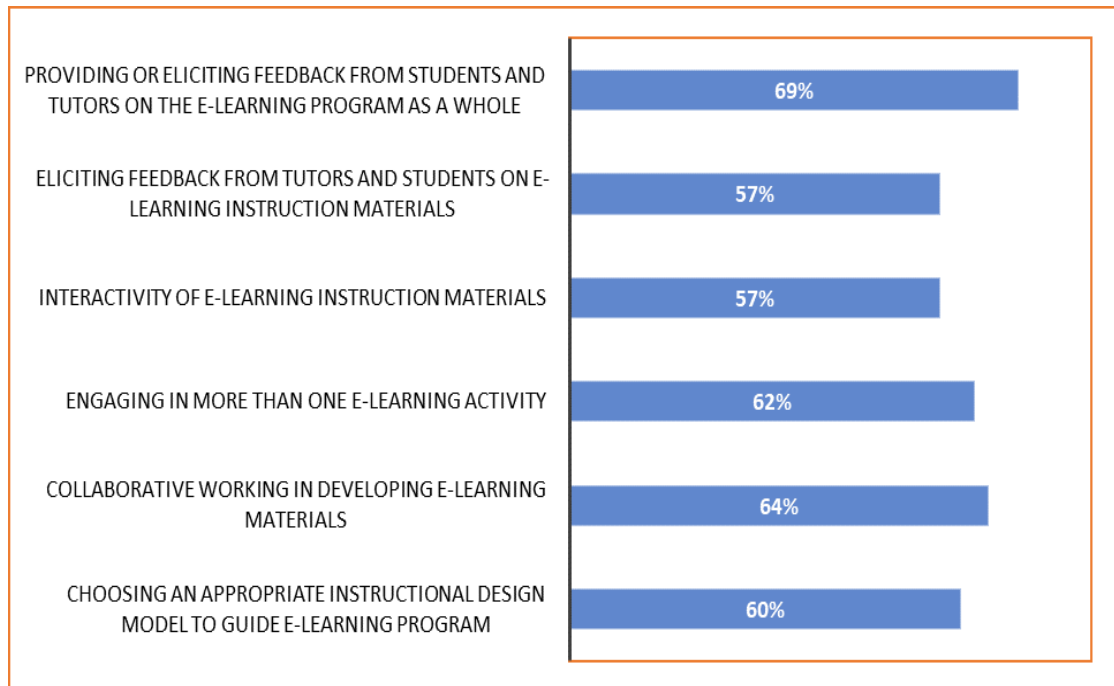


**Source:** Primary data

**Choosing an Appropriate Instructional Design Model to Guide the E-Learning Program**

50.9% of the participants agreed that choosing an appropriate instructional model was one of the salient instructional design practices. However, based on some of the records reviewed, it was highlighted that there were some midwifery schools which were not using or had not used any instruction model in designing their e-learning program.

Information from KIIs and FGDs revealed that some of the reasons why certain schools were not using ID models in their e-learning program was that some models were quite difficult to comprehend and implement. One of the recommendations of improving this practice was that midwifery schools should choose instructional design models that are easy to understand and implement.

**Collaborative Working in Developing E-Learning Materials**

64.17% of the respondents generally agreed that this practice was an important one in fostering e-learning adoption in midwifery schools. Members of one of the FGD's when asked what they meant by collaborative working, they indicated that it was an act where two or more people worked together to achieve a particular purpose. In this case they referred to students and tutors working together to develop and review e-learning materials.

Information from KII's and FGD's elaborated on a number of advantages that arose when students and tutors worked together to develop and review their e-learning materials. This is what some respondents said;

> 'It helps us problem-solve', it can bring students and tutors closer together, it can help students and tutors on the e-learning program to learn from each other, it can open up new channels for communication, it can boost morale across students and tutors, it can also lead to higher retention rates on the e-learning program and 'it makes us more efficient teachers and students.

**Engaging in More Than One E-Learning Activity**

62.2% of the respondents agreed that engaging in more than one e-learning activity was an important practice of instructional design. Information from KIIs and FGDs emphasised that enabling students to engage in more than one e-learning activity helps them to absorb much quickly the learnt aspects, put in practice what has been learnt, and connect the learnt knowledge to real life situations. However, despite of the advantages highlighted, in the same KIIs and FGDs it was also discovered that few midwifery schools were engaging their learners in more than one e-learning activity.

When asked why few midwifery schools were not engaging their learners in more than one e-learning activity, most responses pointed to the aspect of inadequate capacity to design a variety of e-learning activities. The major recommendation from KIIs and FGDs was

that midwifery schools should be able to train its tutors on how to design a variety of e-learning activities so that they can be able to implement this aspect well.

Some of the records reviewed especially the annual work plans indicated that some schools had planned to carryout trainings of its tutors and students on e-learning design and continuous improvement, however, most schools did not implement this activity citing difficulties in getting funds to accomplish these trainings.

**Interactivity of E-Learning Instruction Materials**

56.9% of respondents agreed that interactivity of e-learning materials was another salient practice of instruction design worth to be pursued by midwifery schools, if they are to improve e-learning adoption. In the FGD's we literally agreed on the meaning of interactive e-learning materials as something that means that the learner is not passively going through and trying to peruse through the contents, but it means that they have to solve problems, make decisions, look for pieces of information, test assumptions and take risks.

Information from KIIs and FGD's highlighted on the advantages of interactive e-learning materials and the key advantages highlighted included increased engagement, when e-learning materials are interactive they increase student engagement with the materials hence fostering e-learning adoption. When the materials are interactive, they also make a student practice what she/he has learnt, hence increasing the learning capacities of students. It was also agreed that interactive e-learning materials motivate learners to learn or increase their willingness to get involved in e-learning activities. All these advantages once achieved effectively can contribute significantly to e-learning adoption.

**Eliciting Feedback from Tutors and Students on E-Learning Instruction at Materials**

56.9% of the respondents also pointed out that eliciting feedback from tutors and students on the e-learning materials was an important practice of instructional design. The FGDs and KIIs indicated that there were students and tutors who seemed quite unwilling to

share their experiences unless deliberately targeted. In this realm it was observed as an important practice to always elicit feedback from students and tutors on how they feel about the e-learning materials and what improvements can be made to make them more appealing.

In the realm of e-learning, one of the key informants likened students and tutors on the e-learning program to clients or customers of any given business. The key informant argued that just like how businesses generate feedback from their customers on what is going on well or not in an attempt to satisfy their needs, administrators of e-learning programs also need to learn how to generate feedback from their students and tutors. In so doing it would help e-learning programs to satisfy the needs of their 'clients'.

The practice of eliciting feedback from tutors and students on the e-learning instructional materials was also linked to providing or eliciting feedback from students and tutors on the e-learning program at 68.8% of respondents, agreed that this practice was also important for midwifery schools to pursue. The reasoning of some of the members from KII's was that eliciting feedback on e-learning materials was a smaller component compared to the e-learning program. Hence, generating feedback from students and tutors and the other stakeholders on the entire e-learning program was critical as well, as this would help to improve the quality aspects of the program.

Based on the records reviewed, especially the e-learning meeting minutes, it was revealed that the aspect of eliciting feedback from tutors and students on e-learning instructional materials and e-learning program in general was rarely done, if it was done at all, then it wasn't being documented properly.

### 4.9.3 Salient Online Quality Management Practices

This study conceptualised online quality as something that cannot be delivered to the learner as it is portrayed in several literature but rather as something that is co-developed by the learner and the provider during the teaching and learning processes, particularly in an

interactive e-learning environment (Ehlers, 2004). As such the practices of online quality management took cognisant of the two perspectives of online quality that is to say, the perspective of the student and the perspective of the tutor or administrator.

Six broad practices were identified in the dimension of online quality management. However, these were summarised into three practices as highlighted in figure 4.5 below:

**Figure 4.5: Salient Online Quality Management Practices**
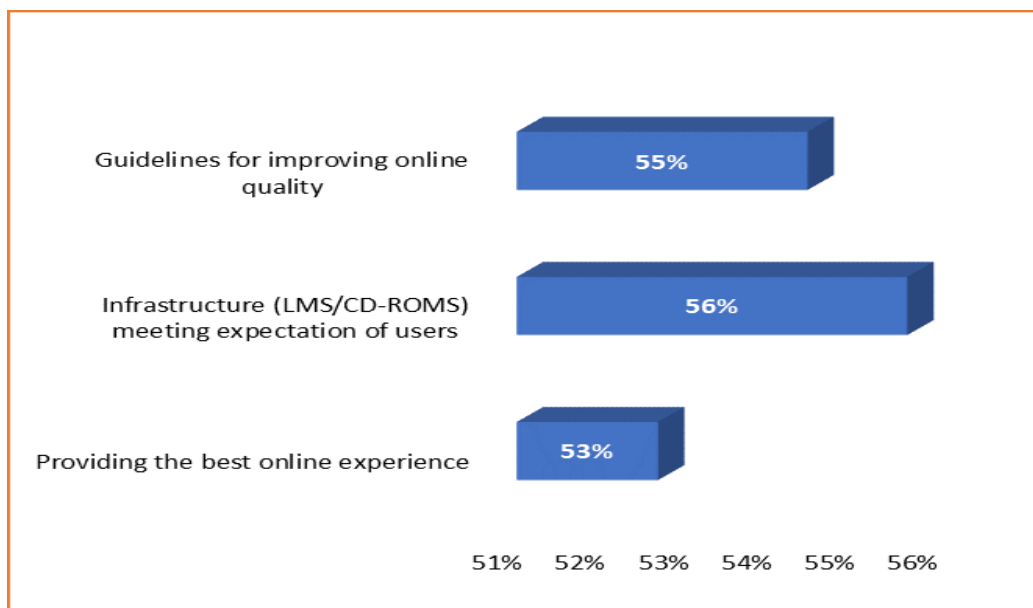


**Source:** Primary data

**Providing the Best Online Experience**

47.3% of the respondents agreed that providing the best online experience to users can help them adopt e-learning much quickly. Information from FGDs and KIIs indicated that providing the best online experience requires the administrators and designers of the e-learning programs to always ask themselves whether their e-content delivery channels such as the LMS or CD-ROMs are user friendly. It also requires them to ask themselves what do the online users expect to encounter.

Information from KIIs and FGDs recommended that, there should be provisions for easy to use, easy to navigate delivery channels, periodic engagement of online users to review the different components of the e-learning program, provision of more than one e-learning

activity, endeavouring to know the needs and aspirations of online users (audience) and tailoring their preferences.

**Infrastructure (LMS/CD-ROMS) Meeting Expectation of users**

44.3% of respondents agreed that the main infrastructure used to deliver the e-content such as the LMS/CD-ROMS should be designed to meet expectations as key practice of online quality management. Information from KIIs and FGDs indicated that at the time of the study, most midwifery schools relayed on Compact Disc, Read-Only-Memory (CD-ROMS) as their major avenue of delivering e-content to their learners, although all schools had installed the Learning Management System (LMS) as a means of delivering e-learning content to students, the LMS was always on and off, and inherently unreliable most of the time. The key recommendation from KIIs and FGDs was making the e-learning delivery channels user friendly, reliable, easy to access, easy to use and ensuring the user preferences are accommodated.

**Guidelines for Improving Online Quality**

54.5% of the respondents agreed that setting guidelines geared towards improving the quality of e-learning was a major practice for online quality management. KIIs and FGDs revealed that there were no approved guidelines focusing on e-learning quality across all midwifery schools that participated in the study. However, some schools had unwritten guidelines which were not all encompassing and not generally well understood by all stakeholders on the e-learning program.

The documents reviewed, especially the e-learning program meeting minutes, highlighted discussions which were geared towards the need for developing e-learning quality assurance guidelines for all midwifery schools participating in e-learning programs. However, this item of the agenda seems not to have been implemented. Key recommendations from KIIs and FGDs were that midwifery schools needed to be supported to develop and use e-learning service quality guidelines which could be used across all

schools. However, it was observed that when developing these guidelines, it was important to involve all relevant stakeholders.

### 4.9.4 Salient School Financing Mechanisms

At 39.5%, the major schools' financing mechanisms were found to be diversified sources of funds; (0.7% for deliberate efforts to expand sources of funds, coordination of mechanisms for the sources of funds; favourable school fees structure for each study program at 52.7%; affordable school fees structure for e-learning program at 40.2%, and a convenient fees payment system for e-learning program at 50.2%. However, based on information from KII's, FGD's and records review, these practices were summarised into two as highlighted in figure 4.6 below:

**Figure 4.6: Salient School Financing Mechanisms**
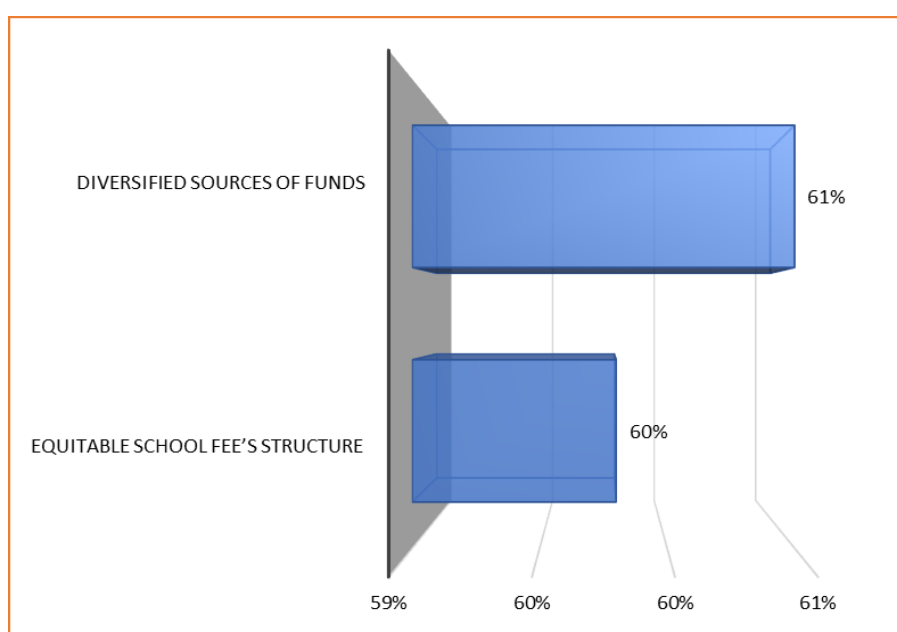


**Source:** Primary data

### Diversified Sources of Funds

60.5% of the participants agreed that having diversified sources of funds was a key school financing mechanism. During the FGD's, it was agreed that diversified sources of funds could be understood as the process of financial management in midwifery schools which involves the intentional exploration and use of funds from various financing sources.

Information from KII's, FGD's and records reviewed, indicated that midwifery schools had at most two funding sources. For the public midwifery schools, the first source of funds was government inform of capitation grants, specifically meant for meeting the day-to-day operational costs of the midwifery school, and staff salaries. The second source was school fees from privately sponsored students, including those on the e-learning programs.

The private midwifery schools, also had two sources of funds at most. The first source being school fees from students including those on the e-learning program, the second source being donations from well-wishers and their founding agencies.Although e-learning students were paying school fees to the midwifery schools where they were registered, their school fees were not being considered as a major funding source for the schools.

A key recommendation from KII's and FGD's was that midwifery schools should begin viewing school fees received from students on the e-learning programmes as a potential source of funding for the schools. That if well harnessed and handled, the funds could be able to cater for most of the needs of the e-learning programme hence making it more sustainable in due course.

**Equitable School Fee's Structure**

59.8% of the respondents agreed that equitable school fee's structure was a salient school financing mechanism.

Findings from the records reviewed, KII's and FGD's indicated that school fees' structure especially for the students on e-learning was not equitable. For instance, at the time when this study was conducted, midwifery students on the e-learning programme and their colleagues on the regular programme were paying the same fees structure despite of the inherent differences between the two study programs.

Some of the inherent differences between e-learning midwifery study program and the regular/full time study program was that in the e-learning study program, midwifery students

spent few weeks at school during the semester as most of the time they were expected to be at their workplaces while studying online, compared to the regular program where students stay at school for the entire semester. In such circumstances, it would imply that those who stay for fewer weeks would spend less on utility bills and food. These cost reductions were not being reflected in the school fee's structure.

## 4.10 Summary of Chapter Four

The key findings as per the above results is that majority (79%) of the people on the midwifery e-learning program in Uganda are below the age of 40 years, and majority (89.2) are females who are either desirous to upgrade to a higher level of midwifery qualification or are on the program as tutors or clinical instructors. The composition of higher levels of females on the programme is not a surprise as this is in line with the unwritten policy of training midwives in Uganda which constructs the speciality as a domain of the female species.

The level of e-learning adoption was positioned at 61% as majority of the respondents somewhat and strongly agreed to all the eight statements used to assess e-learning adoption. However, if only 61% of students and faculty agree that they are satisfied with the overall e-learning program, and that they are happy with the number of students taking on and using e-learning as their main approach for their quest for knowledge and skills, quantitatively expressed in terms of number of students enrolled on the program; number of students and tutors using LMS/CD-ROM; and the number of faculty offering online support to their learners, the 39% who superficially pronounce dissatisfaction represents a slightly bigger constituency of likely defaulters over time, and something needs to be done to arrest the situation.

The findings were also able to answer the overall research question of the study which stated, "What are the OCSF's which have significant influence on e-learning adoption and to

what extent do they influence e-learning adoption? Instructional design processes, online quality management aspects and technology leadership practices of end users were found to be OCSFs which significantly influenced e-learning adoption. Thus, a unit increase in instructional design strategies would translate into 0.173 unit increase in e-learning adoption, a unit increase in technology leadership practices would translate into 0.322 unit increases in e-learning adoption; and a unit increase in Online quality management aspects would translate into 0.488 unit increase in the adoption of e-learning in midwifery schools in Uganda.

One of the proposed OCSF's specifically school financing mechanism was not found to be a predictor of e-learning upon conducting a hierarchical linear multiple regression as indicated in table 4.9, since its p-value (p= .840) was found to be more than 0.05. The most relevant OCSF's to e-learning adoption therefore were found to be instructional design processes (p=0.016), technology leadership practices (p=0.000), and online quality management aspects (p=0.000). These therefore are the OCSFs that the management apparatus of midwifery school has to focus on if they are to improve the adoption of e-learning

The study was also able to validate the practices in each of the four OCSFs that should be focused on by midwifery schools so as to improve the adoption of e-learning. Core technology leadership practices included: commitment of school administration to provide technological facilities; encouragement of students and faculty to use technological facilities; a culture of appreciating those who excel at using technological facilities; grooming of technological champions; ambient and supportive environment for technological use; and institutionalising technological use in all teaching and learning activities of the school.

Key instructional design strategies included: choosing an appropriate instructional design model to guide e-learning programs; collaborative working in developing e-learning

materials; engaging in more than one e-learning activity; interactivity of e-learning instruction materials; eliciting feedback from tutors and students on e-learning instruction materials; and providing or eliciting feedback from students and tutors on the e-learning program as a whole. While those of online quality management included: providing the best online experience; infrastructure (LMS/CD-ROMS) meeting expectation of users; and guidelines for improving online quality. And the key school financing mechanisms were equitable school fee's structure, and diversified sources of funds. Midwifery schools can focus on those core practices across the four OCSFs so as to improve e-learning adoption.

# CHAPTER FIVE

# DISCUSSION, CONCLUSION AND RECOMMENDATION

## 5.1 Introduction

This chapter discusses the findings guided by the research general purpose and specific objectives. Makes conclusions drafts recommendations emerging from the general findings of the study. The specific objectives were as follows: to ascertain technology leadership practices of end users for e-learning adoption in midwifery schools in Uganda; to establish instructional design practices for e-learning adoption in midwifery schools in Uganda; to analyse online quality management practices for e-learning adoption in midwifery schools in Uganda; and to examine school financing mechanisms for e-learning adoption in midwifery schools in Uganda. This chapter is arranged under the following sections: Introduction, Discussion of findings based on the four objectives, and Summary of findings.

## 5.2 Discussion

Discussion of the findings are done under the following subheadings: technology leadership practices and e-learning adoption, instructional design strategies and e-learning adoption, online quality management practices and e-learning adoption, and school financing mechanisms and e-learning adoption.

## 5.2.1 Technology Leadership Practices and the Adoption of E-Learning.

The key findings for this study were that technology leadership practices were one of the organisation critical success factors which significantly influenced e-learning adoption. For instance, there was a moderate positive relationship between technology leadership practices and e-learning adoption in midwifery schools in Uganda, ($r = 0.691$, $p = 0.000$, $n = 167$). The relationship was statistically significant at 95% confidence level since p-value (Sig.) equal 0.000 (<0.050). This meant that improvements in technology leadership practices could be related to improvements in e-learning adoption in midwifery schools in Uganda.

Similarly decline in technology leadership practices shall be related to decline in e-learning adoption. An adjusted R Square of 0.475 means that technology leadership practices account for 47.5% of the variance in e-learning adoption in midwifery schools in Uganda.

These findings are in line with the findings of Anderson and Dexter's (2005) study which revealed that technology leadership was a significant school characteristic responsible for major technological outcomes such as internet use for e-mail and Web browsing, technology integration, and use of different online tools. All these outcomes enhance the adoption and continued use of e-learning within the school setting.

Additionally, the study also recognised that the key technology leadership practices that foster e-learning adoption were: encouragement of students and faculty to use technological facilities (70%); ambient and supportive environment for technological use (69.4%); institutionalising technological use in all teaching and learning activities of the school (64.6%); grooming of technological champions (60.5%); commitment of school administration to provide technological facilities (56.3%); and a culture of appreciating those who excel at using technological facilities (48.5%).

The practice of encouraging of students and faculty to use technological facilities was strongly highlighted as a key practice that could greatly improve the adoption of e-learning, this practice was also found to be very critical by the Chang et al,. (2008) study, which recommended that administrators who had not previously assumed these responsibilities of encouraging their students and faculty to use technological facilities might want to begin with a school technology audit to determine the degree to which the school has adequate technology goals, policies, budgets, committees, and supporting elements in place and where they should begin (Chang et al., 2008).

Anderson and Dexter's (2005) study, further indicated that technology leadership has greater leverage on desired outcomes of e-learning adoption than technology infrastructure

and expenditures (Anderson & Dexter, 2005). It was also found relevant for technology leaders to be actively involved with technology, i.e., crafting policies, using e-mail, and generally spending time on it. In other words, it is suggested that school's technology efforts are seriously threatened unless key administrators become active technology leaders in a school (Mwawasi, 2014).

The research findings of Anderson and Dexter (2005), and those of Mwawasi, (2014), were also in tandem with this study's findings that revealed that tutors and students in midwifery schools are always encouraged to use technological facilities inside and outside classroom to supplement their learning and schools provide an ambient and supportive environment for the use of technology in their teaching and learning processes. The findings also indicated that most stakeholders on the e-learning program i.e., tutors and students alike were experiencing the technological gargets used on the e-learning program for their first time. Imminently these gargets such as computers, CD-ROMs, microphones, projectors, and the other gargets were relatively new innovations in their own way, as such they required that constant encouragement to continue interfacing with them for effective familiarisation so as to achieve the best learning experience out of them.

Furthermore, Chang et al's (2008) study suggested that principals who embraced the idea of technology leadership were able to effectively lead their schools to acquire educational resources to enhance student engagement and learning. The findings further revealed that the e-learning program is seen as an opportunity for embedding technology in all their learning programs in the school and that there are people that students and tutors can visibly refer to as 'champions' that advocate for the use of technology in their teaching and learning processes.

The idea of grooming and promoting champions in e-learning programs is also supported by Alekha, (2018) and Gachago et al (2017), in their studies they asserted that this

aspect could be achieved when school administrators seek to hire teachers and recruit new students on the e-learning program by considering technology literacy and leadership for technology in their assessments (Alekha, 2018; Gachago et al., 2017). This practice would intern help to segment teachers and students as either novices or as exhibiting some basic capabilities for using e-learning facilities. The segmentation can help them to deliver tailored support to respective groups, while observing the early adopters or ICT enthusiasts. This assertion was further augmented by Bart (2011), who indicated that in the long run, the early adopters or ICT enthusiasts can easily be groomed to become e-learning champions (Bart, 2011).

Institutionalising e-learning in all teaching and learning endeavours of the school was yet another technology leadership practice highlighted by the study as a crucial element that should be taken up by the school administrators if they are to improve e-learning adoption. This finding is in line with the findings of Martins and Baptista Nunes (2016) who recommended that in order to achieve this, school administrators make deliberate efforts of developing a technology plan for the school collaboratively with the key stakeholders such teachers, students and some selected community members (Martins & Baptista Nunes, 2016).

Davis et al (2015) also indicated this is well achieved when the school administrators can consider using technology in all their communication endeavours (Davis et al., 2015), including, communicating and collaborating with the wider stakeholders about school programs and student learning including communicating about school programs designed to enhance student learning. In this realm stakeholders stop viewing technology as a distant phenomenon but rather begin considering it as part and partial of their daily lives and routines (Gachago et al., 2017).

**5.2.2 Instructional Design Practices and the Adoption of E-Learning.**

Instructional design is very loosely defined as a system or process of organizing learning resources to ensure learners achieve established learning outcomes. As such, it is essentially a framework for learning. This process is vital in e-learning programs because it serves the learning needs and success of students through effective presentation of content and fostering of interaction. Based on this study, there are certain practices that ought to be adhered to in order to make the process a success.

Instructional design practices were found to be one of the OCSFs for e-learning adoption by this study. For instance, instructional design practices had a moderate positive statistically significant relationship with e-learning adoption, and they accounted for 38.7% of the variance observed in e-learning adoption in midwifery schools in Uganda. This finding also concurs with similar studies that asserted that many of the concerns of e-learning dropout rates, learner resistance, and poor learner performance can be addressed through well-structured design processes. The resulting benefits would include reduced design costs, consistent look and feel, transparency, quality control and standardization (Gustafson & Branch, 2002). The most noticeable gap in some of the literature reviewed was the implicit mention of how much instructional design practices would contribute to the observable changes in e-learning adoption, this study however, has been able to explicitly discover that well designed and anchored instructional design practices can contribute up to 38.7% of the observable changes in e-learning adoption.

According to Berger (1996), instructional design is a process of analysing learning needs and goals and the development of a delivery system to meet those needs. It includes development of instructional materials and activities and evaluation of all instruction and learner activities. Instructional design is therefore similar to lesson planning, but more elaborate and more detailed. This means that instructional design should include both the

learners and the tutors. In this study, it was ascertained that one of the critical instructional design practices was that both tutors and students were being given an opportunity to provide feedback on the e-learning program and that tutors and students always worked together in updating the e-learning materials and these findings agreed with Berger's (1996) study.

Siemens (2002) asserts that instructional design is the process where learning, not technology, is kept at the centre of development, which is also in agreement with the research findings of this study which revealed that tutors and students collaboratively develop the e-learning materials for their program. This shows that while technology was being used in the process of developing and reviewing e-materials, tutors and students were at the centre of the entire process of learning by using technology to design appropriate, needs based, context specific e-materials. Therefore, technology was being used as a tool to smoothen the roadmap for learning (Siemens, 2002).

According to Gustafson and Branch (2002), appropriately designed and implemented instructional design practices are very important in e-learning programs because whereas many traditional classroom activities do not leave a "trail" that can be viewed by others, e-learning programs do leave a "trail" in terms of captured live sessions that are easy to store and retrieve whenever needed. However, the practice of capturing live sessions and using them in subsequent learning sessions was not being done in almost all the midwifery schools. The lack of this instructional design practice denies schools an opportunity of increasing the transparency of their e-learning programs as certain lectures cannot be taped and shown to students and be used in later learning activities. This eventually can lead to low adoption of e-learning (Gustafson & Branch, 2002).

Much as instructional design practices had a potential of contributing up to 38.7% of the observable changes in e-learning adoption, what was found disheartening however, was that they were inadequately designed and implemented in e-learning programming in most

midwifery schools in Uganda. This was exemplified when it was shown that only 52.1% of respondents on average agreed to ever using an instructional design model in designing and implementing their e-learning programmes. The inadequate use of instruction design practices such as using an instructional model to guide the entire process of e-learning partly explains the low rate (61%) of e-learning adoption in these midwifery schools.

The major reason behind the inadequate use of instruction design practices such as the using of ID models was that midwifery schools found it difficult to comprehend appropriate ID models. This depicted a dare absence of practical and theoretical knowledge and skills among the key stakeholders on the e-learning program on putting in practice appropriate instructional design processes. It is not surprising therefore, by the result that indicated that all the seven salient instructional design practices were found to be inadequately practiced by midwifery schools. Hence, there is need to focus on each of these practices so as to be able to improve the adoption of e-learning.

The aspect of not using ID models in e-learning programs by most schools because of lack of knowledge is also highlighted in the study of Chizmar and Wilbert (1999) who emphasised that institutions ought to select an instructional model that is not only easy to comprehend and implement but also an ID model which fits their learning desires and aspirations. In other words, pedagogy must drive the choice of instructional technology, not the other way around (Chizmar & Walbert, 1999).

This study parades four salient instructional design practices: providing feedback on the e-learning program (68.8%), collaborative working in updating e-learning materials (64.1%), engaging in more than one e-learning activity (62.2%), and utility of ID model in designing e-learning programs (61%).

However, engaging in more than one e-learning activity was found to be particularly important by other studies (Franceschi et al, 2008; Horton, 2005; Johnson, 2009; Yengin et

al, 2010) as it helps students to absorb much quickly the learnt aspects, put in practice what has been learnt, and connect the learnt knowledge to real life situations. This is also connected to William Horton's (2005) writings in his books titled e-learning by design, where he asserts that there are three types of e-learning activities – Absorb, Do, and Connect that can help accomplish learning objectives.

In Absorb activities, learners absorb knowledge by observing, listening, or reading. They are physically passive but mentally active. In Do activities, learners do something with the knowledge acquired by means of practice, exploration, and discovery. And in Connect activities, learners link to prior knowledge and apply what they have learned– skills and knowledge – to their work. Examples of absorb e-learning activities include video-based learning, Storytelling, eBooks, and PDFs. Examples of do e-learning activities include Branched Scenarios, LEAD, and Simulations. While those of connect include Job-aids, and Collaborative e-learning. All these were found to be lacking in the design processes of e-learning programs in all midwifery schools. However, the four key instructional design practices highlighted by this study can be able to integrate all these aspects highlighted by Horton's seminal work.

**5.2.3 Online Quality Management Practices and the Adoption of E-Learning.**

The quality of e-learning in midwifery schools was rated at 44.9%, based on stakeholder's perspective of e-learning quality, conceptualised as gaining the finest learning accomplishment, in conjunction with something that is excellent in performance (Ehlers et al., 2005). This rating was quite low as compared to e-learning quality scores generated in other studies (Elango et al, 2008; Agarya & Singh, 2012).

However, the findings further revealed that online quality management practices showed strong positive relationship with e-learning adoption (r=0.747, p=0.000, n=167), and they accounted for 55.5% of the variance observed in e-learning adoption. This showed that

online quality management practices were highlighted as one of the OCSFs for e-learning adoption. This finding was in tandem with other studies (Jung, 2011; Frydenberg, 2002; McNaught, 2001; Ehlers et al., 2005) which underscored the importance of e-learning quality in e-learning programs especially when considerations are made to toe a middle line of assessing the quality perspectives of all stakeholders in reaching a consensus on the quality rating of any e-learning program.

Three salient online quality management practices were highlighted by this study, namely, providing the best online experience (52.7%); infrastructure (LMS/CD-ROMS) meeting expectation of users (55.7%); and guidelines for improving online quality (54.5%). The three core practices reflect the quality perspectives of all the key stakeholders on the e-learning program including students, tutors, and administrators. This mix of the quality perspectives has been up lauded by some studies (Jung, 2011; Hughey et al., 2003), who argue that the concept of online quality is multifaceted and complex partly because it evolves from the mainstream concepts of quality in the business service sector, where it is interpreted differently by different people (Jung, 2011).

These three online quality management practices have a great influence on the adoption and continued use of e-learning because they revolve between the nexus of beliefs and motivations for e-learning (Ehlers & Goertz, 2006). For instance, providing the best online experience is assessed based on the user's feelings, beliefs, and attitudes towards the e-learning system they are interfacing with. For the e-learning system to be in position of providing the best experience to its users means that the users expectations and beliefs have been met to their satisfaction (Jung and Latchem, 2007).

This study was able to show that to achieve "the best online experience" requires the administrators and designers of the e-learning programs to always ask themselves whether their e-content delivery channels are user friendly and are meeting the expectations of the

users. This literally means that users should be involved in all stages of improving e-learning quality. This finding is also in tandem with the findings of Jara and Mellar (2007) who have argued that e-learning quality has to empower and enable the student to verbalize what seems not to be going on well, along the e-learning trajectory. The student has to be given an opportunity to define what e-learning quality means to them at the onset of the e-learning trajectory, in so doing, the teacher also takes note of what is supposed to be improved (Jara & Mellar, 2007).

According to Jung, (2011), the aspect of involving learners in determining the quality of e-learning is very critical. Jung (2011), asserts that the dimensions of online quality management are sometimes conceptualised differently between learners and faculty and the assessment is also sometimes one-sided, especially skewed on e-learning providers, donors and government agencies. This contradiction is likely to affect the adoption and continued use of e-learning, in a sense that the quality of e-learning is not something that can be delivered to the learner but something that is co-developed by the learner and the provider during the teaching and learning processes, particularly in an interactive e-learning environment (Ehlers, 2004).

Based on studies conducted by Jung (2011), and Ehlers (2014), it is not surprising that there were mixed reactions on whether the e-learning program provides the best online learning experience, whether the Learning Management System (LMS) meets most of the learners' online learning expectations and whether the eLearning program can be described as an excellent online learning experience.

### 5.2.4 School Financing Mechanisms and the Adoption of E-Learning.

The major research findings established that school financing mechanisms have weak positive relationship with e-learning adoption ($r = 0.402$, $p = 0.000$, $n = 167$), and accounts for 15.7% of the variance observed in e-learning adoption. Based on this finding it is clear that

school financing mechanisms are one of the OCSFs for e-learning adoption. The study highlighted two salient school financing mechanism which include equitable school fee's structure (59.8%), and diversified sources of funds (60.5%). These findings are in agreement with (Clark, 1989) who established that the level of financing and the way in which it is disbursed to health training institutions have important implications for the size, skills and diversity of the health workforce, and subsequently the adoption of new training innovations such as the e-learning approach.

However, what was found to be at stake was that the school fees structure was not equitable across all the midwifery schools, and yet, according to Guo (2006), for any nursing and midwifery school to be able to adopt new innovations of training, there is need to ensure adequate levels of financing, fair financing for student access and efficient coordination of sources of funds. To achieve an equitable school fee's structure, Guo (2006) argues that there must be deliberate efforts at the institutional management level to figure out how this ought to be accomplished while considering the interests of different stakeholders. However, research findings revealed that there were mixed reactions on whether schools have diversified sources of funds and whether there are deliberate efforts for expanding sources of funds in the schools. This implies that most of the midwifery schools have gaps in funding and do not have very clear deliberate efforts towards expansion of sources of funds in their schools.

According to Guo et al (2014), social entrepreneurship is believed to be one of the categories of entrepreneurship, and hence it creates room for understanding systems and processes that are designed to achieve social change and to generate surplus to support activities that cannot generate revenue (Austin et al., 2012). However, social entrepreneurship may not be practical in most of the midwifery schools because most of them have a lot of

limitations because they do not have authority to expand school fees without approval from government or their foundation agencies especially for the PNFP midwifery schools.

This means that they have to continue relying on the limited funding from government and the little tuition that students pay to pursue their courses. Therefore, although social entrepreneurship is critical for generating social impact and assuring financial sustainability, it is currently not one of the options that the schools can use to finance their activities.

The two salient school financing mechanisms highlighted by the study, were found to be insufficiently implemented at the school level, yet deliberate efforts of focusing on them can greatly improve new learning innovations including the e-learning pedagogy (WHO, 2006). Visualising e-learning in social entrepreneurship lens can allow midwifery school administrators to invest in hard and software e-learning infrastructure with the aim of achieving cost reductions on major cost centres of learning. This aspect can be achieved if midwifery school administrators embrace a social business stance and start to strategize for diversified sources of funds for a midwifery school so as to provide opportunities for smooth implementation of new learning innovations such as e-learning.

**5.3 Conclusion**

The conclusion comprises of both descriptive and inferential findings and is based on the study objectives as laid in chapter one of this report. The four hypotheses were tested using ANOVA and coefficient of determination under linear regression and the conclusions of the findings are presented below.

The purpose of this study was to ascertain the organisational critical success factors for e-learning adoption and validate how they could be used to facilitate e-learning adoption in midwifery schools in Uganda. The study was able show that all the four OCSFs hypothesised by this study were found to have significant influence on e-learning adoption

since their p-values (Sign.) were less than 0.05: technology leadership practices (r=0.691, p=0.000, n=167), instruction design strategies (r=0.625, p=0.000, n=167), online quality management practices (r=0.747, p=0.000, n=167), and school financing mechanisms (r=0.402, p=0.000, n=167). Based on this observation it can be concluded that the organisational critical success factors for e-learning adoption in midwifery schools in Uganda are technology leadership practices, instruction design strategies, online quality management practices, and school financing mechanisms. These have to be implemented concurrently if the anticipated effect on e-learning adoption is to be realised.

The study was also able to validate the salient practices in each of the four OCSFs and how they could be used to facilitate e-learning adoption, a summary of these findings is highlighted in the proceeding paragraphs.

### 5.3.1. Technology Leadership Practices and the Adoption of E-Learning.

This study has come up with the following core technology leadership practices for e-learning adoption in midwifery schools: commitment of school administration to provide technological facilities; encouragement of students and faculty to use technological facilities; creating a culture of appreciating those who excel at using technological facilities; grooming of technological champions; ambient and supportive environment for technological use; and institutionalising technological use in all teaching and learning activities of the school.

However, creating a culture of appreciating those who excel at using technological facilities, was found to be the least implemented technology leadership practice as it was scored at 48.5%, yet this kind of practice is highly linked to all-inclusive leadership approaches advocated by a handful of researchers (Rupp, 2016; Futrell, 2011; Leithwood et al., 2020), who argue that leadership practices in schools are becoming more collaborative, and inclined to distributed leadership.

Owing to this finding it can be concluded that most stakeholders on the e-learning program in the midwifery schools do not hold the view that "leadership is action, and not position". This view epitomizes the leadership philosophy that looks at people as being leaders by virtue of what they do, not the authority they are given or the duty title or position they hold. Loosely translated as everyone is a leader at whatever level they are. Given the multistakeholder nature of e-learning programs, this is the leadership view that should be promoted if the technology leadership practices highlighted by this study are to be effectively implemented.

### 5.3.2 Instructional Design Practices and the Adoption of E-Learning.

Key instruction design practices for e-learning adoption in midwifery schools highlighted by this study included,  choosing an appropriate instructional design model to guide e-learning program; collaborative working in developing e-learning materials; engaging in more than one e-learning activity; ensuring interactivity of e-learning instruction materials; eliciting feedback from tutors and students on e-learning instruction materials; and providing or eliciting feedback from students and tutors on the e-learning program as a whole.

Given the fact that the study indicated that most midwifery schools were not using any instructional design models to guide their instruction processes, this study espouses a view that there was inadequate capacity within the tutors and administrators of the e-learning programs to support the design, development, implementation, and management of instruction design practices as those highlighted by this study.

### 5.3.3 Online Quality Management Practices and the Adoption of   E-Learning.

Core online quality management practices for e-learning adoption highlighted by this study included, providing the best online experience; infrastructure (LMS/CD-ROMS) meeting expectation of users; and guidelines for improving online quality. All these practices

take cognisant of the different quality perspectives held by the different stakeholders on the e-learning program.

Among the three highlighted online quality management practices, providing the best online experience was the lowly scored practice by all the stakeholders on the e-learning program in the midwifery schools, it was scored at 52.7%. This indicates that this practice was inadequately being implemented across all the midwifery schools, yet, according to Jung, (2011), it is a proxy indicator that can show how well the stakeholders of any e-learning program are being involved in improving the quality aspects of their program.

Based on this observation, it can be concluded that not all stakeholders on the e-learning program were being included in the continuous quality improvement processes for their e-learning program across all midwifery schools, and most importantly most schools lacked an e-learning quality assurance policy in place. These gaps could be the reason why the overall quality of the e-learning program was lowly assessed by all the stakeholders who rated it at 44.9%.

### 5.3.4 School Financing Mechanisms and the Adoption of E-Learning.

Key school financing mechanisms for e-learning adoption in midwifery schools highlighted by the study, were, implementing an equitable school fee's structure, and striving to have diversified sources of funds. The study discovered that midwifery students on the e-learning program and their counterparts on the regular program were paying the same school fees. It can be concluded that the school fees structure for midwifery students on the e-learning program across all the midwifery schools was not equitable and did not take cognisant of peculiar differences within the two study programs.

### 5.4 Recommendations

The recommendations are presented objective by objective on findings of each of the independent variables based on the previous discussions and conclusions.

**5.4.1 Technology Leadership Practices and E-Learning Adoption**

Based on the research findings it is concluded that improvements in technology leadership practices shall lead to improvements in adoption of e-learning in midwifery schools in Uganda. However, under the current status the following recommendations are hereby made to ensure that technology leadership practices contribute to adoption of e-learning in midwifery schools in Uganda

i) Commitment to provide and use e-learning facilities has been found to be an important technology leadership practice for improving e-learning adoption, as such, the school management should heighten up their committed at providing most of the technological facilities, students and staff require on the e-learning program. However, more importantly the administration apparatus of the school should consider inculcating a leadership culture that embraces the view of "leadership is action and not position". This will enable all stakeholders on the e-learning program to thrust out their leadership potentials regardless of the authority or the duty title or position they hold at the school.

ii) At the school level, a policy, specifically a school technology policy should be put in place which will articulate issues of how to initiate and set up e-learning programs, how to recognize 'champions' that advocate for the use of technology in their teaching and learning processes to encourage the rest of the tutors and students, including articulating issues of budget, formation of technology committees and the other supportive in place.

iii) Tutors and students should continue to be encouraged to use technological facilities inside and outside classroom to supplement their learning. This aspect can also be articulated in the school technology policy.

iv)     Schools that don't have an ambient and supportive environment for the use of technology in their teaching and learning processes should make it an effort to create them.

v)     There should be a deliberate effort to create an opportunity to embed technology in all their learning programs in the school.

vi)     There should be a deliberate effort to create a culture of appreciating those who take an extra mile in using technology to improve their teaching and learning process.

All these technology practices recommended from I to VI can be well articulated in the general school technology policy, as one of the findings of this study was that most of the midwifery schools did not possess school technology policy.

**5.4.2 Instructional Design Practices and the Adoption of E-Learning**

Based on the research findings it is concluded that improvements in instructional design practices shall lead to improvements in adoption of e-learning in midwifery schools in Uganda. However, under the current status the following recommendations are made to ensure that instructional design practices effectively contribute to adoption of e-learning in midwifery schools in Uganda.

i)     Interactivity of e-learning materials and collaborative efforts in developing the e-learning materials were highlighted as a key practice of ID by the study, as such, schools should heighten up the aspect of designing interactive instruction materials for e-learning program, but in a collaborative approach, involving all the key stakeholders, students, tutors, and administrators.

ii)     Tutors and students should be encouraged and facilitated to continue working together in updating the e-learning materials. This approach has been highlighted as one of the several ways of validating the quality of the e-learning materials.

iii) Students should continue to go through a process of analyse, design, develop, implement, and evaluate as they develop the e-learning content. Literally meaning that the school administrators together with tutors should be able to identify and adapt to an instruction design model that is fit for purposes, and context specific.

iv) The system for eliciting feedback from tutors and students on the e-learning instruction materials should be improved upon to ensure that all stakeholders can elicit feedback and use the feedback to improve the quality of e-learning services.

v) Tutors and students should be encouraged and facilitated to collaboratively develop the e-learning materials for their programs, this is in-line with the learner centred approach which is highly recommended by literature for all programs of e-learning.

**5.4.3 Online Quality Management Practices and the Adoption of E-Learning**

Based on the research findings it is concluded that improvements in online quality management practices shall lead to improvements in adoption of e-learning in midwifery schools in Uganda. However, under the current status the following recommendations are hereby made to ensure that online quality management practices contribute effectively to adoption of e-learning in midwifery schools in Uganda.

i) Schools should continue to set guidelines for improving the e-learning quality processes of the e-learning program.

ii) The online quality management practices highlighted by this study for the e-learning program should collaboratively be worked upon by tutors, students, and the school administrators, since e-quality is a multistakeholder aspect.

iii) The different sections of the e-learning program such as e-content delivery channels (LMS/CD-ROMs), and the e-content itself, should continuously be improved upon to create an excellent online learning experience.

iv)   However, above all, midwifery schools should endeavour to develop a policy for e-learning quality assurance that is made public and forms part of their strategic management. Internal stakeholders such as students, tutors and administrators should actively participate in develop and implement this policy through appropriate structures and processes, while involving external stakeholders as well.

**5.4.4   School Financing Mechanisms and the Adoption of E-Learning**

Based on the research findings it is concluded that improvements in school financing mechanisms shall lead to improvements in adoption of e-learning in midwifery schools in Uganda. However, under the current status the following recommendations are hereby made to ensure that school financing mechanisms effectively contribute to adoption of e-learning in midwifery schools in Uganda

i)   The current school fee's structure for the e-learning midwifery students is inequitable, the school management apparatus needs to revisit this as it has potential for negatively affecting e-learning adoption.

ii)   There should be deliberate efforts by midwifery school administrators to develop a school financial resource mobilisation strategy which acknowledges the avenues for achieving diversification of financial resources.

iii)   Midwifery school administrators should organise trainings on "social entrepreneurship" for their staff, and senior management, this will help shift the attitude of administrators to start viewing e-learning programs as a source of social income to the school and hence inculcate it in their school strategic plans

iv)   The current school fees payment system for e-learning program should be improved upon or other payment systems should be introduced for the convenience of all students.

**5.4.5 Recommendations for E-Learning Practitioners, Researchers, and Policy Makers.**

This study comes up with recommendations for e-learning practitioners especially in the Ugandan context, and it recommends as follows:

i) When designing e-learning programs there is need to ensure that the user interface is well developed so as to meet the learning needs of the e-learners. Particularly paying attention to features that can increase interactivity, easy navigation, reliability and can give access to campus all the time.

ii) If the e-learning program is still in its infancy and relying on CD-ROMs as the main charnel for delivering content, ensure the CD-ROMs are of high quality and internet enabled, so as to be able to be accessed on any computer irrespective of the model. The DVD technology could also be used instead of CD-ROM.

iii) Ensure effective training of the users is accomplished before they can access the content. Involve users in eliciting feedback on the user interface for continuous quality improvement.

Based on the findings of the study, the following are recommended for future research:

i) Given the fact that the study did not address all the dimensions of e-learning service, there is need for follow on study to cover all the dimensions of e-learning service across all e-learning programs in Uganda.

ii) There is need also for follow on research to study what constitutes e-learning service in the context of Uganda, the current dimensions used are based on more developed countries like the USA, UK, Vietnam, and others.

Based on the findings of the study, the following are the policy recommendations

i) There is need to develop e-learning quality assurance policy at the national level and since midwifery schools did not possess any of such a policy, the national e-learning

quality assurance policy would be used as a benchmark for the midwifery schools to develop their own which fits within their context.

ii) There is need to develop the school tuition fees policy for all midwifery training programs including e-learning training as this will help in guiding the midwifery schools to levy equitable school fees structure across all training programs.

## 5.5 Summary of Chapter Five

The discussion in this chapter clearly indicates that most of the findings of this study were also in tandem with findings of similar studies previously conducted elsewhere. Specifically, this study was able to highlight that technology leadership practices, online quality management practices, instructional design strategies and school financing mechanisms were Organisational Critical Success Factors for the adoption of e-learning.

There were several salient practices highlighted in each of the four OCSF's, however, several literatures indicated that their effective implementation required combined efforts of the stakeholders, including school administrators, tutors, and the students on the e-learning programs. The study has also made specific recommendations to be looked at for each of the four OCSFs, additionally, recommendations for e-learning practitioners, researchers, and policy makers have also been highlighted.

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**Publications from Dissertation**

1. Bigirwa, J. P., Ndawula, S., & Naluwemba, E. F. (2020). Does the School Financing Role Matter in E-Learning Adoption? An Explanatory Sequential Study in Midwifery Schools in Uganda. *Contemporary Educational Technology, 12* (1), 1-10. p264. https://doi.org/10.30935/cedtech/7630

2. Bigirwa, J. P., Ndawula, S., & Naluwemba, E. F. (2020). Online quality management a precursor for improving e-learning adoption in Midwifery schools in Uganda. *International Journal of Educational Methodology*, *6* (2), 271-283. https://doi.org/10.12973/ijem.6.2.271

3. Bigirwa, J. P., Ndawula, S., & Naluwemba, E. F. (2020). E-learning adoption: Does the instructional design model matter? An explanatory sequential study on midwifery schools in Uganda. *E-Learning and Digital Media*, *17*(6), 460–481. https://doi.org/10.1177/2042753020946286

# APPENDIXES

## APPENDIX I: Questionnaire for tutors and students on e-learning program. …

Dear Respondent,

The researcher is a student at Kyambogo University and is undertaking a research to generate data and information on "ORGANISATIONAL CRITICAL SUCCESS FACTORS AND E-LEARNING ADOPTION IN MIDWIFERY SCHOOLS IN UGANDA".

You have been selected to participate in this study because the contribution you make to your organization is central to the kind of information required. The information you provide will be used for academic purposes but also to improve the adoption of e-learning in midwifery schools and will be treated with utmost confidentiality. Kindly, spare some of your valuable time to answer these questions by giving your views where necessary or ticking one of the alternatives given. Indeed, your name may not be required. Thank you for your time and cooperation.

### A) *Biographical data,*

1) What is the name of your School? (**Tick as Appropriate**)

| | |
|---|---|
| (i) Masaka School of Comprehensive Nursing | (ii) Soroti School of Comprehensive Nursing |
| (iii) Mengo School of Nursing &Midwifery | (iv) Lira School of Comprehensive Nursing |
| (v) Arua Scholl of Comprehensive Nursing | (vi) Public Health Nurses College |
| (vii) Nsambya School of Nursing | (viii) Mulago School of Nursing |
| (ix) Jinja School of Nursing | (x) Kabale School of Nursing |
| (xi) Rubaga School of Nursing &Midwifery | (xii) Kagando School of Nursing &Midwifery |

2) What is the total number of students in your school?

(i) Less than 100 ☐          (ii) 101 – 200 ☐

(iii) 201 - 300 ☐          (iv) More than 300 ☐

3) What is the number of students on eLearning program in your school?

(i) Less than 10 ☐          (ii) 11 - 20 ☐

(iii) 21 – 30 ☐          (iv) More than 30 ☐

4) What is your gender?

(i) Male ☐      (ii) Female ☐

5) What is your age?

(i) 20-29 ☐      (ii) 30-39 ☐

(iii) 40-49 ☐      (iv) 50 and above ☐

6) What is your highest level of education?

(i) Diploma ☐      (ii) Bachelor's degree ☐

(iii) Masters' degree ☐      (iv) Doctorate ☐

(v) Others (specify)..........................................

7) What is your role in this school?

(i) Tutor ☐      (ii) Student ☐

| **B)** | **School Financing mechanisms** |
|---|---|

Please indicate the extent to which you agree or disagree with each of the following statements: **Note (if you are student skip questions 1 – 4)**

| | Strongly disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Strongly agree |
|---|---|---|---|---|---|
| 1. Our school has diversified sources of funds | 1 | 2 | 3 | 4 | 5 |
| **2.** In our school, there are deliberate efforts for expanding sources of funds. | 1 | 2 | 3 | 4 | 5 |
| **3.** At our school, there is good coordination mechanisms for our sources of funds | 1 | 2 | 3 | 4 | 5 |
| **4.** At our school there is a good school fees structure relevant to each study program | 1 | 2 | 3 | 4 | 5 |
| **5.** The school fees structure for e-learning program is affordable. | 1 | 2 | 3 | 4 | 5 |
| **6.** The school fees payment system for e-learning program is convenient | 1 | 2 | 3 | 4 | 5 |

## C) Instruction design

Please indicate how much you agree or disagree with each of the following statements:

| | Strongly disagree | Somewhat disagree | Neither agree nor disagree | Somew hat agree | Strongly agree |
|---|---|---|---|---|---|
| 1. In our school, the instruction materials for e-learning program are interactive | 1 | 2 | 3 | 4 | 5 |
| 2. At our school, tutors and students always work together in updating the e-learning materials | 1 | 2 | 3 | 4 | 5 |
| 3. At our school, we go through a process of analyse, design, develop, implement, and evaluate as we develop our eLearning content | 1 | 2 | 3 | 4 | 5 |
| 4. At our school, there is a routine of eliciting feedback from tutors and students on the eLearning instruction materials | 1 | 2 | 3 | 4 | 5 |
| 5. At our school, tutors and students collaboratively develop the e-learning materials for our program | 1 | 2 | 3 | 4 | 5 |
| 6. At our school, both tutors and students are given an opportunity to provide feedback on our e-learning program | 1 | 2 | 3 | 4 | 5 |
| 7. At our school, we engage in more than one e-learning activity on our e-learning program (examples of eLearning activities are CD-ROMS, video clips, audio clips, small group work, chat, debate, discussion, Facebook link, etc.) | 1 | 2 | 3 | 4 | 5 |

## D) Technology leadership

Please indicate how much you agree or disagree with each of the following statements:

| | Strongly disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Strongly agree |
|---|---|---|---|---|---|
| 1. Our school administration is committed at providing most of the technological facilities we require on our e-learning program | 1 | 2 | 3 | 4 | 5 |
| 2. In our school, tutors and students are always encouraged to use technological facilities inside and outside classroom to supplement our learning | 1 | 2 | 3 | 4 | 5 |
| 3. At our school, there is a culture of appreciating those who take an extra mile in using technology to improve our teaching and learning process | 1 | 2 | 3 | 4 | 5 |
| 4. At our school, there are people that we can visibly refer to as 'champions' that advocate for the use of technology in our teaching and learning processes. | 1 | 2 | 3 | 4 | 5 |
| 5. Our school, provides an ambient and supportive environment for the use of technology in our teaching and learning processes. | 1 | 2 | 3 | 4 | 5 |
| 6. Our e-learning program is seen as an opportunity for embedding technology in all our learning programs in our school | 1 | 2 | 3 | 4 | 5 |

## E) Online Quality

Please indicate how much you agree or disagree with each of the following statements:

| | Strongly disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Strongly agree |
|---|---|---|---|---|---|
| 1. Our e-learning program provides the best online learning experience | 1 | 2 | 3 | 4 | 5 |
| **2.** Our Learning Management System (LMS) meets most of my online learning expectations | 1 | 2 | 3 | 4 | 5 |
| **3.** The CD-ROMS we use on our eLearning program meets my online learning expectations | 1 | 2 | 3 | 4 | 5 |
| **4.** Our e-learning program can be described as an excellent online learning experience | 1 | 2 | 3 | 4 | 5 |
| **5.** Our school, has set guidelines for improving the quality triats of our eLearning program | 1 | 2 | 3 | 4 | 5 |
| **6.** The quality triats of our eLearning program are collaboratively worked upon together with tutors, students, and the school administrators | 1 | 2 | 3 | 4 | 5 |

## F) e-learning adoption

Please indicate how much you agree or disagree with each of the following statements: **Note**
**(If you are a student skip questions 1-3 and start from 4)**

| | Strongly disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Strongly agree |
|---|---|---|---|---|---|
| 1. The number of e-learning students has been increasing from the time the program was initiated | 1 | 2 | 3 | 4 | 5 |
| 2. The number of log-ins on the learning management system has been increasing over time. | 1 | 2 | 3 | 4 | 5 |
| 3. Online support mechanisms to e-learning students has been diversifying since the inception of the e-learning program | 1 | 2 | 3 | 4 | 5 |
| 4. Different e-learning program activities have been introduced overtime | 1 | 2 | 3 | 4 | 5 |
| 5. Tutors provide timely e-feedback to their students | 1 | 2 | 3 | 4 | 5 |
| 6. Students provide timely e-feedback to their tutors | 1 | 2 | 3 | 4 | 5 |
| 7. The quality of the e-learning program has improved with time | 1 | 2 | 3 | 4 | 5 |
| 8. The e-learning program is exciting | 1 | 2 | 3 | 4 | 5 |

*THANK YOU SO MUCH*

**APPENDIX II: Key Informant Interview Guide for Students and Tutors**

Dear Respondent,

The researcher is a student at Kyambogo University and is undertaking a research to generate data and information on **"ORGANISATIONAL CRITICAL SUCCESS FACTORS AND E-LEARNING ADOPTION IN MIDWIFERY SCHOOLS IN UGANDA".**

You have been selected to participate in this study because the contribution you make to your organization is central to the kind of information required. The information you provide will be used for academic purposes but also to improve the adoption of e-learning in midwifery schools and will be treated with utmost confidentiality. Kindly spare some of your valuable time to answer these questions by giving your views where necessary or ticking one of the alternatives given. Indeed, your name may not be required. This interview will take about 45 minutes. Thank you for your time and cooperation.

**A: School Financing Mechanisms**

1) What are the sources of funds for your school (Probe about government grants, tuition fees from students and other sources) _____?

2) What is the total amount of money in Ugandan Shilling your School receive per year?
_____

 3) What percentage of these funds is allocated to e-learning? _____

4) What challenges are you facing in expanding the sources of funding for your institution?
_____

_____

5) What traits of the e-learning program do these funds support (tutors' wages, students' accommodation, practical placement, utilities (water, electricity, and telephone bills), etc.)?
_____

_____

6) How much do the full-time students on the same program pay per year? …………………

7) How much do e-learning students pay per year at your school? …………………………

8) What is the reason for the difference in fees payable between the two categories?
_____

**B: Instruction design**

9) What learning activities have you integrated in your e-learning program? (Probe whether to following are integrated; video clips, audio clips, Facebook link, Chats, Pop-quiz or self-test, Small group work, Discussion and debate)? _____

_____

10) How do tutors and students work together to update the eLearning materials? _____
_____
_____

11) How does the school go through the process of analyse, design, develop, implement and evaluate as you develop your eLearning content?  _____
_____
_____

12) What mechanisms are in place for eliciting feedback from tutors and students on the eLearning instruction materials? _____
_____
_____

13) How do tutors and students develop the eLearning materials for the program (Probe whether there is any collaboration, any challenges, etc.) _____
_____
_____

14) Do you engage in more than one eLearning activity on the eLearning program? Yes/No. Which are some of these activities (Probe for CDROMS, Video Clips, Audio clips, small group work, chat, debate, discussion, Facebook link, etc.)?

15) How do you cater to the individual needs of your learners on the e-learning program (Probe for **Acknowledging diverse learning needs,** On-going assessment, Group collaboration, Learners' empowerment, etc.)? _____
_____

16) How do you apply differentiated teaching in your e-learning program (Probe for Allow learners to progress at their own speed, offer supplemental learning resources, create individualized learning plans, research the specific needs of learners, clarify expectations right from the start, etc.)?

_____
_____

17) Describe to me the steps you take in designing and improving your e-learning program?
_____
_____

**C: Technology leadership**

18) What technological facilities do your students commonly use on your e-learning program (Probe for Desk top computers, iPad, Laptops, MP3 player, Smartphone, Printer / Scanner, Microphone/Speakers/Headset, Learning Management System (LMS), CD-ROMS, etc.)?

_____

_____

19) Are the above technological facilities used both inside and outside classroom to supplement our learning? Yes/NO. Elaborate _____

_____

20) Does the school have the culture of appreciating those who take an extra mile in using technology to improve the teaching and learning process? Yes/No. Elaborate_____

_____

21) Does the school have an ambient and supportive environment for the use of technology in our teaching and learning processes? Yes/No. What do you have in any place? _____

_____

22) What is the total number of functional desktop computers in the school? _____

23) What challenges do you face in maintaining and servicing your technological facilities?

_____

_____

**D: Online Quality**

24) How do you meet the quality aspirations of your e-learning students (Probe for design and implement the learning together, take learners' preferences as the starting point, use their feedback to improve on key issues, etc.)?

25) How do you achieve the best learning experience of your e-learning students (Probe for set and communicate clear goals, invest more on qualitative content design, focus more on analysis and design, evaluate thoroughly, etc.)? _____

_____

26) What do you do to keep quality standards of e-learning (Probe for check course content to ensure it is well thought-out, examine the logical structure so that learners can access the content better, check interactivity for engagement, provide adequate technology support, check Visual design to put the learner at ease and minimizes cognitive overload, etc.)?

_____

**E: e-learning adoption**

27) Has the number of e-learning students been increasing or decreasing from the time the program was initiated? YES/NO. Why?

_____

_____

28) What influences the number of log-ins by users on the learning management system (LMS)? _____

29) On average how often do users log-in on the learning management system (LMS) (Probe for Every day, once a week, twice a week, every two weeks, once a month, etc.)? _____

30) How do you offer online support to your e-learning students (Probe for students in a live chat, mobile/landline, send emails, WhatsApp, record lectures and post them as audio clips, Facebook, etc.)?

31) On average how many students are instructed on line? _____

32) How often do tutors provide e-feedback to their students? _____

33) How often do students provide e-feedback to their tutors? _____

34) What are the challenges facing the quality of the e-learning program in the school?

_____

_____

35) How often do you meet as members staff to evaluate and share experiences on your e-learning programs? _____

_____

**THANK YOU SO MUCH**

**APPENDIX III: Focus group discussion guide for students and tutors**

**A: School Financing Role**

1. What is your view regarding the sources of funds for the school verses the amounts collected?

2. How relevant is the school fees structure to the e-learning study program?

**B: Instruction design**

3. To what extent are the instruction materials appropriate to the eLearning program?

4. How do tutors and students work together in updating the eLearning materials?

5. How do students get involved in the process of analyse, design, develop, implement &evaluate as you develop your eLearning content?

**C: Technology leadership**

6. What technological facilities do you commonly use on your e-learning program?

7. What technological facilities are used outside classroom to supplement our learning?

8. What kind of appreciation does the school have in place for those who take an extra mile in using technology to improve the teaching and learning process?

**D: Online Quality**

9. What are the challenges faced to meet the quality aspirations of e-learning students?

10. How are the above challenges mitigated by the school?

**E: e-learning adoption**

11. What majorly affects students from enrolling for the e-learning program?

12. What influences the number of log-ins by users on the learning management system (LMS)?

13. How often do tutors provide e-feedback to you?

14. How often do you provide e-feedback to tutors?

15. What are the challenges facing the quality of the e-learning program in the school?

**THANK YOU SO MUCH**

**APPENDIX IV: Documents Review Guide**

**Key Documents to be reviewed**

1. Financial reports
2. Annual School reports
3. Strategic plans of schools
4. Annual school budget drafts
5. eLearning program meeting minutes
6. Field practice reports
7. School Assessment Reports

**Some questions to be posed for each document**

**Technology leadership**

- What technological equipment has been procured in the most recent past?

- What proportion of the school budget does technological equipment cover?

- What do inventory records say on technological equipment?

**Financing role of the school**

- What do records say about sources of funds for the school?

- What was the total revenue of the school in the past financial year?

- What proportion of the total revenue of the school is spent on e-learning related

  activities?

- What is the school fees structure for eLearning students as compared with the

  regular students on the similar program?

**Online quality management**

- Presence of online quality guidelines

- How are online quality guidelines implemented?

– What do quality assurance reports say about quality of e-learning program?

**Instructional design**

– What do reports say about interactivity of learning materials?

– What do reports say about catering for individual needs of eLearning students?

**e-learning adoption**

– What do reports say about total enrolment of eLearning students?

– What changes are observed in enrolment of students on eLearning program over years?

**APPENDIX V: Informed Consent Document- Questionnaire**

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**Title of the study:** "ORGANISATIONAL CRITICAL SUCCESS FACTORS AND THE ADOPTION OF E-LEARNING IN MIDWIFERY SCHOOLS IN UGANDA".

**Investigator(s):** Bigirwa June Patrick; **Institution(s):** Kyambogo University.

**Introduction**

Dear Respondent,

The researcher is a student at Kyambogo University and is undertaking a research to generate data and information on "Institutional Management Framework and the adoption of e-learning in Midwifery schools in Uganda". You have been selected to participate in this study because the contribution you make to your school is central to the kind of information required. The information you provide will be used for academic purposes but also to improve the adoption of e-learning in midwifery schools and will be treated with utmost confidentiality. This informed consent explains the study to you. After the study has been explained, any questions you may have are answered, and if you decide to participate in the study, you will be asked to sign a consent, which you will be given a copy to keep.

**A brief description of the sponsors of the research project**

This research project is supported by the individual PhD student who is the main researcher. It is hoped that the findings of the study will contribute to the award of his academic degree but at the same time help Ministry of Education and sports together with midwifery schools and all those involved in e-learning to design and implement robust e-learning programs in the country.

**Purpose:**

The purpose of this study is to develop institutional management framework elements that can be used to improve e-learning adoption in midwifery schools in Uganda.

**Procedures:**

Your participation in this study will involve you responding to some few questions related to e-learning implementation in your school.

**Who will participate in the study?**

The interview will last for approximately 45 to 50 minutes and about two hundred and twenty-four (224) students and tutors are anticipated to respond to the questionnaire.

**Risks/discomforts:**

There is no foreseeable risk of harm or discomfort that will arise from your participation in this study. The only risk or discomfort will be the inconvenience in terms of time spent during the interview.

**Benefits:**

This study might benefit you particularly and your school in sense that the findings are likely to improve the usage of e-learning and as result improving your learning prospects and career development including lifelong learning abilities. research participants will get feedback on findings and progress of the study, and any new information that affects you (including incidental findings) will be made available to you on time.

**Confidentiality:**

Your identity will not be revealed to any one as we shall only use codes to identify participants. Information obtained will only be accessible by the research team. Soft copies of the data will be protected by password and hard copy files will be kept under lock and key. Confidential information will only be accessed by the principal investigator.

**Alternatives:**

You do not have to participate in this study if you are not interested. You will not lose any benefit in case of no participation.

**Cost:**

There will not be any additional cost incurred as a result of participating in this study.

**Questions:**

If you have any questions related to the study, or your rights as a research participant, you can contact the principal investigator, Bigirwa June Patrick on telephone number 0772559083/0701559083 or via email on bigirwajp@gmail.com.

**Statement of voluntariness:**

Participation in the research study is voluntary and you may join on your own free will. You have a right to withdraw from the study at any time without penalty. If you have any issues pertaining to your rights and participation in the study, please contact the Chairperson, Gulu University Research Ethics Committee, Dr. Gerald Obai Tel: No., 0772305621; email: lekobai@yahoo.com/lekobai@gmail.com; or the Uganda National Council for Science and Technology, on plot 6 Kimera road, Ntinda, Kampala on Tel 0414705500.

**APPENDIX VI: Informed Consent Document - KII**

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**Title of the study:** "ORGANISATIONAL CRITICAL SUCCESS FACTORS AND E-LEARNING ADOPTION IN MIDWIFERY SCHOOLS IN UGANDA".

**Investigator(s):** Bigirwa June Patrick; **Institution(s):** Kyambogo University.

**Introduction**

Dear Respondent,

The researcher is a student at Kyambogo University and is undertaking a research to generate data and information on "Institutional Management Framework and the adoption of e-learning in Midwifery schools in Uganda". You have been selected to participate in this study because the contribution you make to your school is central to the kind of information required. The information you provide will be used for academic purposes but also to improve the adoption of e-learning in midwifery schools and will be treated with utmost confidentiality. This informed consent explains the study to you. After the study has been explained, any questions you may have are answered, and if you decide to participate in the study, you will be asked to sign a consent, which you will be given a copy to keep.

**A brief description of the sponsors of the research project**

This research project is supported by the individual PhD student who is the main researcher. It is hoped that the findings of the study will contribute to the award of his academic degree but at the same time help Ministry of Education and sports together with midwifery schools and all those involved in e-learning to design and implement robust e-learning programs in the country.

**Purpose:**

The purpose of this study is to develop institutional management framework elements that can be used to improve e-learning adoption in midwifery schools in Uganda.

**Procedures:**

Your participation in this study will involve you responding to some few questions related to e-learning implementation in your school.

**Who will participate in the study?**

The interview will last for approximately 45 to 50 minutes and about fifteen key informants including selected students, tutors, school administrators and MOES officials are anticipated to respond to the questions in the KII guide.

**Risks/discomforts:**

There is no foreseeable risk of harm or discomfort that will arise from your participation in this study. The only risk or discomfort will be the inconvenience in terms of time spent during the interview.

**Benefits:**

This study might benefit you particularly and your school in sense that the findings are likely to improve the usage of e-learning and as result improving your learning prospects and career development including lifelong learning abilities. research participants will get feedback on findings and progress of the study, and any new information that affects you (including incidental findings) will be made available to you on time.

**Confidentiality:**

Your identity will not be revealed to any one as we shall only use codes to identify participants. Information obtained will only be accessible by the research team. Soft copies of the data will be protected by password and hard copy files will be kept under lock and key. Confidential information will only be accessed by the principal investigator.

**Alternatives:**

You do not have to participate in this study if you are not interested. You will not lose any benefit in case of no participation.

**Cost:**

There will not be any additional cost incurred as a result of participating in this study.

**Questions:**

If you have any questions related to the study, or your rights as a research participant, you can contact the principal investigator, Bigirwa June Patrick on telephone number 0772559083/0701559083 or via email on bigirwajp@gmail.com.

**Statement of voluntariness:**

Participation in the research study is voluntary and you may join on your own free will. You have a right to withdraw from the study at any time without penalty. If you have any issues pertaining to your rights and participation in the study, please contact the Chairperson, Gulu University Research Ethics Committee, Dr. Gerald Obai Tel: No., 0772305621; email: lekobai@yahoo.com/lekobai@gmail.com; or the Uganda National Council for Science and Technology, on plot 6 Kimera road, Ntinda, Kampala on Tel 0414705500.

**Statement of consent**

......................................................................, has described to me what is going to be done, the risks, the benefits involved and my rights as a participant in this study. I understand that

my decision to participate in this study will not affect me in any way. In the use of this information, my identity will be concealed. I am aware that I may withdraw at any time. I understand that by signing this form, I do not waive any of my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate. A copy of this form will be provided to me.

Name ……………………Signature of participant……………………Date ………

Name……………………. Signature of interview …………………….. Date……………

**APPENDIX VII: Informed Consent Document- FDG**

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**Title of the study:** "ORGANISATIONAL CRITICAL SUCCESS FACTORS AND E-LEARNING ADOPTION IN MIDWIFERY SCHOOLS IN UGANDA".

**Investigator(s):** Bigirwa June Patrick; **Institution(s):** Kyambogo University.

**Introduction**

Dear Respondent,

The researcher is a student at Kyambogo University and is undertaking a research to generate data and information on "Institutional Management Framework and the adoption of e-learning in Midwifery schools in Uganda". You have been selected to participate in this study because the contribution you make to your school is central to the kind of information required. The information you provide will be used for academic purposes but also to improve the adoption of e-learning in midwifery schools and will be treated with utmost confidentiality. This informed consent explains the study to you. After the study has been explained, any questions you may have are answered, and if you decide to participate in the study, you will be asked to sign a consent, which you will be given a copy to keep.

**A brief description of the sponsors of the research project**

This research project is supported by the individual PhD student who is the main researcher. It is hoped that the findings of the study will contribute to the award of his academic degree but at the same time help Ministry of Education and sports together with midwifery schools and all those involved in e-learning to design and implement robust e-learning programs in the country.

**Purpose:**

The purpose of this study is to develop institutional management framework elements that can be used to improve e-learning adoption in midwifery schools in Uganda.

**Procedures:**

Your participation in this study will involve you responding to some few questions related to e-learning implementation in your school. Together with other colleagues in a group of 4-5 people.

**Who will participate in the study?**

The FGDs will last for approximately 45 to 50 minutes and about four similar FGDs will be held for the entire study, two for students and two for tutors each comprising about 4-5 people, and held within the premises of the school.

**Risks/discomforts:**

There is no foreseeable risk of harm or discomfort that will arise from your participation in this study. The only risk or discomfort will be the inconvenience in terms of time spent during the focus group discussions.

**Benefits:**

This study might benefit you particularly and your school in sense that the findings are likely to improve the usage of e-learning and as result improving your learning prospects and career development including lifelong learning abilities. research participants will get feedback on findings and progress of the study, and any new information that affects you (including incidental findings) will be made available to you on time.

**Confidentiality:**

Your identity will not be revealed to any one as we shall only use codes to identify the four groups of FGDs. Information obtained will only be accessible by the research team. Soft copies of the data will be protected by password and hard copy files will be kept under lock and key. Confidential information will only be accessed by the principal investigator.

**Alternatives:**

You do not have to participate in this study if you are not interested. You will not lose any benefit in case of no participation.

**Cost:**

There will not be any additional cost incurred as a result of participating in this study.

**Questions:**

If you have any questions related to the study, or your rights as a research participant, you can contact the principal investigator, Bigirwa June Patrick on telephone number 0772559083/0701559083 or via email on bigirwajp@gmail.com.

**Statement of voluntariness:**

Participation in the research study is voluntary and you may join on your own free will. You have a right to withdraw from the study at any time without penalty. If you have any issues pertaining to your rights and participation in the study, please contact the Chairperson, Gulu University Research Ethics Committee, Dr. Gerald Obai Tel: No., 0772305621; email: lekobai@yahoo.com/lekobai@gmail.com; or the Uganda National Council for Science and Technology, on plot 6 Kimera road, Ntinda, Kampala on Tel 0414705500.

**Statement of consent**

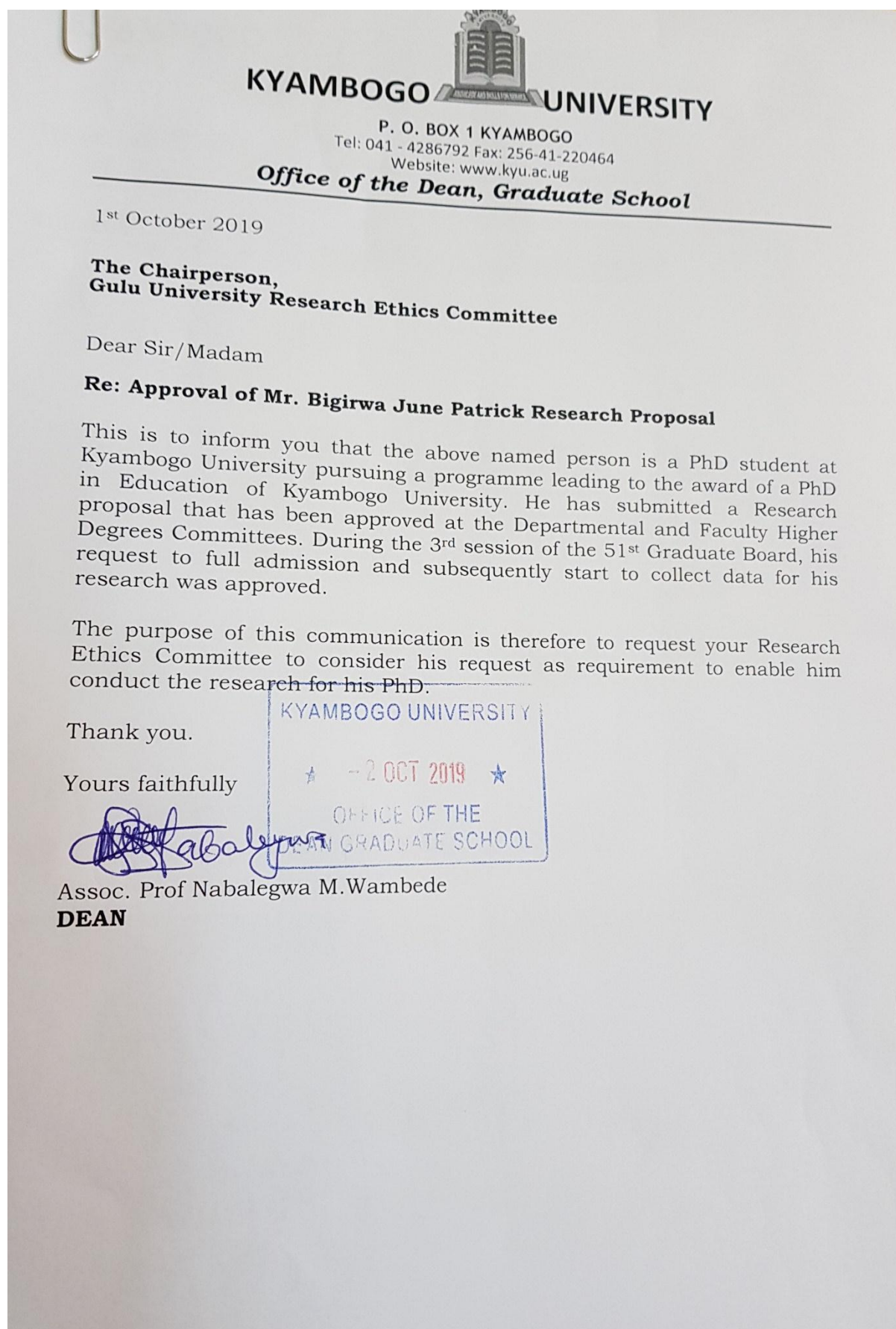...................................................................., has described to me what is going to be done, the risks, the benefits involved and my rights as a participant in this study. I understand that

my decision to participate in this study will not affect me in any way. In the use of this information, my identity will be concealed. I am aware that I may withdraw at any time. I understand that by signing this form, I do not waive any of my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate. A copy of this form will be provided to me.

Name ………………………Signature of participant…………………Date ………………

Name……………………. Signature of interviewer…………………Date…………………

**APPENDIX VIII: Approval letter from Kyambogo University Graduate School**

**KYAMBOGO UNIVERSITY**

P. O. BOX 1 KYAMBOGO
Tel: 041 - 4286792 Fax: 256-41-220464
Website: www.kyu.ac.ug

*Office of the Dean, Graduate School*

1st October 2019

The Chairperson,
Gulu University Research Ethics Committee

Dear Sir/Madam

**Re: Approval of Mr. Bigirwa June Patrick Research Proposal**

This is to inform you that the above named person is a PhD student at Kyambogo University pursuing a programme leading to the award of a PhD in Education of Kyambogo University. He has submitted a Research proposal that has been approved at the Departmental and Faculty Higher Degrees Committees. During the 3rd session of the 51st Graduate Board, his request to full admission and subsequently start to collect data for his research was approved.

The purpose of this communication is therefore to request your Research Ethics Committee to consider his request as requirement to enable him conduct the research for his PhD.

Thank you.

Yours faithfully

KYAMBOGO UNIVERSITY

★ -2 OCT 2019 ★

OFFICE OF THE
DEAN GRADUATE SCHOOL

Assoc. Prof Nabalegwa M.Wambede
**DEAN**

**APPENDIX IX: Authorization letter from Gulu University Research and Ethics Committee (GUREC)**

**GULU** **UNIVERSITY**

P.O. Box 166 Gulu Uganda
Website: www.gu.ac
Email: guluuniversity.rec@gmail.com

Tel: +256-4714-32096
Fax: +256-4714-32913
Mob:+256772305621/776812147

**RESEARCH ETHICS COMMITTEE**

23rd July 2019

**APPROVAL NOTICE**

Mr. BIGIRWA JUNE PATRICK
Kyambogo University,

Re:    **Application No. GUREC-064-19**

Type of review:
[X] **Initial review**
[ ] Amendment
[ ] Continuing review
[ ] Termination of study
[ ] SAEs
[ ] Other, Specify:_____

Title of proposal: **"INSTITUTIONAL MANAGEMENT FRAMEWORK AND THE ADOPTION OF E-LEARNING IN MIDWIFERY SCHOOLS IN UGANDA"**

I am pleased to inform you that at the 53$^{rd}$ convened meeting on 20$^{th}$ June 2019, the Gulu University Research Ethics Committee (**GUREC**) voted to approve the above referenced application.

Approval of the research is for the period of **20$^{th}$ June 2019 to 19$^{th}$ June 2020**

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.

2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the **GUREC** for re-review and approval prior to the activation of the changes. The **GUREC** application number assigned to the research should be cited in any correspondence.

GULU UNIVERSITY
INSTITUTIONAL REVIEW COMMITTEE
APPROVED
★   2 3 JUL 2019   ★
FACULTY OF MEDICINE
P. O. Box 166, Gulu

3. Any unanticipated problems involving risks to participants must be promptly reported to the **GUREC**. New information that becomes available which could change the risk: benefit ratio must be submitted promptly for the **GUREC** review.

4. Only approved and stamped consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The **GUREC** may conduct audits of all study records, and consent documentation may be part of such audits.

5. Regulations require review of an approved study not less than once per 12-month period. Therefore, a continuing review application must be submitted to the **GUREC** eight (8) weeks prior to the above expiration **date of 19th June 2020** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely manner may result in suspension or termination of the study, at which point new participants may not be enrolled and currently enrolled participants must be taken off the study.

6. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.
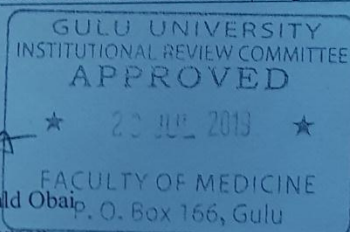
The following documents have been approved in this application by the **GUREC**:

| | Document | Language | Version | Version Date |
|---|---|---|---|---|
| 1 | Protocol | English | Version 2.0 | 22nd July 2019 |
| 2 | Data Collection Tools | English | Version 2.0 | 22nd July 2019 |
| 3 | Informed consent Document | English | Version 2.0 | 22nd July 2019 |

GULU UNIVERSITY
INSTITUTIONAL REVIEW COMMITTEE
APPROVED
★    2 3 JUL 2019    ★
FACULTY OF MEDICINE
P. O. Box 166, Gulu

Signed,

Dr. Gerald Obai
**Chairperson**
**Gulu University Research Ethics Committee**

**APPENDIX X: Authorization letter from Uganda National Council of Science and Technology (UNCST)**

# Uganda National Council for Science and Technology
## (Established by Act of Parliament of the Republic of Uganda)

**UNCST**

Our Ref: SS 5167          11ᵗʰ February 2020

Mr. June Patrick Bigirwa
Principal Investigator
C/o Kyambogo University
**Kampala**

Dear Mr. Bigirwa,

**Re: Research Approval:**     Institutional Management Framework and the adoption of E – Learning in Midwifery Schools in Uganda

I am pleased to inform you that on **15/01/2020**, the Uganda National Council for Science and Technology (UNCST) approved the above referenced research project. The Approval of the research project is for the period of **15/01/2020** to **15/01/2023**.

Your research registration number with the UNCST is **SS 5167**. Please, cite this number in all your future correspondences with UNCST in respect of the above research project. As the Principal Investigator of the research project, you are responsible for fulfilling the following requirements of approval:

1. Keeping all co-investigators informed of the status of the research.
2. Submitting all changes, amendments, and addenda to the research protocol or the consent form (where applicable) to the designated Research Ethics Committee (REC) or Lead Agency for re-review and approval **prior** to the activation of the changes. UNCST must be notified of the approved changes within five working days.
3. For clinical trials, all serious adverse events must be reported promptly to the designated local REC for review with copies to the National Drug Authority and a notification to the UNCST.
4. Unanticipated problems involving risks to research participants or other must be reported promptly to the UNCST. New information that becomes available which could change the risk/benefit ratio must be submitted promptly for UNCST notification after review by the REC.

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**LOCATION/CORRESPONDENCE**

*Plot 6 Kimera Road, Ntinda*
*P. O. Box 6884*
*KAMPALA, UGANDA*

**COMMUNICATION**

**TEL: (256) 414 705500**
**FAX: (256) 414-234579**
**EMAIL: info@uncst.go.ug**
**WEBSITE: http://www.uncst.go.ug**

5. Only approved study procedures are to be implemented. The UNCST may conduct impromptu audits of all study records.

6. An annual progress report and approval letter of continuation from the REC must be submitted electronically to UNCST. Failure to do so may result in termination of the research project.

Please note that this approval includes all study related tools submitted as part of the application as shown below:

| No. | Document Title | Language | Version Number | Version Date |
|-----|----------------|----------|----------------|--------------|
| 1. | Research proposal | English | 2.0 | July 2019 |
| 2. | Questionnaire for tutors and students on e – learning program | English | 2.0 | July 2019 |
| 3. | Key informant interview guide | English | 2.0 | July 2019 |
| 4. | Informed consent forms | English | 2.0 | July 2019 |

BETH MUTUMBA

For: Executive Secretary

UGANDA NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY
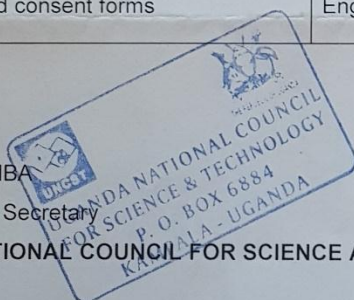
Copied:     Chair, Gulu University, Research Ethics Committee