



**UNIVERSITY OF NAIROBI**

SCHOOL OF COMPUTING AND INFORMATICS

**FACTORS AFFECTING INTENTION TO USE E-LEARNING BY PEOPLE WITH  
HEARING IMPAIRMENT: A CASE OF KAREN TECHNICAL TRAINING  
INSTITUTE FOR THE DEAF**

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE  
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## DECLARATION

This proposal is my original work and to the best of my knowledge, this research project has not been submitted for any other award in any University.

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This Project has been submitted in partial fulfilment of the requirement of the Master of Science Degree in Information Technology Management of the University of Nairobi with my approval as the University supervisor.

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## **DEDICATION**

To my daughters Aimee Limera and Anaya Njambi; you give me the motivation to face life everyday

## **ACKNOWLEDGEMENT**

I thank the Almighty God for his love, mercy and grace during the entire journey. I thank my Lord and Saviour Jesus Christ for the faith and belief that success was coming. I sincerely appreciate the guidance provided by my supervisor Prof. Robert O. Oboko who always made time to review, correct, guide and encourage me during the the entire period of this research. I also truly appreciate the members of the review panel, Prof. Opiyo, Prof. Wausi and Dr. Pauline for their guidance and corrections. Many thanks to all my lecturers for the knowledge I acquired throughout the course. I also thank my fellow students pursuing MSc. ITM and in particular Mr. Ronald Cyoy, Ms Wambui Waithaka and Mr. James Odanga. I would also like to thank my wife Pamella Odingee for her unwavering support and understanding throughout the entire journey and my sister Mary Wanjiku for the advice and encouragement as I carried out my research work. I thank my parents Mr Stanley Mutua and Mrs Lucy Njambi for supporting me through my entire educational life, this would not have been possible without the seed you planted.

## **ACRONYMS AND ABBREVIATIONS**

**AT** - Assistive Technologies

**CMS** – Content Management System

**DFA** - Design for all

**IITE** - Institute for Information Technologies in Education

**ICT** – Information and Communication Technology

**KTTID** – Karen Technical training institute for the deaf

**LMS** – Learning Management System

**PWD** – People with disabilities

**UD** -Universal Design

**UDL** -Universal Design for learning

**WAI** – Web Accessibility initiative

**WCAG** – Web content Accessibility Guidelines

**W3C** – World Web Consortium

## DEFINITION OF OPERATIONAL TERMS

**Accessibility:** design qualities that endeavour to make online learning available to all by ensuring that the way it is implemented does not create unnecessary barriers however, the student may interact with systems

**Asynchronous learning:** a form of learning where learning can occur in different times and spaces particular to each learner

**Assistive technologies:** any form of technology, device, software, or equipment that helps people work around challenges so they can learn, communicate, and function better.

**Hearing Impairment:** an impairment in hearing, whether permanent or fluctuating, that adversely affects an individual's educational performance

**Synchronous learning:** a type of learning in which learner(s) and instructor(s) are in the same place (in person or online), at the same time, in order for learning to take place

**Web Content:** information in a web page or web application, including natural information such as text, images, and sounds, code or mark-up that defines structure, presentation.

## ABSTRACT

E-learning has become an increasingly important learning and teaching mode and is heavily utilised in open and distance learning programs as well as in conventional learning institutions. The traditional application of e-learning does not address learner variety. People with disabilities have learning difficulties that hinder their ability to benefit from the general education system without support or accommodation to their needs. Institutions of higher learning need to expand efforts at ensuring equality in the e-learning experience, by adopting platforms that enable accessibility of the virtual campuses as more students with disabilities enrol in college. The Web Content Accessibility Guidelines 2.1 (WCAG) aims to make digital learning more accessible to people with disabilities, including auditory disabilities. Learning Management Systems including Moodle, Canvas, Brightspace and Blackboard Learn are compliant with WCAG 2.1 accessibility requirements at compliance levels AA or AAA. This study was carried out to find out the factors that affect intention to use e-learning for people with hearing impairment in Kenya. The research is descriptive study and was carried out at the Karen Technical Training Institute for the deaf. Data was collected from students and instructors through questionnaires. After data analysis, the study presents the findings and recommendations. The study concludes that while LMS systems for people with hearing impairment are available and users perceive them to be useful, their perceived ease of use is not apparent to the users and there is lack of facilitating conditions to influence the intention to use. There is little social influence while users are also not likely to adopt these systems voluntarily. The study recommends that institutions for learners and instructors with hearing impairment enhance their institutional structures in terms of e-learning policies, ICT infrastructure, ICT skills development and sensitise users on ease of use of e-learning systems.

**Keywords: e-learning, accessibility, hearing impairment, ease of use, usefulness, facilitating conditions, voluntariness**

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## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 Background to the Research Study

E-learning has become an integral part of modern learning. It is widely used in various conventional educational institutions and distance learning programs (Gros, 2016). According to Vaona (2018), “e-learning is any educational intervention mediated electronically via the Internet”. (Koper, 2007) states that E-learning is the application of technology to facilitate and enhance learning and training. To get to the current state of e-learning technologies, there has been an evolution of distance learning that began with early postal services and progressed through the use of radio, television, satellite communication and finally the internet, leading to the emergence of Learning Management Systems (Sleator, 2010). LMS systems use software to bridge the learning perception between instructors and learners’ perception (Shannon, 2017). Learning institutions in Kenya have adopted e-learning although in blended mode where face-to-face method is combined with learning that is mediated through computers. (Tarus et al., 2015). For eLearning to be implemented successfully, there is need for physical infrastructure, provision of technical expertise as well as ensuring user’s psychological readiness. (Ouma, Awuor & Kyambo, 2013).

People with disabilities are unable to benefit from the general education system in the absence of support and accommodation to their special needs. (Hayek et al, 2020). One of the key beneficial aspects brought about by e-learning for people with disabilities is accessibility. (Policar, Crawford & Alligood, 2017).For systems to be effective and inclusive, the Design for All’ (DFA) or universal design which ensures benefit from technologies for a wider population must be incorporated (IITE,2006). To achieve this, manufacturers need to agree and adopt general as well as international standards.

According to (IITE, 2006), Accessibility is also a key principle that asserts that a product is deemed inaccessible to a user if it is unused by that user. The product should be defined in terms of the requirements and demands of the user. Service Delivery Systems incorporating regulations and policies relating to Assistive technologies such as market costs and maintenance costs are important in availability as well as the usability of these technologies. Assistive technologies are available for pupils who are blind or visually impaired, deaf or hard of hearing, or have speech difficulties.

The typical application of eLearning follows a ‘one-size-fits-all’ strategy according to (Graf,2007). In modern education, this strategy no longer addresses learner diversity (Rose et al., 2006) Institutions therefore need to adopt e-learning technologies that incorporate the “Universal Design for Learning” (UDL). Universal design for learning, according to (Dalton et al., 2019), extends the concepts of accessibility and inclusion and enables teaching and learning opportunities that are varied and accessible, and includes even learners that have disabilities.

## **1.2 Problem statement**

E-learning has been adopted by many learning institutions internationally and locally. Despite the many benefits provided by e-learning, the traditional e-learning systems do not address the aspect of learner variety (Rose et al., 2006). According to Hollins et al., (2013), as more people with disabilities join colleges, institutions of higher learning must increase efforts to ensure equality in the educational experience, including virtual campus accessibility. When new educational technologies are implemented, higher education institutions must prioritize accessibility. (McAlvage and Rice, 2018).

In Kenya, one of the institutions that provides higher learning opportunities for students that have hearing impairment is the Karen Technical Training Institute for the Deaf. Ngamau (2013), Mulwa et al., (2013), Njoroge (2018) have carried out studies on uptake of eLearning in Kenya. The studies focus on e-learning adoption and majorly in the context of people without disabilities. They fail to cover the scope of e-learning technologies for people with disabilities, specifically people with hearing impairment. This study therefore seeks bridge that research gap.

### **1.3 Objectives of the Research Study**

#### **1.3.1 Main Objective**

The main objective of this study is to establish the factors that affect intention to use e-learning by people with hearing impairment in Kenya.

#### **1.3.2 Specific objectives**

- i.** To determine whether social influences affect intention to use e-learning by people with hearing impairment in Kenya.
- ii.** To assess whether perceived ease of use affects intention to use e-learning by people with hearing impairment in Kenya.
- iii.** To find out whether perceived usefulness affects intention to use e-learning by people with hearing impairment in Kenya.
- iv.** To determine whether facilitating conditions affects intention to use e-learning by people with hearing impairment in Kenya.
- v.** To assess the awareness of the use e-learning among people with hearing impairment in Kenya.
- vi.** To determine whether voluntariness affects intention to use e-learning by people with hearing impairment in Kenya

## **1.4 Research Questions**

- i. Do social influences affect intention to use e-learning by people with hearing impairment in Kenya?
- ii. Does perceived ease of use affect intention to use e-learning by people with hearing impairment in Kenya?
- iii. Does perceived usefulness affect intention to use e-learning by people with hearing impairment in Kenya?
- iv. Do facilitating conditions affect intention to use e-learning by people with hearing impairment in Kenya?
- v. What is the level of awareness of the use of e-learning systems by people with hearing impairment in Kenya?
- vi. Does voluntariness affect intention to use e-learning by people with hearing impairment in Kenya?

## **1.5 Significance of the research study**

**1.5.1 Education sector** - players in education policy setting and implementation including the Ministry of Education can utilise the study findings to create a facilitating environment and bridge technological gaps that create exclusion for people with hearing impairment.

**1.5.2 Technology sector** – The Ministry of ICT can utilise this study to create partnerships with players in the education sector to provide technological platforms that can make e-learning accessible for all.

### **1.5.3 Researchers and Scholars**

This study may be significant to other researchers and scholars as it adds to existing knowledge and would be a source of reference to new research being undertaken in the field of technology and education in Kenya.

## **1.6 Scope of the Research Study**

This study was carried out at Karen Technical Training Institute for the Deaf. The research was limited to e-learning platforms with additional accessibility elements that people with hearing loss can use.

## **1.7 Limitations to the Research Study**

Data collection from respondents was limited to questionnaires, interviews were not utilised since third party assistance for sign language translation would have been required.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 Introduction

E-learning has a number of advantages, including improved communication, student involvement, group development, and knowledge availability (Benta, 2014). It allows for greater flexibility in terms of time and location while also improving the efficacy of knowledge and qualifications. It is cost-effective, compensates for academic staff shortages, and enables for self-paced learning (Arkorful, 2014).

According to W3C, the Internet was designed to work for all people, regardless of their talents and capacities (Pappas, 2018). As a result, it must be used by persons with various hearing, vision, movement, and cognitive capacities. Additionally, (Pappas et al., 2018) notes that the deaf and hard of hearing rely on sign language instead of sounds and states that it is therefore important that LMS for hearing-impaired individuals, to avail all sound in alternative visual formats. The LMS should also provide an effective GUI that is understandable and logical in the presentation of educational activities to students with hearing impairment.

The flexibility of the e-learning system in terms of presentation, control techniques, modalities of access, learner support, as well as the availability of suitable similar content and activities, determine accessibility (Cooper, 2016). In a system whose primary goal is to educate the users, it's critical that everyone, regardless of their physical disability, is presented with the same opportunities to learn the information and content, and that time that should be spent learning the content is not spent overcoming the challenges of navigating the app (Lundqvist & Ström, 2018). Virtual reality, voice recognition, symbol-based interaction and mobile device are

examples of technologies that can be used to assist students with various educational requirements (Erdem, 2017).

### **2.1.2. Web Content Accessibility Guidelines (WCAG)**

WAI creates accessibility guidelines for the web, technical specifications, as well as educational resources geared towards making web-based applications more accessible to persons with disabilities such as learning, neurological disabilities, physical, cognitive, language, visual, speech and auditory (W3C.org, 2021). The guidelines, currently at WCAG 2.1 were published in 2018, with a newer standard, WCAG2.2 set to be published within 2021 (w3c.org, 2021). The WCAG 2.0 which was published in 2008 is approved as an ISO standard: ISO/IEC 40500:2012. According to W3C.org (2021) WCAG has four principles which state that systems are required to be operable, robust, perceivable and understandable. WCAG 2.1 provides 3 levels of compliance, namely A, AA and AAA. For people with hearing impairment, among other requirements, the standard has the following requirements:

Level A: Pre-recorded captions for audio content

Level AA: Live captions for audio content

Level AAA: Pre-recorded Sign Language

#### **2.1.2.1 WCAG Compliant E-learning systems**

##### **2.1.2.1.1 Moodle**

Moodle is a free and opensource LMS, designed to deliver equal functionality and information to all users, regardless of their disability or assistive technology (moodle.org, 2021). On 10 November 2020, Moodle received WCAG 2.1 Level AA accreditation for compliance with WCAG requirements.

#### **2.1.2.1.2 Canvas**

Created by Instructure Inc., Canvas, is a web-based learning management system. Canvas has been validated as compliant with Level A and Level AA of the Web Content Accessibility Guidelines version 2.1 by WebAIM, an independent web accessibility authority.

(instructure.com, 2021)

#### **2.1.2.1.3 Blackboard Learn**

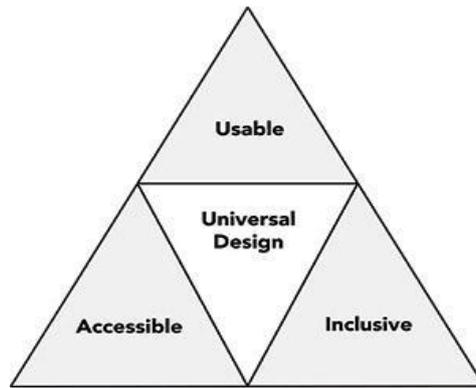
The learning management system Blackboard Learn was created by Blackboard Inc. Blackboard conducts frequent accessibility testing to ensure that its products fulfill international accessibility standards. The WCAG 2.1 AA is used in Blackboard accessibility tests, and frequent audits are performed by a third party. (Blackboard.com, 2021).

#### **2.1.2.1.4 Brightspace**

Brightspace is a web-based learning management system used for online learning and teaching, developed by D2L, formerly known as Desire2Learn. Brightspace reports conformance with (WCAG) 2.1 Level AAA.

### **2.1.3 Universal Design for Learning (UDL)**

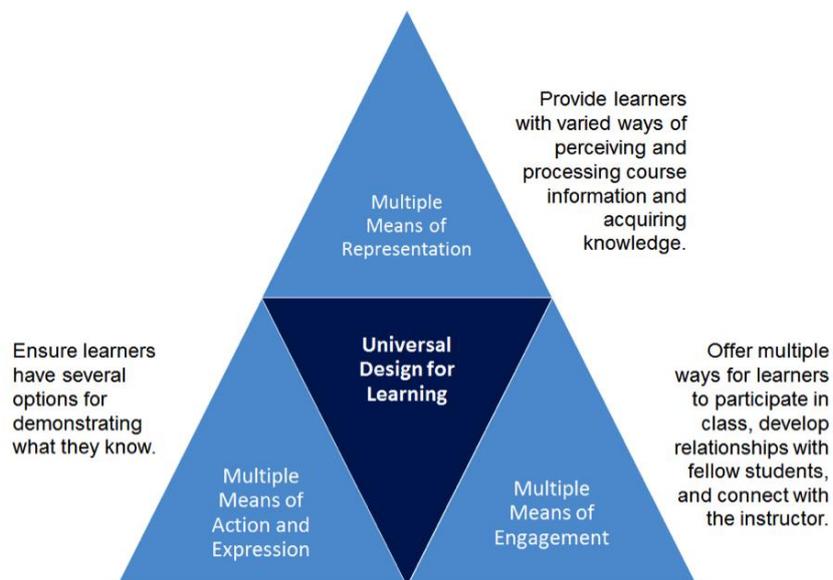
The UDL framework was designed by the Centre for Applied Special Technology (CAST), a non-profit education research and development organization, according to Dalton (2019). UDL is based on Ronald Mace's Universal Design (UD), which he created in 1980 as a design basis for products as well as environments that are useful and more accessible (Burgstahler, 2007). Universal Design, according to Molly (1998), contains seven principles for universal design of products and environments which state that systems should provide flexibility, should be able to tolerate errors, be simple to use, should be usable by people with different capabilities, should require low effort physically, should efficiently deliver information to users and should provide adequate size and space for use.



**Figure 2. 1: Universal Design**

*Source: Washington.edu*

Universal Design for Learning offers flexibility and adaptability to address the requirements of diverse learners while maximizing engagement. It provides an intentional and systematic approach for building an environment that accommodates diversity and difference in learning environments (Hollingshead, 2019). UDL has three core principles for instructional design. The first principle is multiple means of engagement, followed by multiple means of representation and finally, multiple means of action and expression (Dalton et al., 2019).



**Figure 2. 2: UDL Learning**

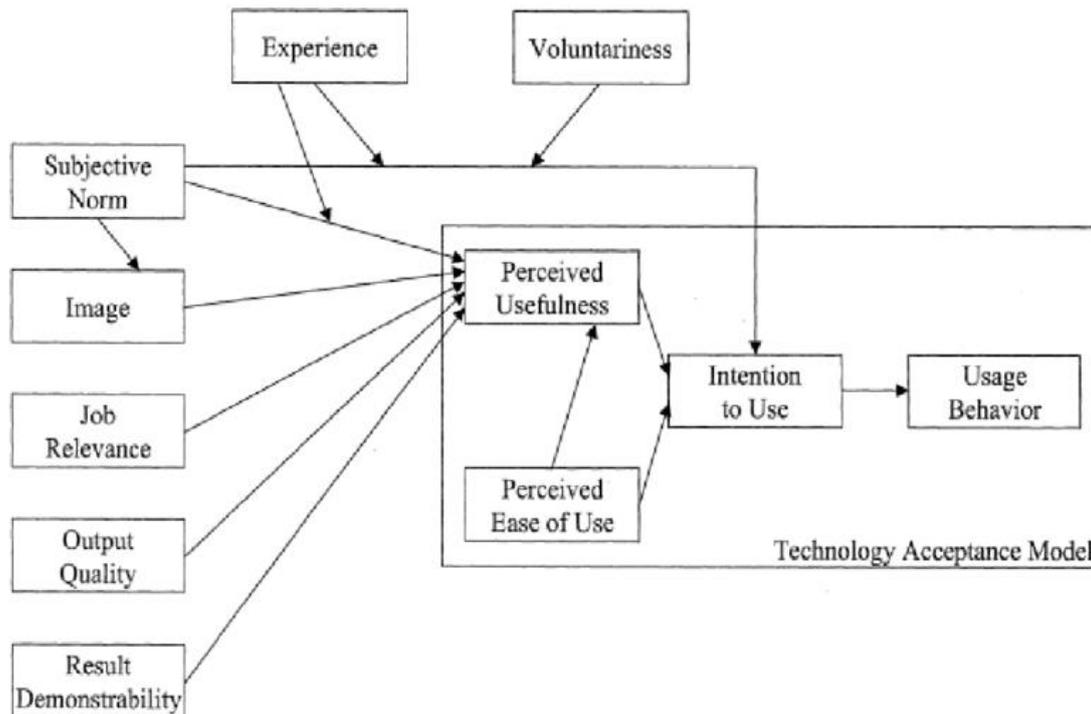
*Source CAST*

## **2.2 Theoretical Framework of the Research Study**

A theory is a coherent set of hypotheticals, conceptual, and pragmatic concepts that serve as the field's broad frame of reference. Two theories have been proposed in relation to this research. The study reviews two Information system adoption frameworks, TAM2 and UTAUT

### **2.2.1 Technology Acceptance Model 2 (TAM 2)**

TAM 2 is based on the original Technology Acceptance model (TAM) which was proposed in 1989 by Ben Davies to predict the likelihood of the adoption of a new technology. TAM introduced the impact of three motivational variables namely perceived ease of use (PEOU), perceived usefulness (PU), and attitude toward use (A), upon the actual usage of technology (U). (Mabed, 2013). TAM indicates user's attitude is significantly impacted by PU as well as PEOU. These can be classified as unfavorable and favorable attitudes toward the system. (Taherdoost, 2017). TAM ignores the social influence on technology adoption, limiting its application beyond the workplace. Furthermore, some external variables must be included to TAM in order to produce a more consistent prediction of system use. As a result, TAM fails in a situation where information technologies are accepted and used not only to complete tasks but also to meet emotional demands (Masrom 2009). According to TAM 2 theory, users' mental assessments of the fit between significant work goals and the consequences of utilizing the system to execute job activities serve as a foundation for creating views about the system's usefulness (Venkatesh and Davis, 2000)



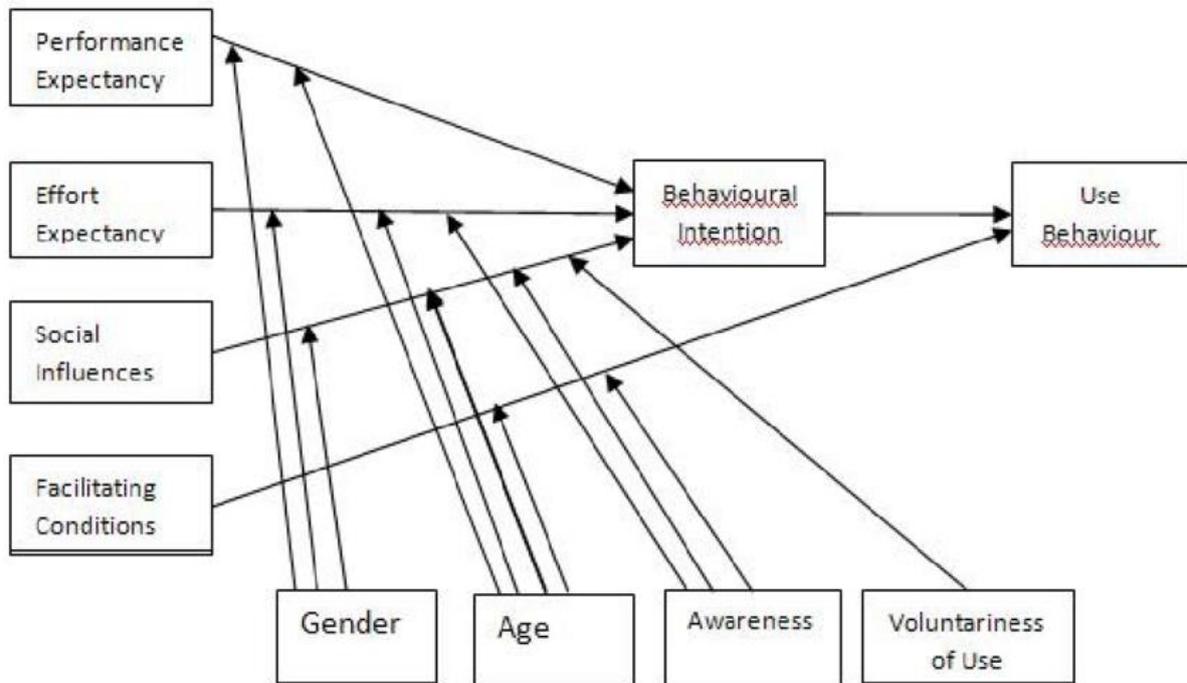
**Figure 2.3: TAM 2 model**

### 2.2.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

UTAUT, proposed by Venkatesh et al. (2003), has been widely employed by scholars in their attempts to explain IS/IT acceptance and use. UTAUT looks at performance expectancy, effort expectancy, social influence, and facilitating conditions to try to explain user intents to use an information system and subsequent usage behaviour.

Venkatesh et al. (2003) used a longitudinal research at four firms to analyze and test some of the most renowned models and build a new unified theory of technology acceptance and use. The theory of reasoned action, the technology acceptance model, the motivational model, the theory of planned behavior, a combined model of the theory of planned behavior and the technology acceptance model, the model of personal computer utilization, the innovation diffusion theory, and the social cognitive theory were among the models that were evaluated. Venkatesh et al. discovered four major aspects as a result of the research, which were refined into the unified theory of technology acceptance and use. Performance expectancy, effort

expectancy, social influence and facilitating conditions are the four essential components of this paradigm. Self-efficacy, according to Venkatesh et al., is contained by and a part of effort expectancy. Venkatesh (2000) discovered that self-efficacy did influence perceived ease of use, which is a component of effort expectancy, in a previous study.



**Figure 2. 3: UTAUT model**

### 2.2.3 Conceptual Framework of the study

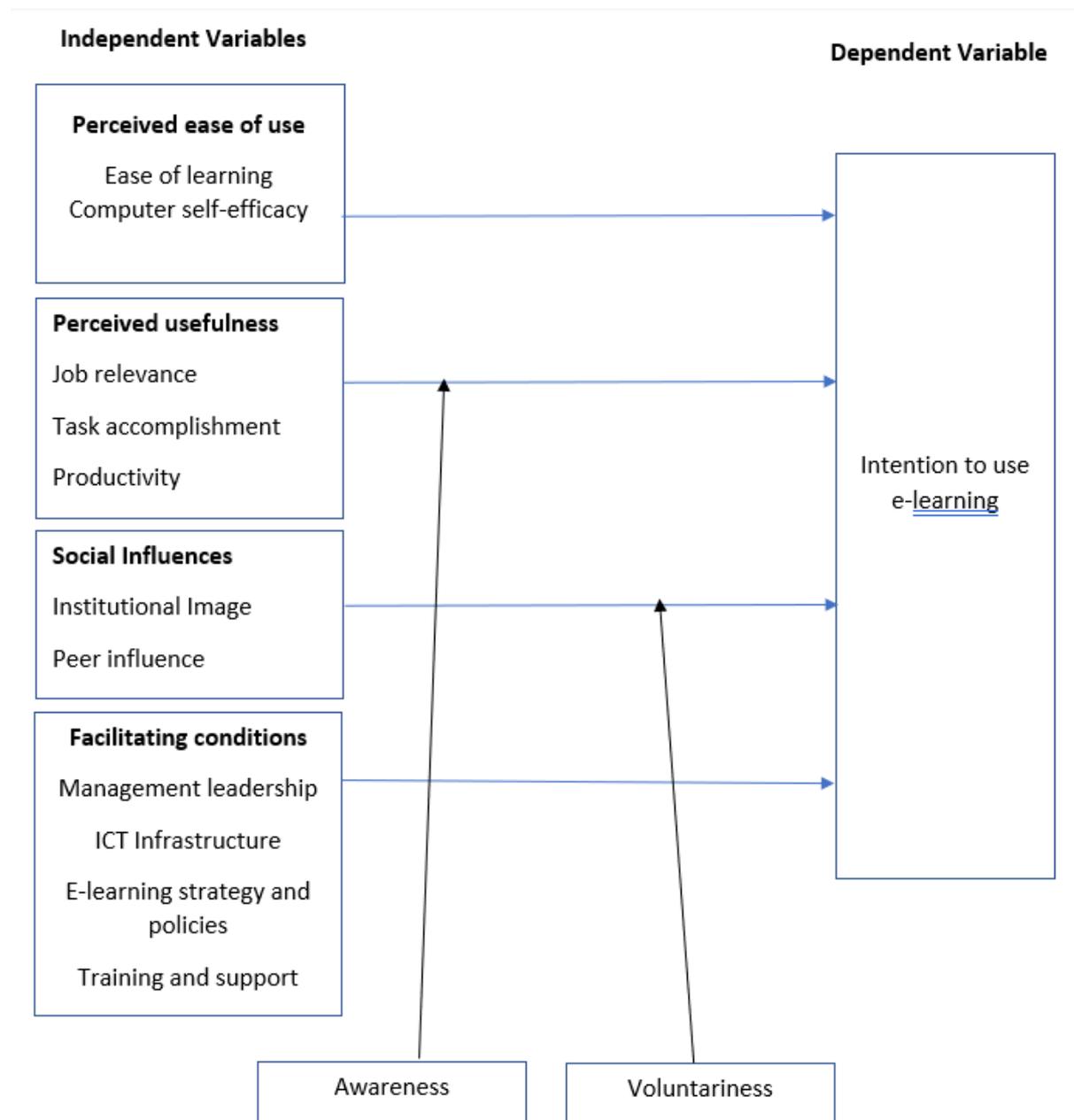


Figure 2. 4: Conceptual framework

## **2.3 Empirical Literature Review**

The growth of the internet, the integration of technology and education, and the creation of platforms that support e-learning have all aided the development of e-learning as a potent medium of learning. These learning management systems (LMS) provide a platform where content is available, and these systems can also help institutions in managing progress towards set learning goals (Gros, 2016). According to Love and Fry (2006), higher education institutions are working towards improving online course capabilities in a rapidly emerging cyber education market. Aspects of educational delivery and support operations have experienced rapid changes due to the growth of educational technologies (Dublin, 2003). Algahtani (2011), in his evaluation of E-learning effectiveness and experience in Saudi Arabia, identified three models of using e-learning in education as are described below:

In Adjunct, e-Learning is used as a supplement to normal classroom training, giving learners or students more independence. In blended e-Learning, the transmission of course content and explanations combine both traditional and e-learning methods. The third paradigm, the online model, integrates entire eLearning so that learners or students have maximal independence.

### **2.3.1 Perceived ease of use and intention to use e-learning by people with hearing impairment**

Perceived ease of use according to (Davis, 1989) is the degree to which a person believes that utilizing a certain technology would be effort free. (Gong, Xu, and Yu 2004) state that learners' opinions and perceived usefulness are both influenced by perceived ease of use. End users may have a favorable attitude toward utilizing the target system if they view it to be simple to use and free of mental effort (Sivo et al., 2005). Perceived Ease of Use is a metric that measures how confident people are that using this technology will require the least amount of effort. (Gerasimova et al., 2018)

Even though many institutions have adopted Internet-based learning systems, successful deployment necessitates a thorough grasp of whether the end-user has accepted to use the process, according to Al-Adwan et al., (2013). Similar to any information technology systems, user acceptability and utilization are essential main indicators of service quality (Saade et al. 2007). As a result, while implementing an LMS and evaluating its effectiveness, the user perspective is critical to consider (Hall, 2006). According to Žuvic-Butorac et al. (2001), an essential step in creating and executing an effective e-learning system is learners' impression of it. Hrastinski (2009) assesses the research in the field of online learner involvement, claiming that involvement and training are inextricably linked, and that a satisfying involvement encounter is required for trainees to fully benefit.

Venkatesh, (2000) established a model of facilitating conditions of use factors based on various anchors linked to users' current feelings about computers and computer usage. Control, intrinsically motivated, and emotions were recommended as universal anchors for the creation of facilitating conditions of use when a new system was introduced. Particularly, Control was broken down into beliefs of internal management (computer self-efficacy) and views of external influence (enabling circumstances), with intrinsic motivation described to as computer fun and emotionally described to as computer anxiety.

### **2.3.1.1 Computer Self-Efficacy and Perceived ease of use**

The belief in one's ability to perform a specific behavior is known as self-efficacy (Gong et al., 2004). Self-efficacy is defined by Bandura (1986) as an individual's belief in their own skills, which is defined as people's assessments of their abilities to plan and execute actions required to achieve specific sorts of results. According to the Self-Efficacy Theory, people perform better when they believe they have the requisite skills (Barling & Beattie, 1983). Computer

Individuals' perceptions of their ability to use computers in a variety of scenarios are referred to as self-efficacy (Compeau & Higgins, 1995). (Compeau & Higgins, 1995) stated that users who are not confident in their ability to use computers are likely to get frustrated quickly and this will in turn lower their computer usage confidence levels while confident users will most likely not give up. Gong et al. (2004) found that user's self-belief in technology use indicated strong positive effect on the perception of users regarding the ease of using web-based learning systems.

Low or high of levels of self-efficacy can influence how innovation is embraced (Compeau and Higgins, 1995). Likewise, the technology acceptance model indicates that application is motivated by three main aspects: performance expectancy and the expected usefulness and how easy it is to use. Similarly, expectation theory claims that people feel motivated when they believe their activities will result in certain consequences. A review of the existing research on self-efficacy is important considering that technological skills are frequently new abilities that must be taught. Self-efficacy, according to Albion (1999), is important for new teacher training. Albion further states that as community aspirations for integrating ICT in teaching keep growing, it will be extremely relevant that instructors are sufficiently prepared for this aspect of their profession. Ertmer (2005) argued that educational attitudes might influence how students utilize technology. Pedagogical beliefs, according to Ertmer (2005), are socially formed in the same manner that other social beliefs are formed. Because few contemporary instructors have expertise, or use technology regularly, they are likely to have several predetermined views on technology use, for it to accomplish student achievement (Ertmer, 2005).

The attitude of trainers in and comprehension of certain pedagogical practices are critical, and more teacher aid for curricular oriented integrating innovation is needed. To successfully incorporate technologies, Zhao, Pugh, Sheldon, and Byers (2002) argue that instructors need to grasp the functionalities as well as limits of technologies, including how certain technologies may complement their own teaching methods and educational goals. Situational and contextual variables, such as technological functionality and supportive resources, may influence integration of technology in learning process.

### **2.3.2 Perceived usefulness and intention to use e-learning by people with hearing impairment**

Davis (1989), indicates that Perceived Useful-ness refers to the extent to which an individual believes that using a specific system will improve performance. Most previous studies on e-learning adoption viewed perceived usefulness as a black-box, concentrating on an e-learning system's total utility (Larsen et al., 2009). Shee and Wang (2008) stated that e-learning systems differ from conventional information systems in that they provide users with possibilities rather than just providing resources that are ready to use. (Islam, 2013) contends that the previous conception of perceived usefulness fails to reflect the unique aspects of e-learning and offers a new understanding of perceived usefulness in e-learning that includes context. (Islam, 2013) identifies two forms of perceived usefulness: perception on learning support and perception on assistance to build a community. The degree to which an individual's learning is aided by LMS is referred to as perceived learning support. The amount to which the LMS aids individuals in forming social communities is referred to as perceived community building assistance.

Raba (2005) states that through utilizing e-learning, objectives can be completed quickly with minimal effort. Teachers and students can both enhance and retain their skills by getting

experience from sector experts. Educational ethics are impacted positively by eLearning (Khan, 2005). E-learning setting is adaptable, making it a good fit for providing equal access to knowledge independent of users' locations, ages, ethnic backgrounds, or races (Khan, 2005). Learners are encouraged to self-learn because teachers are no longer the sole source of information, but are more of consultants or facilitators (Alsalem, 2004). The ability to connect with others on a global scale is also enhanced by eLearning (Zeitoun, 2008). Algahtani (2011) states that if e-learning is effectively used, the potential benefits of e-learning are great.

Zhang et al (2006) states that e-learning enables flexible learning approaches while also reducing the need to travel. Furthermore, e-learning together with interactive media allows students to observe all educational processes and listen to instructors as the need arises. According to Brown et al., (2008), this allows teachers to connect with pupils and provide instant feedback in a variety of ways. People who employ sophisticated technology, according to Judahil et al. (2007), must have some skills in information and communications technologies.

Learners are also given the merits of eLearning in other research (Singh, 2001; Hemsley, 2002). E-learning technologies, for example, provides for greater communication among learners and teachers or trainers (Singh, 2001). Students can learn from any location, according to Hemsley (2002), regardless of program, offering people mobility. The incorporation and utilization of eLearning enables handicapped people to complete their training from any location (Sadler-Smith 2000; Brown et al 2001).

### **2.3.3 Facilitating Conditions and intention to use e-learning by people with hearing impairment**

Venkatesh et al., (2003) defines facilitating conditions as the extent to which an individual believes that an organizational and technological infrastructure exists to assist system utilization. Some of the important indicators that have been discovered to influence or alter facilitating conditions are institutional policy, training support, and leadership (Venkatesh et al., 2008). In recent years, the influence of the Internet on learning has piqued the interest of both instructors and students (Elkaseh et al., 2016). Many countries are supporting the use of internet in across all levels of education, They have provided favourable conditions for the acquisition of equipment for learners and trainers, as well as secure connections. (Carvalho et al., 2010).

#### **2.3.3.1 Technical skills and facilitating conditions**

Many trainers fail to use accessible technology for individuals with disabilities because they do not understand how these technologies work or can be used in an educational setting, according to (Connor & Beard, 2015). The uptake of e-learning by staff is influenced by various motivational characteristics such as faculty support developing of e-learning skills in the creation of e-content and distribution and staff releasing time for participation online, according to Nanayakkara (2007). Staff engagement in eLearning adoption can also be enhanced by adequate training in ICT, as well as user support services to facilitate learning content delivery through eLearning. Nanayakkara (2007) indicated that instructors' acceptance of educational technologies in tertiary institutions was influenced by three major sets of factors: human, technology, and institutional. It was noted that faculty support for employee release time, motivations and awards, IT training and contact center services were all important contributing elements for technologies adoption.

### **2.3.3.2 Management support**

Leadership and senior management support have been identified as essential variables for implementation success (Birch & Burnett, 2009). The use and integration of educational technology is also hampered by a lack of institutional and administrative support, especially top management engagement (Benson & Palaskas, 2006). According to Jaspersen et al. (2005), managers such as direct supervisors, team leaders, and top management are essential aspects of initiatives, who can intervene indirectly such as sponsoring or promoting, offering support, and issuing guidelines and obligations. Their input can also lead to issues such as directing alteration or improvement of IT. According to Venkatesh and Bala (2008), management intervention, especially in the context of actual participation in the system testing and design procedures, can affect users' attitudes of the behavioural intention of the users' to use the system. Organization supportive culture, in the context of personal intervention in the design of the system and development processes, will assist workers shape judgments towards job relevance, product characteristics, and result demeanour.

Faculty support: facilities, inventory levels, staff career enhancement, prompt customer advice, rewards, formative assessment support, positive reputation that offers leadership as well as assistance for the modern technology and promote risk-taking and so on are all factors influencing technological adoption, according to Grunwald (2002). Insufficient time, difficulty to earn credit toward tenure and advancement, inadequate or old infrastructure were all highlighted as barriers to educational technology use in the literature, insufficient infrastructure and technical support, a lack of knowledge about best practices, an underestimate of the challenges, insufficient professional enhancement, and an usual treatment that isn't worth it (Grunwald, 2002).

Mukiri (2011) looked at the issue of poor eLearning usage among JKUAT instructors. Poor internet connectivity, power outages, the lack of computer networks, insufficient time to produce material, inadequate remuneration, inadequate training, a lack of people in the eLearning department to educate lecturers, and insufficient resources were among the problems. She stated that the most of lecturers would be happy to use online in their classrooms if they were given adequate time to create their programs. She also stated that the most instructors (76%) required support or training in order to use online effectively. Likewise, ninety one percent said they would demand online support, whereas seventy one percent said they would be ready to use e-learning if there were programs to help instructors use it for their classes. Mukiri, on the other hand, did not look at the impact of management assistance on individuals with impairments' intentions to utilize e-learning, particularly learners with hearing impairment.

### **2.3.3.3 Infrastructure**

The successful distribution of online content to distant students is dependent on a strong information and communication network (Nanayakkara, 2007). Nanayakkara further stated that more often than not, institutions of higher learning have the bare minimum of ICT infrastructure required to facilitate remote study. To effectively providing online courses, extra hardware and software is required, including servers and a curriculum control system. Network bandwidth and router pools or network operator connections are required for learner benefits. Infrastructure that lacks stability, performance, and timely assistance may make it difficult for both the instructor and the learner to adopt this technology. According to Tucker and Gentry (2009), the infrastructure must be in place before e - learning programmes and curricula can be implemented successfully. The eventual deployment of an e-learning solution, according to Galamoyo (2011), is dependent on the availability of sufficient and enough technology. Roll-

out approaches may be used if the design process is robust, and the learning program is in place and established.

In order for e-learning to succeed especially in third world countries, it must take advantage of existing infrastructure as well as connection (Gunawardena 2005). According to (Tarus et al., 2015), developing nations such as Kenya still confront numerous hurdles in implementing e-learning, which necessitates advanced technology infrastructure and significant financial investment, particularly in the early stages. Furthermore, most Kenyan public institutions rely on money from the government exchequer, which has been declining in recent years.

Most institutions of higher learning have embraced eLearning technology, according to Graves (2001) but they lack appropriate connectivity with other internal processes inside the organisation. (Nanayakkara, 2007) notes that in addition to the programs offered using online means, the organizations are also required to provide virtual access to educational services including remote public libraries, course registration, and student advising and support programs, financial assistance, and the bookstore. Nanayakkara and Whiddelt (2005) looked at the variables that affect or deter the use of e - learning tool in universities, technological institutes and vocational institutes in New Zealand. The study showed that external system features such as capacity and dependability of IT infrastructure were important variables in user adoption as indicated by a 100% of respondents. The study further indicated that developing a variety of distant administration systems, such as distance libraries and distance teaching staff, may greatly increase staff use of eLearning technology as indicated by 90 percent of respondents.

ICT Infrastructure refers to network hardware components, communications systems, applications, and standards (Blinco et al., 2004). The importance of networks and connections

in the creation of effective infrastructure is nearly widely assumed (Blinco et al., 2004). One of the most quickly growing sectors of education as well as training is the creation of e-learning materials and the delivery of learning possibilities (Attwell, 2006). Lack of high-speed internet connection is among the most significant difficulties facing most poor nations, owing to a variety of causes involving inconsistent energy, the use of low-bandwidth satellite technologies, and insufficiently educated staff (Omidinia et al., 2011). According to Bates (2009), challenges to eLearning implementation in African institutions of higher learning include insufficient and costly digital infrastructure, significantly higher computer costs, a scarcity of qualified IT staff and e-learning professionals, and the need for more knowledge workers. In a study carried out by Kenya Education Network in 2006, several institutions observed a lack of functional course management solutions for eLearning and advised the establishment of a virtual learning environment. A few schools had implemented class management system such as Moodle, which faculty were utilizing to complement their student learning, but no organization provided statistics on the proportion of courses used e-learning system (Kashorda et al., 2006).

#### **2.3.3.4 Policies and e-learning**

Lack of operational e-learning policies inhibits the introduction of e-learning at Kenyan institutions, according to (Tarus, Gichoya, and Muumbo 2015). They went on to say that while some institutions have an e-learning policy, implementation has been impeded by a lack of necessary budget and appropriate e-learning infrastructure, and that some institutions simply have a draft policy.

## **2.4 Social Influences and intention to use e-learning for people with hearing impairment**

Venkatesh et al., (2003) states that social influence is the extent to which an one believes that other people think that he or she should use the system. Prior research has shown that social influence provides beneficial effect on the users' intention to adopt e-learning (Belaaj et al, 2020). Three concepts make up social influence: image, social variables, and subjective norm. Image is the perception that using new technologies or technologies can enhance the image or status of a person's social system and can increase reputation and visibility (Moore & Benbasat, 1991). The term "subjective norm" refers to how one's view of whether or not one is encouraged to engage in specific behaviors is influenced by those around them (Ajzen & Fishbein, 1980). When they have a favorable attitude toward it and believe that those around them believe they should, they will engage in the desired behavior (Hussein, 2018). As a result, if other learning institutions have embraced inclusive e-learning systems, higher education institutions are more likely to do so.

At all three stages of measurement, the impact of image on perceived utility was considerable. Furthermore, at all points of measurement, the influence of perceived usefulness on image described as was substantial. Persons depended less on social information in establishing benefits and purpose as they got direct personal experience with a system for a long time, but they persisted to assess a system's utility on the basis of possible status gains arising from usage. Venkatesh and Bala (2008) discovered simplicity of use, risk, image, and outcome credibility were all significant determinants of usefulness over time. They also discovered that subjective norm's influence on perceived value was tempered by experience, with the impact becoming smaller as experience increased. The influence of picture on perceived usefulness, on the other hand, was substantial at all points of assessment. At all stages of assessment, Venkatesh and Bala (2008) discovered that the anchors, namely e-learning self, views of external influence, computer anxiety, and computing fun, were substantial factors of perceived

ease of system use. Additionally, the influence of perceived stress on PEOU was tempered by knowledge, with the effect becoming smaller as knowledge grew.

Individual perception of e-learning was found to be a major determinant in system acceptability by Nanayakkara and Whiddelt (2005) and Nanayakkara (2007). Inspiration from coworkers, was important in their choice to embrace these technologies (Nanayakkara and Whiddelt, 2005). Furthermore, the majority of the faculty believed that an online system would improve the effectiveness of learning and would complement traditional teaching by providing more flexibility for distant learners. Collaborator's effect was important, but it wasn't all-pervasive (Nanayakkara, 2007). Around 25% of the survey sample believed that their coworkers' opinions would affect adoption, however nearly half said that their coworkers' opinions would not affect adoption. Over half of the study participants said they were willing to use LMS technologies if they thought it would enhance face-to-face teaching.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter describes the study methodology applied in this research. Additionally, it discusses the research philosophy, research design, the population under study, the sampling design, sampling frame, sampling technique and sample that were used to assess the factors that affect intention to use e-learning by people with hearing impairment in Kenya. It also covers the collection of data, the research procedures and also the method used to analyse data.

#### **3.2 Research Philosophy**

The beliefs and values that govern the design of, as well as the gathering and analysis of data in a research study, are outlined in a research philosophy, which complements philosophical concepts (Gemma, 2018). Positivism, Interpretivism, and Critical Theory are the three philosophical paradigms. Three research paradigms for research on information systems were explored, positivism, interpretivism and pragmatism.

Positivism is often associated with experiments and quantitative study, and it is thought to be a subset of or development from empiricism. Positivists think that facts can be demonstrated, and that reality is the same for everyone (Gemma 2018).

Interpretivism, often known as anti-positivism, is an anti-positivism movement that opposes positivism (Flick 2014). Interpretivism claims that truth as well as knowledge are subjective, culturally and historically biased, and based on people's experiences and interpretation of them. Researchers' data collection, interpretation, and analysis will invariably be influenced by their own values and ideas because they can never be completely divorced from them.

Pragmatism keeps researchers from debating ideas like truth and reality, which they do not consider to be meaningful (Tashakkori and Teddlie, 1998). According to them, one should only

study what is of interest and valuable, study in the various ways that you find acceptable, and make use of the results in ways beneficial to your value system. As a result, this research follows the pragmatist philosophy.

### **3.3 Research Design**

This is the conceptual structure for conducting research and serves as the blueprint for data collecting, measurement, and analysis. (Golafshani, 2013). This study adopted descriptive design. Descriptive research design is applied to get knowledge pertaining to existing situation (Sekaran, 2003). Mugenda and Mugenda, (2000) defined descriptive research as pertaining to surveys and knowledge investigations.

### **3.4 Study site**

The study was conducted at Karen Technical Training Institute for the deaf.

### **3.5 Population**

(Breakwell, 1995) refers to population as a set of all units of analysis in one's problem area. (Cooper and Schindler, 2001) refers to study population as the subjects under study. (Mugenda and Mugenda, 2003) refers to target population as a group of people with observable and measurable qualities. The population comprised of instructors and students from KTTID. The target population was 374 respondents, 300 students and 74 instructors from the different academic departments.

### **3.6 Sample and Sampling Techniques**

Stratified random sampling was employed in this study. Simple random sampling technique was then applied. In this case, students and instructors formed the strata. Stratified sampling is

applied where the population under the study has different characteristics to ensure all elements are represented in the study (Miller, 1996). A sample is a smaller number or subset drawn from the population that is accessible (Mugenda and Mugenda, 1999). Stratified simple random sampling which involves dividing the population into distinct non overlapping subgroups (strata) according to characteristics of roles. This was employed to obtain the study sample because it assures that a representative sample from each stratum is chosen, allowing the research findings to be generalized.

To get the sample size, the Yamane (1967) formula was used. The formula is illustrated below, and it provided 193 as the appropriate sample size

A 95 percent confidence level and  $e = .05$  are assumed for this equation

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

Where:

$n$  = sample

$N$  = target population

$e$  = the level of precision

$$n = \frac{374}{1 + 374(0.05)^2} = \frac{374}{1.935}$$

$n = 193$

The sample size will be computed as follows using stratified sampling technique according to Cochran (1977).

Let  $N$ =target population

$n$ = the desired sample size

$N_i$ =  $i^{\text{th}}$  stratum population. For  $i=1, 2$

$n_i$ = $i^{\text{th}}$  stratum sample size. For  $i= 1, 2$

Then we compute  $i^{\text{th}}$  stratum sample as follows

$$n_i = \frac{\text{ithstratumpopulation}}{\text{targetpopulation}(N)} \times n \text{ (the desired sample size}(n))$$

Therefore, we obtain the desired sample size by adding the stratum samples.

$n=n_1+n_2$  which can be summarized as follows:

$$n = \sum_{i=1}^k n_i$$

Where  $n$  is desired sample size,  $\sum_{i=1}^k$  is summation from  $i^{\text{th}}$  to  $k^{\text{th}}$  stratum samples,  $n_i$  is  $i^{\text{th}}$  stratum sample size, and  $k$  is total number of stratum samples/number of strata.

Table 3. 1: Sample size determination

<b>Respondents</b>	<b>categories</b>	$n_i = \frac{\text{ithstratumpopulation}}{\text{targetpopulation}(N)} \times n$
<b>Students</b>	300	155
<b>Instructors</b>	74	38
<b>Total</b>	374	193

### 3.7 Data Collection Methods

Data collecting methods, according to Kothari (2005), are the stages and actions required for performing research efficiently, as well as the desired sequence of these steps.

### 3.8 Instrumentation

The study used primary sources to collect data. (Mutai, 2000) notes that primary data is desired because of its closeness to the truth and simplicity of control over inaccuracies. Questionnaires

were utilised for gathering information from the respondents. The questionnaires had closed-ended questions as well as open ended questions. According to Kothari, (2003) questionnaires help in collection of correct and consistent data since responses are given at liberty devoid of any influence. The questionnaire used a Likert scale of 1-5.

### **3.9 Reliability of research instrument**

Kothari (2015) defines test instrument reliability as the degree to which a test instrument consistently gives the same result when administered to the same group throughout time intervals. Reliability helps to identify ambiguities and insufficient elements in the study instrument. Cronbach's alpha was used to evaluate reliability based on internal consistency or average correlation of items using coefficients ranging from 0 to 1. The instrument is reliable if the Cronbach alpha formula values for all variables are greater than 0.7

### **3.10 Data Analysis and Presentation**

Data analysis, according to Cooper and Schindler (2016), entails inspecting, transforming, and modeling data in order to highlight useful information for drawing conclusions and supporting decision-making. Collected data was first entered into Microsoft Excel sheet and afterwards cleaned to remove inconsistencies. For descriptive and inferential statistical measures, the data file was uploaded to the Statistical Packages for Social Sciences software. Variables were analysed and summarized into means, standard deviation, frequencies, and percentages and presented in tables. Findings and recommendations are provided. The researcher used regression analysis model in this study.

$$Y_1 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where: - Y= intention to use

X<sub>1</sub> = Perceived usefulness

$X_2$  = Perceived ease to use

$X_3$  = Social influence

$X_4$  = Facilitating Conditions

$B_0$  = Constant;  $B_1, \beta_2, \beta_3, \beta_4, \beta_5$ = predictor variable coefficients;  $\epsilon$ =Error term of the model.

**Table 3. 2: Opalization of variables**

<b>Research objective</b>	<b>Type of variable</b>	<b>Constructs</b>	<b>Data collection</b>	<b>Approach of analysis</b>	<b>Level of analysis</b>
To determine whether social influences affect intention to use of e-learning by people with hearing impairment in Kenya.	Independent: Social Influences	Peers influence	Questionnaires	Quantitative and Qualitative	Descriptive
		Institutional image	Questionnaires	Quantitative and Qualitative	Descriptive
To assess whether perceived ease of use affect intention to use of e-learning by people with hearing impairment in Kenya.	Independent: Perceived ease of use	User friendliness	Questionnaires	Quantitative and Qualitative	Descriptive
		Computer self-efficacy	Questionnaires	Quantitative and Qualitative	Descriptive
To find out whether perceived usefulness affect intention to use of e-learning by people with hearing impairment in Kenya.	Independent: Perceived usefulness	Content delivery	Questionnaires	Quantitative and Qualitative	Descriptive
		Feedback	Questionnaires	Quantitative and Qualitative	Descriptive

		Flexibility	Questionnaires	Quantitative and Qualitative	Descriptive
		Content reusability	Questionnaires	Quantitative and Qualitative	Descriptive
		Exam grading	Questionnaires	Quantitative and Qualitative	Descriptive
To determine whether facilitating conditions affect intention to use of e-learning by people with hearing impairment in Kenya.	Independent conditions:	Budget	Questionnaires	Quantitative and Qualitative	Descriptive
	Facilitating conditions				
		Available computers	Questionnaires	Quantitative and Qualitative	Descriptive
		Trained ICT Staff	Questionnaires	Quantitative and Qualitative	Descriptive
		Internet bandwidth	Questionnaires	Quantitative and Qualitative	Descriptive

		e-learning policies	Questionnaires	Quantitative and Qualitative	Descriptive
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## CHAPTER FOUR

### RESULTS AND ANALYSIS

#### 4.1 Introduction

This chapter discusses the data that was collected in the field and how it was analysed. In the analysis and presentation of the findings, descriptive as well as inferential statistics are used. The chapter starts with a response rate, then moves on to general information on the respondents and a description of each variable in relation to the study's goals. The outcomes of the study are presented using charts and tables in accordance with the study's objectives.

##### 4.1.1. Response Rate

The sample size of this study was 193 instructors and students from KTTID in Nairobi. 111 responses were received. The study recorded 57% response rate.

##### 4.1.2. Reliability test

The questionnaire's reliability was tested using Cronbach's alpha, and an alpha score of 0.754 was achieved as the lowest value, showing strong internal consistency. This indicated that the questionnaire was reliable in assessing the factors affecting intention to use e-learning by people with hearing impairment in Kenya, particularly learners and trainers from Technical Training Institute for the Deaf.

Table 4. 1: Reliability of study variables

	<b>Factor</b>	<b>Cronbach's alpha</b>
<b>1</b>	Perceived usefulness	0.813
<b>2</b>	Perceived ease of use	0.824
<b>3</b>	Facilitating conditions	0.786

<b>4</b>	Social influences	0.886
<b>5</b>	Intention to use	0.754

## 4.2. Descriptive statistics

### 4.2.1. General information

The data was collected from students and instructors from KTTID in Nairobi. Questionnaires were used to collect the data. The basic information this study comprised the respondents' awareness of e-learning systems. This was critical to understand the knowledge base of the respondents under the study.

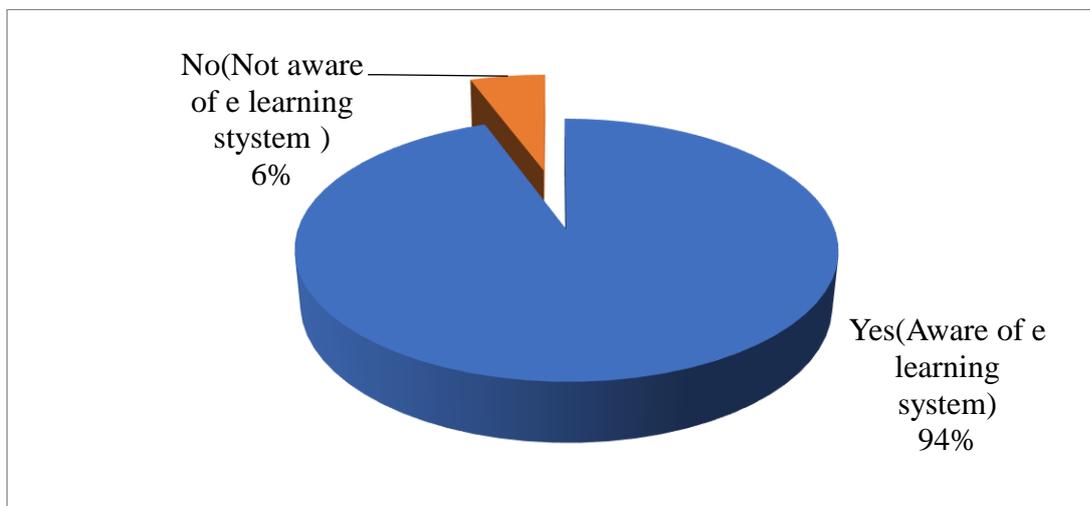


Figure 4. 1: Awareness of e-learning system

The study found majority of the respondents were aware of e-learning system; only 6% said that they did were not aware of the e-learning system.

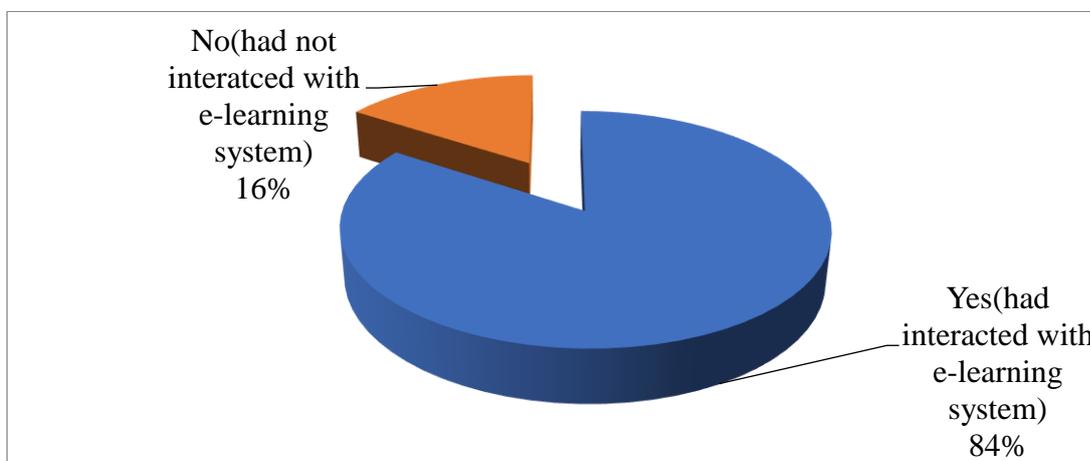


Figure 4. 2: Prior interaction with e-learning system

Majority (84.0%) of the participants had interacted with LMS prior to this study. This finding implies that the concept of e-learning was not a new among people with hearing impairment in Kenya, particularly learners and trainers from KTTID.

#### 4.2.2. Perceived usefulness and intention to use e-learning for people with hearing impairment in Kenya

One of the objectives of this study was to assess how perceived usefulness affected intention to use e-learning among people with hearing impairment in Kenya. In efforts to address this objective, the researcher assessed various constructs, e.g. relevance, efficiency in service delivery, improvement of learning and content delivery, creation of feedback between the learner and instructors, flexibility in time management, increased productivity and overall productivity.

Table 4. 2: Perceived usefulness and intention to use e-learning by people with hearing impairment in Kenya

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	mean	STD_ Dev (SD)
	n	n	n	n	n		
	%	%	%	%	%		
use of e-learning systems would be relevant	4(3.6)	12(10.8)	33(29.7)	42(37.8)	20(18.0)	3.56	1.024
E-learning would aid quick task accomplishment	6(5.6)	7(6.5)	23(21.5)	46(43.0)	25(23.4)	3.72	1.071

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E-learning systems can improve learning and content delivery	6(5.5)	13(11.8)	14(12.7)	57(51.8)	20(18.2)	3.65	1.079
E-learning systems can help in creating a feedback mechanism	7(6.4)	16(14.7)	25(22.9)	40(36.7)	21(19.3)	3.48	1.151
LMS are flexible and can lead to effective time management for instructors	9(8.3)	16(14.8)	21(19.4)	36(33.3)	26(24.1)	3.5	1.242
E-learning systems can increase productivity while using less resources through content reusability	7(6.6)	19(17.9)	33(31.1)	30(28.3)	17(16.0)	3.29	1.138
Overall, using the system would increase my productivity	6(5.7)	10(9.4)	20(18.9)	49(46.2)	21(19.8)	3.65	1.078

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Most respondents as implied through a mean of 3.56 and a SD of 1.024 considered LMS relevant in learning and teaching among people with hearing impairment in Kenya. The study also found use of e-learning system help the participants to accomplish task within a reasonable time as implied through a mean of 3.72 and a SD of 1.071. Respondents agreed that e-learning systems could improve learning and content delivery as indicated by 51.8% who agreed and

18.2% that strongly agreed. Assessing the on the assessment on students, the study found that participants perceived the e-learning system as useful in creating a feedback mechanism between instructors and students as implied by a mean of 3.48 and SD of 1.151. E-learning system was considered flexible and effective in time management for instructors and students as indicated by 33.3% that agreed and 24.1% that strongly agreed. Equally, most participants were neutral on the usefulness of e-learning systems in increasing productivity while using fewer resources through content reusability as indicate by a mean of 3.29 and SD of 1.138. However, the system was considered to have an overall influence in productivity as implied through a mean of 3.65 and SD of 1.078.

#### **4.2.3. Perceived ease of use and intention to use e-learning for people with hearing impairment in Kenya**

The study also sought to assess how perceived ease of use affected intention to use e-learning among people with hearing impairment in Kenya. In effort to address this objective, the researchers assessed various constructs, e.g., ease in learning new skills, interaction with the system, perceived requirement of computer literacy to use it, ease of system use, feeling of apprehensiveness about system, avoiding use of system for fear of mistake and fear of intimidation from the system.

*Table 4. 3: Perceived ease of use and intention to use e-learning by people with hearing impairment in Kenya*

	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>	<b>mean</b>	<b>STD_ Dev (SD)</b>
	n(%)	n(%)	n(%)	n(%)	n (%)		

I would find it easy to learn	9(8.2)	11(10.0)	26(23.6)	48(43.6)	16(14.5)	3.46	1.114
Interaction with system would have clarity	8(7.3)	15(13.6)	27(24.5)	43(39.1)	17(15.5)	3.42	1.128
System would easy to use	8(7.3)	12(11.0)	23(21.1)	49(45.0)	17(15.6)	3.5	1.111
I would require high levels of computer literacy	9(8.3)	22(20.4)	22(20.4)	35(32.4)	20(18.5)	3.32	1.229
I have apprehension about using such a system	11(10.3)	15(14.0)	36(33.6)	37(34.6)	8(7.5)	3.15	1.089
I'd be hesitant to use the system due to being afraid of making mistakes.	15(14.0)	33(30.8)	23(21.5)	21(19.6)	15(14.0)	2.89	1.276
I would be somewhat intimidated by the system	18(16.7)	24(22.2)	21(19.4)	26(24.1)	19(17.6)	3.04	1.36

Participants felt they would find it easy to learn and become skillful at using the system as shown by 3.46 mean and 1.114 standard deviation that suggests that the opinion was widely varied among the respondents. Most respondents believed their interaction with the system would have clarity as shown 39.1% that agreed and 15.5% that strongly agreed with a slightly higher number reporting that they would find system ease to use as shown by 45% that agreed and 15.6% that strongly agreed. On the skills required to use system, respondents were neutral on the notion that they would require high levels of computer literacy to use the system as implied by a 3.32 mean and 1.229 standard deviation. Less than 50% felt apprehensive about using such a system as shown by a 34.6% of those who agreed and 7.5% who strongly agreed. It is also important to take note of mean and standard deviation in this case; mean suggest that most of respondents were inclined to neutral response as shown through a 3.15 mean and 1.089

standard deviation. Though a good number of respondents would not be hesitant to use the system due to being afraid of making mistakes as shown by 30.8% that disagreed and 14.0% that strongly disagreed, the average findings suggest a neutral response. Equally, the respondent remained neutral on the perception that the system would intimidate them as indicated through a 3.04 mean and standard 1.36 deviation.

#### 4.2.4. Facilitating conditions and intention to use e-learning for people with hearing impairment in Kenya

The study also sought to assess the facilitating condition that affect intention to use e-learning among people with hearing impairment in Kenya. In effort to address this objective, the researchers examined the institution e-learning strategy, institutional policy, instructional budget allocation in e learning and organisation culture towards the e learning. These findings are presented in table 4.4 and 4.5

Table 4. 4: Institution support and adoption of e-learning for people with hearing impairment in Kenya

	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>	<b>mean</b>	<b>STD_ Dev</b>
	<b>n(%)</b>	<b>n(%)</b>	<b>n(%)</b>	<b>n(%)</b>	<b>n(%)</b>		
An institution wide e-learning strategy for e-learning development and implementation exists	14(12.6)	28(25.2)	19(17.1)	34(30.6)	16(14.4)	3.09	1.283
There is an institutional policy on e-learning	16(14.5)	26(23.6)	19(17.3)	40(36.4)	9(8.2)	3	1.234

There is an institutional budget priority for e-learning	24(22.4)	34(31.8)	15(14.0)	24(22.4)	10(9.3)	2.64	1.305
The organization culture is positive towards e-learning	12(12.0)	22(22.0)	19(19.0)	34(34.0)	13(13.0)	3.14	1.247

On the institution support, the participants remained neutral on their judgement on the institution wide e-learning strategy for e-learning development and implementation as indicated by a 3.09 mean of and 1.283 standard deviation. Equally, the response was neutral on the assessment of existence of an institution policy on e-learning as indicated by a 3.0 mean and 1.34 standard deviation. Regarding budgeting on the e-learning system, more than 50% of the respondents reported that there was no budget priority for e-learning as shown by 31.8% who disagreed and 22.4 who strongly disagreed. The respondents remained neutral on the organisation culture positivity towards e-learning as implied by 3.14 mean and 1.247 standard deviation.

*Table 4. 5: ICT infrastructure support and intention to use e-learning for people with hearing impairment in Kenya*

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	mean	STD
	n(%)	n(%)	n(%)	n(%)	n(%)		_Dev
There is sufficient ICT infrastructure available to support e-learning	21(19.1)	26(23.6)	20(18.2)	29(26.4)	14(12.7)	2.9	1.334

There is adequate technical support for e-learning system implementation	22(20.0)	13(11.8)	28(25.5)	34(30.9)	13(11.8)	3.03	1.31
There is adequate technical support for system difficulties	22(20.2)	23(21.1)	22(20.2)	28(25.7)	14(12.8)	2.9	1.34
Remote technical support services are available	23(21.1)	28(25.7)	21(19.3)	23(21.1)	14(12.8)	2.79	1.341
There is sufficient internet capacity to support e-learning	34(31.5)	21(19.4)	14(13.0)	31(28.7)	8(7.4)	2.61	1.38

On the ICT infrastructure and support, the respondents remained neutral on availability of sufficient ICT infrastructure to support e-learning as implied by a 2.9 mean and 1.334 standard deviation. The response was also neutral regarding availability of sufficient technical support for e-learning system implementation as shown by 3.03 and standard deviation of 1.31. Equally, it was not clear if the technical support for system difficulties was adequate, as respondents remain neutral as indicated by a 2.9 mean and 1.34 standard deviation. There was neutral response on the availability of remote technical support services as implied by a 2.79 mean and a 1.341 standard deviation. The response was neutral on whether the organisation had sufficient internet capacity to support e-learning as indicated by a 2.61 mean and 1.38 standard deviation.

#### 4.2.5. Voluntariness and intention to use e-learning systems for people with hearing impairment

The study also sought to assess how the voluntary adoption affected the intention to use e-learning among people with hearing impairment in Kenya. In effort to address this objective, the researcher assessed whether if the adoption was voluntary and provision of incentives to adopt the systems.

Table 4. 6: Voluntariness and intention to use e-learning systems for people with hearing impairment

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	mean	STD <sub>Dev</sub>
	n	n	n	n	n		
	%	%	%	%			
I would adopt e-learning only if it was mandatory	21(19.6)	18(16.8)	17(15.9)	42(39.3)	9(8.4)	3	1.303
I would adopt e-learning if there were incentives	17(16.3)	22(21.2)	18(17.3)	33(31.7)	14(13.5)	3.05	1.317

The study found most people would adopt e-learning only if it was mandatory as shown by 39.3% that were in agreement and 8.4% that strongly agreed. The study further that incentive could influence adoption among people with hearing impairment in Kenya as indicated by a 3.05 mean and a 1.317 standard deviation.

#### 4.2.6. Social influences and intention to use e-learning for people with hearing impairment in Kenya

The study also sought to assess how social influence affects intention to use e-learning among people with hearing impairment in Kenya. The study examined how use of learning by other persons in the organisation affected their use, people who influence respondents' behaviour and people around the participants recommendations.

Table 4. 7: Social influences and intention to use e-learning for people with hearing impairment in Kenya

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	mean	STD_ Dev
	n(%)	n(%)	n(%)	n(%)	n(%)		
I should use e-learning systems because other instructors/learners are also using them	19(17.4)	20(18.3)	20(18.3)	36(33.0)	14(12.8)	3.06	1.318
Influential people believe I should use LMS	10(9.1)	22(20.0)	33(30.0)	29(26.4)	16(14.5)	3.17	1.18
Important people in my life believe that I should use the system.	8(7.3)	19(17.4)	23(21.1)	41(37.6)	18(16.5)	3.39	1.17

Analysis found that some respondents' intention was influenced by other instructors/learners as shown by 33.0% of those who agreed and 12.8 percentage of those who strongly agreed. A

3.17 mean and 1.18 standard deviation indicated a neutral response. When the respondents perceived that the people important to them wanted them to use e-learning system, the respondents intention was higher as compared to other two the other cases as shown by a 3.39 mean and 1.17 standard deviation.

#### 4.2.7. Intention to use e-learning system

Finally, the study assesses the intention to use e-learning among people with hearing impairment in Kenya. This was assessed on acquisition of needed resources to use system, knowledge required to use system, availability of a person or team for assistances as well as management support and budget to sustain e learning.

Table 4. 8: Intention to use e-learning system

	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>	<b>mean</b>	<b>STD_ Dev</b>
	n	n	n	n	n		
	%	%	%	%	%		
I have the essential resources to make use of the system.	13(11.9)	16(14.7)	16(14.7)	44(40.4)	20(18.3)	3.39	1.276
I have the essential skills to operate the system.	12(11.1)	16(14.8)	21(19.4)	44(40.7)	15(13.9)	3.31	1.212
Support is available	13(12.3)	19(17.9)	16(15.1)	40(37.7)	18(17.0)	3.29	1.287

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There is management								
support and budget to	23(21.1)	21(19.3)	19(17.4)	26(23.9)	20(18.3)	2.99	1.424	
sustain e-learning								

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The study found a good number of respondents would use the system if they had the necessary resources needed to use the system as shown by 40.4% who agreed and 18.3% who strongly agreed. It was observed that on average the respondents would use the system if they had the necessary knowledge required to use the system as shown by 40.7% of those who agreed and 13.9% of those who strongly agreed. Most of the respondents reported that they would use the system if the institution had a person or a team available to assist as indicated by 37.7% that agreed and 17.0% that strongly agreed. It was also found that respondents would be willing to use the e-learning system if there was management support and budget to sustain e-learning as rated by 23.9% that agreed and 18.3% that strongly agreed.

### **4.3. Testing for the assumptions of multiple regression analysis**

To compute multiple regression between response variable (intention to use eLearning among the hearing impaired), the predictor variables (perceived use of use, perceived usefulness, social influence, and facilitating conditions) multicollinearity, and the autocorrelation of residuals was also examined.

#### **4.3.1 Normality Test**

Many data analysis procedures, such as the t-test, ANOVA, and regression analysis, rely on the assumption that data were sampled from a Gaussian distribution, according to Indiana

(2011).

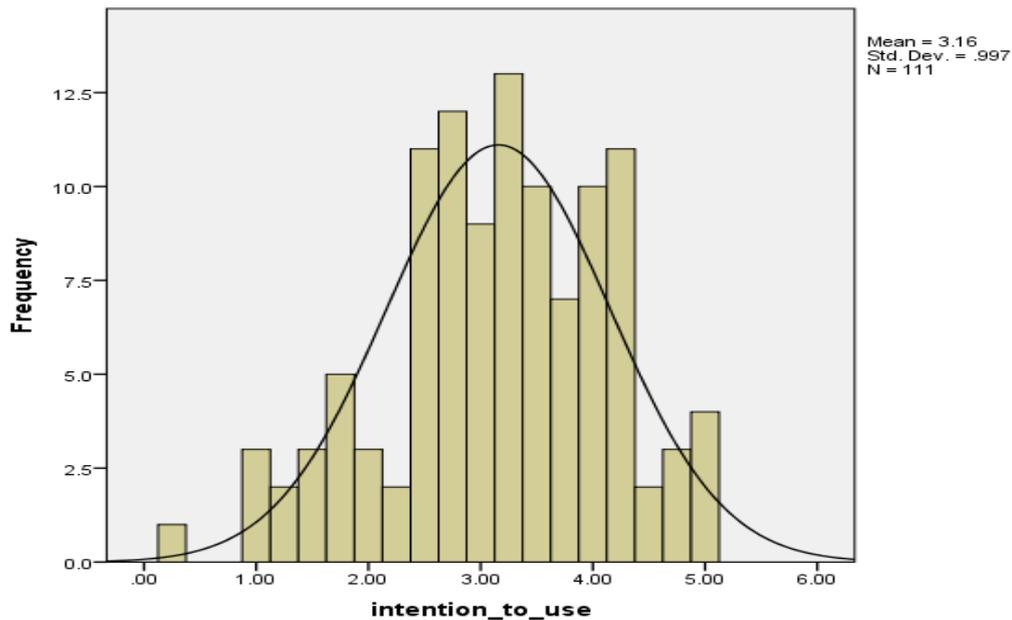


Figure 4. 3: normality test

#### 4.3.2. Autocorrelation

The Durbin Watson statistic looks for autocorrelation in the residuals of a statistical regression research and is always in the range of zero to four. There is no autocorrelation, as indicated by the value of 0.521.

Table 4. 9 : Autocorrelation test

#### Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.517 <sup>a</sup>	.267	.239	.86919	.515

a. Predictors: (Constant), social influence, perceived usefulness, Facilitating Conditions, perceived ease use

b. Dependent Variable: intention to use

### 4.3.3 Multicollinearity

Variance inflation factors (VIF) are used in regression studies to show how much multicollinearity there is. Multicollinearity is present if the VIF score is more than ten (Hair, Anderson, Tatham, & Black, 1995). As a result, we infer that the study variables in our case are not multicollinear.

**Table 4. 10: Multicollinearity Test**

#### Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.521	.558		.933	.353		
perceived usefulness	.122	.113	.094	1.079	.283	.916	1.092
Perceived ease use	.312	.173	.182	1.804	.074	.683	1.465
Social influence	-.051	.097	-.048	-.523	.602	.813	1.230
Facilitating Conditions	.488	.116	.397	4.197	.000	.772	1.295

a. Dependent Variable: Intention to use

### 4.4. Regression analysis

The statistical approach of regression is used to determine the linear relationship between two or more variables. The R square in a regression result reflects how well the values fit the data. Regression analysis is a sort of research that shows how the variation in one variable predicts variation in another.

Table 4.11 show that perceived use of use, social influence, perceived usefulness, and facilitating conditions explain 26.7% of variations in intention to use eLearning among people with hearing impairment

**Table 4.11:** *Effects of perceived use of use, social influence, perceived usefulness, and facilitating conditions on intention to use eLearning*

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.517 <sup>a</sup>	.267	.239	.86919

a. Predictors: (Constant), perceived usefulness, Facilitating Conditions, perceived ease use, social influence,

b. Dependent Variable: intention to use

The value of  $F(4, 110) = 9.649$ ,  $P\text{-value} < 0.05$  shows that perceived use of use, facilitating conditions, perceived usefulness and social influence influence intention to use eLearning among people living with hearing impairment (Table 4.12)

Table 4. 12: Significance of perceived use of use, perceived usefulness, social influence, and facilitating conditions in predicting intention to use eLearning

**ANOVA<sup>a</sup>**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	29.159	4	7.290	9.649	.000 <sup>b</sup>
	Residual	80.082	106	.755		
	Total	109.241	110			

a. Dependent Variable: intention to use

b. Predictors: (Constant), social influence, perceived usefulness, Facilitating Conditions, perceived ease use.

Multiple regression analysis was conducted to determine the effects the independent variables in predicting intention to use eLearning. The findings show that perceived use of use, perceived usefulness and social influence did not significantly influence intention to use e-learning among people living with hearing impairment. However, facilitating conditions were found to have a significant influence people living with hearing impairment’s intention to use eLearning as shown in table 4.13 below

Table 4. 13: Significance of perceived use of use, perceived usefulness, social influence, and facilitating conditions

**Coefficients<sup>a</sup>**

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
1 (Constant)	.521	.558		.933	.353
perceived usefulness	.122	.113	.094	1.079	.283
Perceived ease use	.312	.173	.182	1.804	.074
Social influence	-.051	.097	-.048	-.523	.602
Facilitating Conditions	.488	.116	.397	4.197	.000

a. Dependent Variable: Intention to use

Though the Perceived usefulness and Perceived ease use influence people living with hearing impairment to adopt eLearning, their influence was positive but not significant. Facilitating Conditions was the main factor found to have a significant influence on the intention to use e learning among of people living with hearing impairment at  $\alpha=0.05$ .

## **CHAPTER FIVE:**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

The study targeted students and trainers with hearing impairment in Kenya. The participants in this study included learners and trainers from KTTID. The study sought analyse how perceived usefulness, perceived ease of use, facilitating conditions and social influences affected intention to use e-learning among people with hearing impairment in Kenya. This chapter summarizes the findings from the field data, as well as the study's conclusion and recommendations.

#### **5.2 Summary of the Results**

This section is organised into five sections: perceived usefulness, and intention to use e-learning, perceived ease of use and intention to use e-learning, facilitating conditions and intention to use e-learning, social influences, and intention to use e-learning, voluntariness and intention to use e-learning systems, and finally, intention to use of e-learning systems. This section presents key findings from the fieldwork.

##### **5.2.1. Perceived usefulness and intention to use e-learning by people with hearing impairment in Kenya**

People with hearing impairment mostly rely on sign language to communicate, using the movements of the hands, which simultaneously combine facial expression, eyes and body movement, and lip patterns. Most LMS systems combine video, text, images and audio to deliver content. People with hearing impairment are therefore unable to fully utilise these systems due to the audio component. Nowadays, Learning Management Systems that comply with the Web Content Accessibility Guidelines 2.1 are available and can be utilised by

institutions serving students with hearing impairment. Level A compliance ensures Pre-recorded captions for audio content, Level AA compliance ensures provision of Live captions for audio content while Level AAA ensures provision of Pre-recorded Sign Language.

E-learning systems were perceived relevant in learning and training since it can help the participants accomplish tasks within a reasonable time. E-learning systems could improve learning and content delivery, increased productivity as well as creating a feedback mechanism between instructors and students giving flexibility in effective time management for instructors and students.

### **5.2.2. Perceived ease of use and adoption of e-learning for people with hearing impairment in Kenya**

Park and Wentling (2007) focused on computer attitudes and computer usability and unveiled a strong relationship between objective usability and adoption and objective usability through Perceived Ease of Use to attitude.

Their findings are in agreement with the findings of this study that found perceived ease of use of the e-learning system, most participants felt they would find it easy to learn and gain skills. They believed that they would interact with the system in a manner that would be clear and easy to understand. Participants believe they had skills required to use system, expressing little levels of apprehension about using such a system. A good number of respondents indicated that they would not be hesitant to use eLearning since they would not be afraid of making mistakes and held that the system would not intimidate them.

### **5.2.3. Facilitating conditions and intention to use e-learning by people with hearing impairment in Kenya**

In this study, it was evident that there was lack of common knowledge on existence of an institution policy on e-learning, budgeting on the e-learning system and the organisation culture positivity towards e-learning. The institution posed some form of ICT infrastructure to support and technical support for e-learning but was considered insufficient. There is a moderate supply of internet capacity to support e-learning.

The study confirms that facilitating conditions have a substantial impact on the desire to employ e-learning and agrees with (Benson & Palaskas, 2006) who stated that the implementation and integration of educational technology is hampered by a lack of institutional and administrative support, including top management engagement.

### **5.2.4. Social influences and adoption of e-learning for people with hearing impairment in Kenya**

Social influence was reported to be an important factor of behavioural intention to adopt e-learning in prior research and studies (Al-Fadhli et al., 2009). Although in overall the response averaged on neutral, this claim did not contradict this study since a high number agreed that social expectation determined the adoption of e-learning. The social influences represented by the institutions image, important people would influence their intentions to use e-learning. Since e-learning is a new phenomenon among people with hearing impairment, positive experiences of others, colleagues, and institutions would have a positive influence on those who have not yet adopted the systems.

### **5.2.5. Intention to use e-learning system**

His-Peng, Lu (2005) discovered that perception on relative advantage and perceived compatibility explain much of the diversity in intention by examining the relative strengths of the correlations between distinct e-learning features and usage intention. In general, innovations that receivers perceive to have an advantage, more compatible, and are simple will be quickly accepted (Rogers,1983). Respondents indicated that they were more inclined to use a system if they have the resources and the skills to do so, according to this study. However, most respondents in this study indicated that they would only use e-learning if it was not voluntary or if they were offered an incentive.

### **5.3 Conclusion of the study**

The study concludes that while significant number of instructors and trainers are knowledgeable about the use and usefulness of e-learning and are likely to utilise the systems, there is a general lack of facilitation conditions to influence the use of these systems. Most notable is the lack of management leadership, lack of institutional wide e-learning policies, insufficient budgets for e-learning and organisational culture that is positive towards e-learning. Additionally, the study concludes that there is insufficient ICT infrastructure to support e-learning as well as insufficient ICT skills and technical support to support e-learning for people with hearing impairment.

### **5.4 Recommendation of the study**

The study recommends that institutions of learning for students and trainers with hearing impairments need sensitisation on the availability, usability, requirements, and benefits of these systems. While the intended users are aware of the of the availability and benefits of the

systems, the lack of management support and leadership and insufficient infrastructure points to a general lack of awareness of on the side of the management of the institutions.

### **5.5 Recommendations for further studies**

This study focused only focused on the intended system users who are majorly students and trainers. However, it is also important to carry out research on factors affecting adoption of e-learning systems for people with hearing impairment, with focus on top management and adoption at the institutional level.

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## **APPENDIX I: INSTRUCTORS' QUESTIONNAIRE**



**UNIVERSITY OF NAIROBI**

**COLLEGE OF BIOLOGICAL AND PHYSICAL SCIENCES**

**SCHOOL OF COMPUTING AND INFORMATICS**

**FACTORS AFFECTING INTENTION TO USE E-LEARNING BY PEOPLE WITH  
HEARING IMPAIRMENT: A CASE OF KAREN TECHNICAL TRAINING INSTITUTE  
FOR THE DEAF**

### **INSTUCTORS' QUESTIONNAIRE**

#### **INTRODUCTION**

Dear respondent, I am conducting a research on factors affecting intention to use e-learning by people with hearing impairment. The goal is to establish the awareness of the e-learning systems applicable, assess the perception of instructors on the usefulness and ease of use of these systems, the social influences and also the facilitating conditions that can affect the intention to use these systems. The research findings will be kept confidential and will be used for academic purposes only.

This questionnaire has been prepared for academic purposes only. You are kindly requested to provide answers to these questions as honestly and precisely as possible. Responses to these questions will be treated confidentially. Please do not write your name on this questionnaire.

Kindly answer all the questions

## **Section I**

Kindly tick the appropriate response

### **1. Awareness of E-learning Systems**

Q1. I am aware of the use e-learning systems

Yes

No

Q2. I have used/interacted with e-learning systems

Yes

No

## Section II

Please circle your responses using the following scale. 1 = Strongly disagree; 2 =

Disagree; 3 = Neither agree nor Disagree, 4 = Agree; 5 = Strongly agree.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>2. Perceived usefulness of e-learning systems: How useful do you think the system would be in facilitating learning in the institution</b>					
In my job, use of e-learning systems would be relevant	1	2	3	4	5
Using the system would help me accomplish tasks quickly	1	2	3	4	5
E-learning systems can improve learning and content delivery	1	2	3	4	5
E-learning systems can help in creating a feedback mechanism between instructors and students	1	2	3	4	5
E-learning systems are flexible and can lead to effective time management for instructors	1	2	3	4	5
E-learning systems can increase productivity while using less resources through content reusability	1	2	3	4	5
Overall, using the system would increase my productivity	1	2	3	4	5
<b>3. Perceived Ease of use of e-learning systems: How much effort do you think it would take to learn and use e-learning systems</b>					5

I would find it easy to learn and become skillful at using the system	1	2	3	4	5
My interaction with the system would be clear and understandable	1	2	3	4	5
I would find the system easy to use	1	2	3	4	5
I would require high levels of computer literacy to use the system	1	2	3	4	5
I feel apprehensive about using such a system	1	2	3	4	5
I would hesitate to use the system for fear of making mistakes	1	2	3	4	5
The system would be somewhat intimidating to me	1	2	3	4	5
<b>4. Facilitating Conditions</b>					
<b>i. Institutional Support</b>					
There is an institution wide e-learning strategy for e-learning development and implementation	1	2	3	4	5
There is an institutional policy on e-learning	1	2	3	4	5
There is an institutional budget priority for e-learning	1	2	3	4	5
The organisation culture is positive towards e-learning	1	2	3	4	5

<b>ii. ICT Infrastructure and support</b>					
There is sufficient ICT infrastructure available to support e-learning	1	2	3	4	5
There is adequate technical support for e-learning system implementation	1	2	3	4	5
There is adequate technical support for system difficulties	1	2	3	4	5
Remote technical support services are available	1	2	3	4	5
There is sufficient internet capacity to support e-learning	1	2	3	4	5
<b>5. Voluntariness</b>					
I would adopt e-learning only if it was mandatory	1	2	3	4	5
I would adopt e-learning if there were incentives	1	2	3	4	5
<b>6. Social influence (SI)</b>					
I should use e-learning systems because other instructors are also using them	1	2	3	4	5
People who influence my behaviour think that I should use the system	1	2	3	4	5

People who are important to me think that I should use the system	1	2	3	4	5
Adopting the system would improve the institutional image	1	2	3	4	5
<b>7. Intention to use e-learning system</b>					
<b>I would adopt and use the system if</b>					
I have the resources necessary to use the system	1	2	3	4	5
I have the knowledge necessary to use the system	1	2	3	4	5
A person or a team is available for assistance	1	2	3	4	5
There is management support and budget to sustain e-learning	1	2	3	4	5

8. Please provide any comments/views/challenges/benefits of adoption of e-learning at the institution

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THANK YOU.

## **APPENDIX II: STUDENTS' QUESTIONNAIRE**



**UNIVERSITY OF NAIROBI**

**COLLEGE OF BIOLOGICAL AND PHYSICAL SCIENCES**

**SCHOOL OF COMPUTING AND INFORMATICS**

**FACTORS AFFECTING INTENTION TO USE E-LEARNING BY PEOPLE WITH HEARING IMPAIRMENT: A CASE OF KAREN TECHNICAL TRAINING INSTITUTE FOR THE DEAF**

### **STUDENTS' QUESTIONNAIRE**

#### **INTRODUCTION**

Dear respondent, I am conducting a research on factors affecting intention to use e-learning by people with hearing impairment. The goal is to establish the awareness of the e-learning systems applicable, assess the perception of instructors on the usefulness and ease of use of these systems, the social influences and also the facilitating conditions that can affect the intention to use these systems. The research findings will be kept confidential and will be used for academic purposes only.

This questionnaire has been prepared for academic purposes only. You are kindly requested to provide answers to these questions as honestly and precisely as possible. Responses to these questions will be treated confidentially. Please do not write your name on this questionnaire.

Kindly answer all the questions

## **Section I**

Kindly tick the appropriate response

### **1. Awareness of E-learning Systems**

Q1. I am aware of the use e-learning systems

Yes

No

Q2. I have used/interacted with e-learning systems

Yes

No

## **Section II**

Please circle your responses using the following scale. 1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor Disagree, 4 = Agree; 5 = Strongly agree.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>2. Perceived usefulness of e-learning systems: How useful do you think the system would be in facilitating learning in the institution</b>					
In my job, use of e-learning systems would be relevant	1	2	3	4	5
Using the system would help me accomplish tasks quickly	1	2	3	4	5
E-learning systems can improve learning and content delivery	1	2	3	4	5
E-learning systems can help in creating a feedback mechanism between instructors and students	1	2	3	4	5
E-learning systems are flexible and can lead to effective time management for instructors	1	2	3	4	5
E-learning systems can increase productivity while using less resources through content reusability	1	2	3	4	5
Overall, using the system would increase my productivity	1	2	3	4	5
<b>3. Perceived Ease of use of e-learning systems: How much effort do you think it would take to learn and use e-learning systems</b>					5
I would find it easy to learn and become skillful at using the system	1	2	3	4	5

My interaction with the system would be clear and understandable	1	2	3	4	5
I would find the system easy to use	1	2	3	4	5
I would require high levels of computer literacy to use the system	1	2	3	4	5
I feel apprehensive about using such a system	1	2	3	4	5
I would hesitate to use the system for fear of making mistakes	1	2	3	4	5
The system would be somewhat intimidating to me	1	2	3	4	5
<b>4. Facilitating Conditions</b>					
<b>i. Institutional Support</b>					
There is an institution wide e-learning strategy for e-learning development and implementation	1	2	3	4	5
There is an institutional policy on e-learning	1	2	3	4	5
There is an institutional budget priority for e-learning	1	2	3	4	5
The organisation culture is positive towards e-learning	1	2	3	4	5

<b>ii. ICT Infrastructure and support</b>					
There is sufficient ICT infrastructure available to support e-learning	1	2	3	4	5
There is adequate technical support for e-learning system implementation	1	2	3	4	5
There is adequate technical support for system difficulties	1	2	3	4	5
Remote technical support services are available	1	2	3	4	5
There is sufficient internet capacity to support e-learning	1	2	3	4	5
<b>5. Voluntariness</b>					
I would adopt e-learning only if it was mandatory	1	2	3	4	5
I would adopt e-learning if there were incentives	1	2	3	4	5
<b>6. Social influence (SI)</b>					
I should use e-learning systems because other instructors are also using them	1	2	3	4	5
People who influence my behaviour think that I should use the system	1	2	3	4	5
People who are important to me think that I should use the system	1	2	3	4	5

Adopting the system would improve the institutional image	1	2	3	4	5
<b>7. Intention to use e-learning systems</b>					
<b>I would adopt and use the system if</b>					
I have the resources necessary to use the system	1	2	3	4	5
I have the knowledge necessary to use the system	1	2	3	4	5
A person or a team is available for assistance	1	2	3	4	5
There is management support and budget to sustain e-learning	1	2	3	4	5

8. Please provide any comments/views/challenges/benefits of adoption of e-learning at the institution

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THANK YOU.