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An analysis of key drivers for the implementation of digital literacy programs in Kenyan universities.

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AN ANALYSIS OF KEY DRIVERS FOR THE IMPLEMENTATION OF DIGITAL LITERACY PROGRAMS IN KENYAN UNIVERSITIES

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DECLARATION

I, the undersigned, declare that this project is my original work and has not been submitted for examination in any other institution.

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Sign: …… **Date: 14/10/20**

Approval

This research project has been submitted for examination with my approval as the university supervisor.

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ABSTRACT

With the continuous growth in technological advancement within the country, the implementation of the digital literacy program was expected to be seamless within the education sector. However, to date, institutions of higher learning have been unable to assimilate digital learning in their content delivery comprehensively. The purpose of this study was to examine the key drivers of digital literacy implementation within private and public universities in Kenya. The specific objective of the research was to establish the effect of staff skills and competencies, ICT infrastructure, and strategic planning on the digital literacy implementation within universities in Kenya. The research was grounded on the technology diffusion theory as well as the resource-based view theory. The study used a descriptive research design. The target population for the study was made up of 40 universities within Nairobi County comprising of 12 public universities and 28-privately-run universities. The study sampled three respondents within each of the universities. The study sample size was 94 respondents. The research utilized primary data, which was collected using a structured questionnaire. The study adopted a drop and picked method in the data collection. The data was coded into SPSS 23 for analysis. The study relied on both descriptive and inferential analysis. The study obtained a response rate of 60% of the survey. The results of the indicated there 45.9% of changes in digital literacy implementation is determined by the ICT infrastructure, strategic plans, and staff skills and competencies. The research concluded that having adequate ICT infrastructure, skilled and competent staff, and effective strategic planning positively influence digital literacy implementation. The study recommends that universities should improve investment in internet connectivity, ICT infrastructure, cloud computing, strategic planning, as well as forming strategic alliances with telecommunication firms and digital learning service providers.

Keywords: *Staff Skills and Competencies, ICT Infrastructure, Strategic Plans, Digital Literacy*

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ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
ICT	Information, Communication, and Technology
IS	Information Systems
IT	Information Technology
KNBS	Kenya National Bureau of Statistics
TVET	Technical and Vocational Education and Training
UK	United Kingdom
VIF	Variance Inflation Factors

OPERATIONAL DEFINITION OF TERMS

Digital learning	This is learning through technology, where students use technological facilities as a means of acquiring knowledge (Andema, Kendrick, & Norton, 2013).
Digital literacy	This refers to a government program designed to prepare students for the digital world through the provision of digital devices, capacity development for teachers, broadband connectivity and provision of digital learning (Maina & Nzuki, 2015)
E-Learning	This is the implementation of appropriate technology that is used to enhance learning (Awuor & Kaburu, 2014).
ICT infrastructure	This refers to the various networks, databases, software, internet connection and hardware that is relied upon in the running of new technologies (Chepkonga, 2015)
Staff skills and competencies	These include the various attitudes and personal characteristics exhibited by staff which include their flexibility, technical capabilities (Njoroge, Margaret, & Joab, 2017)
Strategic plan	This is a document created after critical analysis of internal and external factors fundamental to attaining the organization objectives (Njue & Ongoto, 2018)

CHAPTER ONE

INTRODUCTION

1.1 Introduction

The ongoing global pandemic has laid bare the difficulties that Kenyan universities are facing in delivering digital learning services. This research sought to establish the critical drivers to the implementation of digital literacy in Kenya. This chapter presented the background to the study, the problem statement, objectives guiding the study, the research questions, scope of the research, and the significance of the study.

1.2 Background of the Study

The world is becoming more digital, and with it comes a wide range of diversity in its societies. As a result, the social groups, as well as the social practices in the social world, are also becoming complexified. The digital world today allows the existence of social groups in global online affinity spaces (Lee, 2018), which allows people from all over the world to congregate concerning their areas of common interest. These social groups are inclusive of people of different linguistic, cultural, social, and national backgrounds. There is uniqueness in the social languages used. The diversity of the languages also shows an unprecedented degree in human history, and their digital literacy practices with these languages are unique types of situated social practices. (Communication and Media, 2019).

Many technological innovations have been developed in the last years to improve the way things are done in the education industry and to help students in their learning process of storing and defusing knowledge (Rheaume & Gardoni, 2015). Universities have expanded their roles to serve and promote innovative knowledge through the introduction of practical programs that are interlinked with innovation (Youtie & Shapira, 2013). Technologically innovative developments in the education sector are erasing the traditional boundaries of learning, and these changes the scholarly environment. The application of technology can provide better education to create a knowledge society (Salajan & Roumell, 2016).

Communication and Media (2019) indicates that digital literacy within the United States has been entrenched as result of the empowerment of education institutions and supporting learners access smart devices. Woodcock, Middleton, and Nortcliff (2012) found that in the United Kingdom, there is an increase in preference for digital learning, which has been supported by the high development of digital learning material. Elkaseh, Wong, and Fung (2015) posit that

perception that digital learning has been embraced as a result of the efficiency accorded to learners and the positive attitude among learners and faculty members.

Harandi (2015) finds that due to the perceived potential benefits of e-learning, both students and universities are accepting e-learning as an engagement with potentially positive results for the learning process. Maina and Nzuki (2015) indicate that digital learning is primarily grounded on the utilization of internet technologies through knowledge flows and information dissemination in the form of network courses, among others. Olojo, Adewumi, and Ajisola (2012) argue that well-designed digital learning is capable of delivering anticipated outcomes to the students, including motivating them to become more engaged in the learning programs and the course content.

Alkharang and Ghinea (2013) noted that the existing progression of e-learning is inclined towards devising technological concerns and disregarding educational and managerial issues, which are essential for the efficient implementation of digital literacy programs. Digital learning has evolved over the years as technology briskly changes and upgrades; knowledge has become accessible to everyone around the world as long as they have a device and internet. It has created accessibility in learning for even those who have either visual or hearing impairment or disability (Batanero, Karhu, Holvikivi, Oton, & Amado-Salvatierra, 2014).

Along the global stage, there has been a lot of research and documentation on the adoption of digital learning in universities and colleges because that was the first area in which the adoption of technology helped enhance how instructors teach. Students learn (Tarus, Gichoya, & Muumbo, 2015). Kenya National Bureau of Statistics report of 2017 shows the progressive growth of several students. They have been enrolling for both under and postgraduate courses showing that there is indeed hunger for education but fewer resources to accommodate these numbers (KNBS, 2017).

1.2.1 Critical Drivers for Digital Literacy Implementation

Several studies have focussed on the determinant of digital literacy implementation. Masud and Huang (2012) found out that access is key in promoting the adoption of e-learning technology, with a focus on cloud computing. Lee, Hsiao, and Purnomo (2014) indicated that support for e-learning activities (technology accessibility and learning content) is critical in increasing students' adoption of e-learning systems. Urhiewhu and Emojorho (2015), in a study in Nigeria, found out that lack of system access and an inadequate number of computers leads to poor access and enactment of digital learning programs.

Tarus, Gichoya, and Muumbo (2015) indicated that work system accessibility is one of the main challenges to e-learning adoption in Kenyan universities. Tarus *et al.* further indicate that infrastructure like internet coverage, bandwidth, and technology can be a hindrance to the accessibility and implementation of e-learning programs. Njoroge, Margaret, and Joab (2017) found out that the strategic plan, clear vision, ICT infrastructure cost, and the skills of the teachers were the key determinants of implementation. Muriko (2015) indicated that that lack of training, inadequate finances, insecurity, lack of ICT policy, and limited infrastructure were major hindrances to ICT utilization in secondary schools. Makori (2015) found out that information literacy, learning skills, research, teaching, and learning approaches affected the use of electronic systems

The above conceptualization of previous studies have shown that they are various factors that contribute to effective digital literacy implementation. Based on the previous literature the current study sought to determine the effect of ICT infrastructure (Muriko, 2015), strategic planning (Njoroge, Margaret & Joab, 2017) and staff competencies and skills (Makori, 2015) were selected for the current study as the predictor variables. The selected study variables are conceptualized below.

The staff skills and competencies include the various attitudes and personal characteristics exhibited by staff, which include their flexibility, technical capabilities, ability to solve problems, and the quality of interpersonal relationships (Kayoko, Seren, Mitsuo, & Oyabu, 2011)). Further, the staff skills include the professional, technical, and work skills that are exhibited by the staff within a firm (Kwok, Adams, & Price, 2011). Voogt, Erstad, Dede, and Mishra (2013) indicated that inadequate competencies for teaching in the 21st century, insufficient preparation of teachers, attitude and beliefs on ICT, poor training and lack of a systematic strategy for adoption of digital learning limited the implementation process.

Chandra and Sandilands (2005) believe that translating plans into action requires a lot of commitment and sacrifice. A strategic plan is a document created after a critical examination of internal and external factors fundamental to attaining the organization's goals (Johnson, Scholes, & Whittington, 2008). Strategic planning has many dimensions that generally revolve around the identification of key competencies, development of a clear vision and mission statement, as well as identification of the firm's strengths, weaknesses and opportunities, and threats (Bryson, 2018). Awuor and Kabur (2014) found out that a weak ICT policy framework,

lack of competent teachers, lack of vision, and poorly formulated implementation guidelines and mechanisms have contributed to the ineffective e-learning adoption in Kenya.

ICT infrastructure consists of various networks, databases, software, internet connection, and hardware that is relied upon in the running of new technologies (Oyelaran-Oyeyinka & Adeya, 2010). Beckinsale, Ram, and Theodorakopoulos (2010) define ICT infrastructures as the foundational tools that facilitate information technology sharing and are depended upon by the organization. Madsen (2010) asserts that ICT infrastructure is the basic unit of basic communications, computer systems, and data. Duffy (2010) describes ICT infrastructure as a set of IT resources. Chris (2015) indicated that the unavailability of ICT equipment, poor telecommunication infrastructure, and poor digitalization of school curriculums affected the adoption of ICT in Kenyan schools.

1.2.2 Digital Literacy Implementation

Digital learning is defined simply as the activity of learning through computers or other information systems (IS) (Elkaseh, Wong, & Fung, 2015). Digital learning is the dissemination of education using electronic devices and digital media (Woodcock, Middleton, & Nortcliff, 2012). Digital literacy focuses on how ICT is integrated into the curriculum to enhance the delivery of learning materials (UNESCO, 2015). The Digital Literacy Program is a result of the Kenyan vision 2030, which aims to integrate each student into a digital education system (Tarus, Gichoya, & Muumbo, 2015). Smith (2016) notes that digital literacy programs have been beneficial to universities. Firstly, they have enabled human development and bridged the digital divide; hence students are suitable for the global economy and are updated. Secondly, access to quality open and equitable education resources of information is made available. This has fostered information sharing and exchange. Thirdly, lecturers are readier to invest in innovative teaching ideas that improve on the traditional teaching methods. A lastly and most notable characteristic is the flexibility whereby learning can take place from any location in the country where there is internet connectivity. Digital literacy should be considered an important component of integration in the curriculum for students around the world. Studies highlight that there is a preference for technology use among children of 5 to 15 years old in the UK (Devaux, Bélanger, Grand-Clement, & Manville, 2017).

Andema (2014) notes that the implementation of digital literacy is at the nascent level of being adopted within institutions in the continent. The technique of adoption and diffusion of the virtual era in training is in transition. One of the fundamental capabilities of this new section

being the concern governments are giving to coverage improvement, and most of the nations surveyed have already got a countrywide virtual technology policy in the region. Chris (2015), however, indicates that there are several structural and internal factors within the institutions that are limiting the adoption of digital literacy programs within higher learning institutions.

In Kenya, much investment has been pumped into secondary and institutions of higher learning for the acquisition of digital technology material (Awuor & Kaburu, 2014). Lack of funding limited access to ICT infrastructure in the initial stages of implementation (Murgor, 2015). This study aims at examining the execution of digital literacy in terms of the development of digital content, utilization of digital literacy devices, application of digital curriculum and teaching guidelines, and effective use of digital content.

1.2.3 Kenyan Universities

Republic of Kenya (2014) indicates that in the last decade, there has been an acceleration in student uptake in universities across the country. Between 2010/11 to 2013/14, there was a 98.1% in the enrolment rate. This growth has raised concerns among a multitude of stakeholders in the education sector. The Commission for University Education (2014) in recognization of the quality challenges facing universities developed standards and guideline policy aimed at improving and maintaining the quality of education within universities in Kenya. Central to the realization of the policy aspirations, the commission has been advocating for the inclusion of a digital learning environment within institutions of higher learning.

The Commission for University Education was developed to coordinate and advance higher education in the country through the accreditation of colleges and universities within the country. The mandate of the institution goes as far as regulating universities, authorizing programs, as well as coordinating areas for advanced research and guiding the implementation of the virtual learning environment (Waweru, 2014). Ephantus (2017) contends that most universities have instituted Open Distance and e-Learning (ODEL) programs to varying degrees with success in the execution of the program remaining quite low. The research further notes that the complexities in the digital learning environment in Kenya vary within regions; hence there is a need for closer examination of the implementation of digital learning. The current research focussed on an examination of the drivers of digital learning implementation in Kenyan universities. The study focus was on the 40 public and private universities in Kenya.

1.3 Statement of the Problem

Universities have witnessed an increase in enrolment numbers since 2011 due to increased intakes, introduction of parallel degree programs, and the high transition rates from secondary schools (Ephantus, 2017). According to the Kenya Economic Survey, (2014), enrolment by students to public universities increased by 41% and 7.1% in private universities. This has led to an increase in the number of satellite universities to contain this upsurge in student enrolment (Makokha, 2016). To ensure that there is proper management in universities, universities have identified digitization as one of the key strategies. Implementation of digital literacy programs has, however, proven to be a difficult task making some to abandon these programs altogether (Nganga, 2014). This is partly due to a lack of adequate research on the key drivers of the implementation of digital literacy programs in Kenyan universities, which creates the knowledge gap that the current research sought to examine.

Several empirical studies have analyzed the implementation of digital literacy within institutions of learning. Qureshi, Ilyas, Yasmin, and Whitty (2012) examined the problems faced by Pakistani institutions in implementing e-learning and indicates that among key barriers was language proficiency and failure in the electric grid. Andema (2014) studied digital literacy in Ugandan colleges and notes that ICT policy influenced the adoption of digital policy; however, fragile infrastructure, inadequate digital literacy skills, inadequate access to the internet, and lack of proper access to electricity supply limited the adoption of digital literacy programs. Locally, Murgor (2015) assessed the challenges facing ICT adoption in African Universities and reported that lack of a policy framework, lack of necessary skills and knowledge, maintenance of infrastructure, and inadequate financial resources affected the adoption of ICT. Mahinda (2019) studied the factors that influenced the implementation of digital literacy programs in Kenya and indicated that lack of adequate infrastructure, cooperation, and collaboration, as well as lack of adequate skills, limited the implementation of the literacy programs.

The above studies lead to the conclusion that multiple factors come into question during the implementation of digital literacy programs and ICT in institutions of learning. However despite increased investments towards improving digital literacy programs within Kenyan Universities there has been dismal implementation of the programs in the country. This has in recent times been noted with most universities struggling to maintain a learning environment during the Covid-19 pandemic. This has greatly dampened delivery of quality education in the country and lays bare the lack of effective implementation of digital literacy within universities.

Hence there was need to interrogate the key drivers that supports implementation of the digital literacy programs. The current study conducted an analysis of the key drivers for the implementation of digital literacy programs in Kenyan Universities.

1.4 Objectives of the Study

The main objective of the study was to examine analyze the key drivers for the implementation of digital literacy programs in Kenyan Universities

1.4.1 Specific Objectives

i. To examine the effect of staff competencies and skills on the execution of digital literacy programs in Kenyan Universities
ii. To evaluate the effect of ICT infrastructure on the implementation of digital literacy programs in Kenyan Universities
iii. To determine the effect of strategic planning on the execution of digital literacy programs in Kenyan Universities

1.5 Research Questions

i. What is the effect of staff competencies and skills on the implementation of digital literacy programs in Kenyan Universities?
ii. What is the effect of ICT infrastructure on the implementation of digital literacy programs in Kenyan Universities?
iii. What is the effect of strategic planning on the implementation of digital literacy programs in Kenyan Universities?

1.6 Scope of the Study

The study scope was a review of the implementation of digital literacy within public and private universities. The study's geographical scope was universities operating within Nairobi City County. The location was selected since it houses the majority of the universities in Kenya hence was deemed a reliable location for conducting the research. The study contextual scope focused on three main critical drivers of the implementation process: ICT infrastructure, staff competencies, and skills, and the strategic planning of the institutions. The theoretical scope of the research focused on the resource-based view theory and the diffusion of innovation theory.

1.7 Significance of the Study

To the management of the universities, the findings of the research are expected to be vital in identifying the various critical factors that can support the efficient and effective

implementation of digital literacy. The results of the study are also anticipated to support the future formulation of strategic plans that can help guide the public and private universities in applying digital learning in teaching content. Findings are expected to be of significance to the Ministry of Education and Ministry of ICT as they will offer policymakers with relevant information on the key drivers of implementation of digital drivers, and this can be included in future policymaking. Findings can also form the basis of future research work as well as guide debate on the efficacy of digital literacy in the education sector.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focused on the review of the related literature to the themes of the research and reviewed the theories underpinning the research, empirical studies as well as the summary and research gaps. Further, the conceptual framework was depicted in the chapter.

2.2 Theoretical Review

The research was based on the technology diffusion theory and the resource-based view theory. The technology diffusion theory by Rogers (1995) was integral in examining how emerging technologies can be implemented within institutions to foster service delivery. On the other hand, the resource-based view theory by Penrose (1959) posits that firms can leverage on the rare resources and capabilities to enhance firm performance.

2.2.1 Diffusion Of Innovation Theory

Advanced by Rogers (1995), the theory proposes that technology diffusion is a process that spreads fruitful assortments of product and process by an economic structure and shifts the common sub-standard varieties either wholly or partly. Rogers viewed that new technological adoption was a time based process which involves decision making situations among members of a social setup. Rogers characterized that diffusion of innovation followed five factors which were awareness, interest, evaluation, trial and lastly adoption (Rogers, 1996). The theory further defines diffusion as the process through which the community members accept and assimilate technology into their daily livelihoods (Beaver & Prince, 2002).

The theory states that new technologies are the engines of economic development. Rogers discovered that it takes time for a brand-new technology to accumulate monetary significance. The theorist argues that first, it needs to be brought into the economy (innovation). Then, it's steadily followed by using many people (diffusion) (Rogers, 1996). In this theory, Rogers (1996) proposed that four core basics encourage the adoption of fresh ideas; the invention itself, the time, the communication channels involved, and the social process in place. The diffusion of innovation theory explains the process of embracing and diffusion of technology into the system (McAdam, 2002).

Innovation Diffusion Theory (IDT) focuses on the new item characteristics. In this regard, the theory views that acceptability of new technologies are triability, complexity compatibility, observability and relative advantage are perquisite features that determines successful spread of innovations (Chris, 2015). When considering the adoption and diffusion of an invention, several organizational characteristics can influence the adoption and diffusion of innovations. These include the degree of centralization within the organization, the size of the organization, degree of formalization, and as well as the interconnectedness of the various departments (Teece, Pisano, & Shuen, 2017). It critiques how new technological ideas, management systems, and techniques developed from their inception to application in the firm. This enables

it to be able to predict whether particular innovations were successful in accomplishing their task after their adoption and diffusion into the system (Song, Bij, & Song, 2011).

The theory has, however, been criticized by past scholars as its predictive power is sub-par, and the results obtained mystifying (Hai, 1998). Also, many diffusion behaviors have, in the past, had to be traced back to the history of social context (Damsgaard & Lyytinen, 1998). The theory further points out that inherent challenges to the innovation process may render the innovation counter-productive to a firm's goals; hence the proponent posits that a firm should conduct a comprehensive analysis before adopting a specific strategy. IDT is pertinent to this study because it shows the process of new technological innovations adoptions in a social set up.

The innovation diffusion theory is significant in that it outlines how innovation is introduced and adopted in the market and hence the process of acceptance of the innovation in the market (diffusion). This explains the Digital Literacy program (innovations) in the institutions of higher learning and the process of implementation by the institutions and other implementers (diffusion). The theory is related to this study in that innovations, in this case, digital literacy, cannot be successfully implemented without the related infrastructure, effective strategic planning, staff capacity building through training and which enhances their skills and competencies, which are key to the successful execution.

2.2.2 Resource-Based View Theory

Penrose (1959) ascertained that firms consist of resources and capabilities that the company gains during the period, which is in operation (Ambrosine & Bowman, 2009). Academicians argue that value creation is possible when a firm possesses rare, valuable. Non-imitable, thus providing a sustainable competitive advantage (Priem & Butler, 2011). Its origins are from the strategy literature (Wernefelt, 1984), which provides an important framework where the growth of management through the use of resources that have the characteristics specified above can be studied (Rugman & Verbeke, 2002).

The theory focussed on how the assets of the firm can be transformed and applied in ways that determine operations in the firm (Priem & Butler, 2011). Its main assumption is that firms have to develop their resources to gain modest benefits. Resources must be rare, valuable, and difficult to interchange to maximize profits (Eisenhardt & Martin, 2010). This theory categorizes firms with greater edifices as more lucrative since they have enough investment in

their competencies. As a result, vertical integration and diversification have a different outlook, according to this study (Ambrosine & Bowman, 2009).

Eisenhardt and Martin (2010) observed they make the most of long-run profits by taking advantage of and evolving firm resources. It symbolizes funds as rare, valuable, non-substitutable, and inimitable. However, RBV has faced criticism for failing to give a proper explanation of the development and duplication of resources as well as their failure in consideration of the impact of dynamic market environments (Nath, Nachiappan, & Ramanathan, 2010). The theory has been criticized that failure to develop into a competitive advantage is a result of static theory and has been seen, especially in a dynamic environment that is driven by a change in technology (Nalcaci & Yagci, 2014).

The literature highlights the importance of being able to complement their resources as per the demands of the market to encourage an increase in performance output (Eisenhardt & Martin, 2010; Teece, Pisano, & Shuen, 2017). The theory's relevance comes as a result of it being able to inform how the organization can rely on its unique resources to drive strategy implementation within an organization. The theory can be instrumental in the current study in identifying how the various infrastructure capacity and the various competencies and skills among the organization can be utilized towards fostering the implementation of literacy programs within institutions of higher learning.

2.3 Empirical Review

This section presented a review of previous empirical studies that have been conducted in relation to the objectives of this research.

2.3.1 Digital Literacy Implementation

Digital literacy is the implementation of programs designed for the preparation of students for the digital world through the provision of digital devices, capacity development for teachers, broadband connectivity, and provision of digital learning (Mahinda, 2019). UNESCO ICT Competency Framework for Teachers (2016) report revealed that utilization of ICT within the education is vital as it improve the quality of education and ensure that the 21st century students are fully involved. Kenya Education Network (2017) notes that despite the improvement in the enrolment rate within universities, the realism of achieving digital literacy remains in question. The report notes that most universities within the country have not been able to support digital learning due to challenges in digital literacy among instructors and students, lack of internet access, ICT policies, and the development of digital content.

Sutter and Kihara (2019) opined that increased utilization of new technologies within the country has resulted in digital solutions being introduced within the Kenyan education system. This is notable through introduction of ICT in education programs and offering of online learning solutions within different levels in the education sector. Hennessy, Onguko, Harrison, Ang'ondi, Namalefe, Naseem and Wamakote (2010) noted that in Sub Saharan Africa, ICT integration within schools faces numerous challenges such as lack of adequate resources, lack of skilled personnel, poor IT expertise among teachers and regional conflicts across countries.

Laaria (2013) in a research paper indicated that effective implementation of ICT in the learning environment is key to fostering delivery of quality education and supporting research and development. The researcher notes that lack of ICT infrastructure, poor leadership and lack of commitment and support negatively impacts implementation of ICT programmes in schools. Stephen (2014) found out that ICT integration in Kenyan schools has not been successful due to lack of resources, poor support and training of teachers as well as attitude and resistance to change within the schools. Mingaine (2013) similarly indicated that digital literacy in Kenya faces numerous systemic and intrinsic challenges that have led to problems in the implementation process and utilization within most of the Kenyan schools.

2.3.2 ICT Infrastructure and Digital Literacy Implementation

Budhedeo (2016) examined the issues and challenges faced by Indian schools in integrating ICT enabled education to rural India. An Indian based research which focused on rural schools in India with mixed research was utilized with findings indicating that there is need to broaden the available ICT infrastructure for education, enhance internet connectivity and increase investment in the development of ICT applications and support curriculum development that is aligned with available software for teachers and students. The study, however, focuses on Indian rural secondary schools. At the same time, the current research examined the implementation of digital literacy in universities in Kenya.

Raihan and Shamim (2013) used structured questionnaires and document analysis to examine ICT adoption in Bangladesh and South Korea TVET institutions. Both descriptive and inferential analysis was used with results indicating that establishing adequate ICT infrastructure and capacity building in terms of courseware and creating public repositories are key to encouraging the integration of the digital divide in learning. The research scope was in Asia, while the current study examines Kenyan universities.

Osang, Ngole, and Tsuma (2013) studied the potential and encounters faced during mobile learning enactment in Nigeria. Utilizing semi-structured questionnaires and adopting descriptive and inferential results indicated that poor power connection, security issues, low computer literacy, and lack of expertise and adequate technological infrastructure limited the implementation of mobile learning in a Nigerian university. However, the effect of a strategic plan and staff competencies are not analyzed, and the current study aims to analyze their effect on implementation.

Andema, Kendrick, and Norton (2013) studied digital literacy among teachers in Uganda and adopted a qualitative study focusing on six educators at the Urban Teachers College. The study utilized interview schedules in the data collection. It concluded that there had been a moderate success of ICT initiatives within the Ugandan education sector. The study indicates that the high cost of internet connectivity, poor power grid, and digitally irrelevant teaching material were the main hindrances to technology adoption. A qualitative design was adopted as opposed to a quantitative research design. Further, the study was not conducted within the local research context, which is the Kenyan universities.

Nchunge, Sakwa, and Mwangi (2013) assessed the effect of ICT infrastructure on implementation in schools and institutions adopting a descriptive survey of Kiambu-based secondary schools, Kenya, adopting both correlation and regression analysis. The findings of the study indicate that the pace of ICT adoption, the high infrastructure costs, poor internet connectivity, low ICT usage, and lack of clear policy guidelines limited the integration of technology in educational institutions. The research was based on secondary schools as opposed to this study, which examines the adoption of digital literacy in universities.

Ephantus (2017) examined the ICT infrastructure preparedness for e-learning implementation in Kenyan Universities. A descriptive research design was adopted, with a population of 215 lecturers and ICT staff being considered in the study. The research made use of both questionnaires and interview schedules to collect data and reported that inadequate ICT infrastructure hindered E-learning implementation in Kenyan universities. The study indicates that increased investment is necessary for e-learning infrastructure and enhanced internet connectivity within the university. The study, however, fails to examine how staff competencies and strategic plans affect the enactment of e-learning in Kenyan universities.

2.3.3 Staff Competencies, Skills and Digital Literacy Implementation

Ozdamar-Keskin, Ozata, Banar, and Royle (2015) examined the learning habits of distance learners and digital literacy competencies. The study focused on 20,172 students at Anadolu University. The study utilized principal component factor analysis and regression analysis with results indicating that being skilled at project work, and having the ability to use digital tools enhanced the digital learning habits. The study indicates that the basic competencies of digital literacy and skills on the use of ICT are critical to the utilization of digital literacy programs. The research was conducted in Turkey, while the current study focuses on the examination of digital literacy in Kenyan universities.

Oyedokun, Oyewumi, Lawal, and Medinat (2018) assessed ICT competencies among Kware state library staff and utilized a descriptive research design, considering 191 respondents. Findings showed that a high level of ICT competency, professional skills, and deployment of ICT tools was key to the utilization of ICT within libraries in selected universities. The research notes that poor motivation, time management, experience, training, and unbalanced curriculum limited the adoption of ICT within libraries. The research focused only on library staff and did not consider an institution-wide application of digital literacy within universities.

Mingaine (2013) examined how a lack of experience influenced ICT adoption in public schools in Kenya. The research implemented a descriptive research design sampling 15 respondents. The results show that the number of ICT aware teachers is still too low and recommended for the implementation of continuous professional development, which can lead to success in the implementation of ICT in schools. The study focused only on staff skills and failed to analyze how ICT infrastructure and strategic plans affect the implementation of digital literacy in schools.

Chepkonga (2015) investigated the relationship of ICT training of principals and ICT integration in Nairobi-based secondary schools and reported that principals' educational level was a major determinant of ICT integration in the management of public secondary schools. The study indicates that increased ICT principals' training improved the integration of ICT in schools. The study, however, was not focused on digital literacy implementation within the university, which was the concentration of the current research.

Wanza and Oluoch (2019) studied the determinants of implementation of the digital literacy program in Makueni County, Kenya. Data were collected from 104 respondents by the use of questionnaires, and the results indicate that employee training, usage of ICT equipment, and

competency positively enhanced the enactment of digital literacy programs. The study indicates that the level of operation, the experience of the staff, and connectivity enhanced implementation levels. The study did not study the effect of strategic plans on the implementation of digital literacy programs.

2.3.4 Strategic Planning and Digital Literacy Implementation

Zahari, Mustapa, Nasser, Dahlan, and Ibrahim (2018) conducted a study on the conceptual digital transformation design for international Islamic University Malaysia. Adopting a survey research design and utilizing both and quantitative and qualitative research, results showed that long-term planning was integral in digital transformation within the universities. The study indicates that designing an implementation plan should focus on digital capabilities, industry trends, financial support, and universal standards in digital transformation. The location os the research is a direct conflict to the parameters of this research.

Budu and Ackah (2016) examined the challenges affecting the enactment of e-learning in Ghana tertiary institutions as well as utilized questionnaires, interviews scheduled, and secondary data to collect research data from 163 respondents. The findings reveal that e-learning was limited by the lack of adherence to institutional references for implementation of e-learning, limited skills among the staff, lack of adequate financing, and poor policy execution. The study fails to examine the role of ICT infrastructure in the enactment of digital literacy programs.

Osman (2017) studied the challenges and opportunities faced by University of Gezira during the implementation of ICT programs and sampled 150 staff members from the university in Sudan and relied on questionnaires for collection of the data and showed that lack of infrastructure and limited training affected the process of implementation.further, poor planning on the necessary e-learning contents and provision of technical support also affected implementation process. The study indicates that the university should revisit its implementation guidelines for better solutions to the implementation challenges. The study focused on a case study of a single university. In contrast, the current study examined all the local universities operating in Nairobi County.

Mirkena (2018) examined the policy and practice of ICT integration in education in Kenya. The research adopted a case study of the Digital Literacy Programme. The study adopted semi-structured interviews and adopted qualitative and quantitative approaches in the analysis. Most organizations have failed in designing effective policies that can guide the implementation

process. Further, the implementation of the digital literacy program was constrained by teachers' attitudes, limited ICT skills, and inadequate infrastructure. The study failed to examine the implementation of digital literacy in Kenyan universities, which was the focus of this research.

Sutter and Kihara (2019) studied the determinants of successful implementation of digital literacy projects in public primary schools in Baringo County, Kenya. The research adopted a descriptive research design with 612 stakeholders in the implementation of digital literacy projects in public schools being considered. Structured questionnaires with both descriptive and inferential statistics were adopted—school leadership, instructional strategies, and having an elaborate ICT policy positively influenced the execution of digital literacy. The study also indicates that having competent ICT teachers and infrastructure influences implementation. The study focused on the execution of digital literacy in primary school, while current research analyzed digital literacy in universities.

2.4 Summary of Literature and Research Gaps

The review of the previous literature has indicated the various research gaps filled by this study. A summary of the gaps is shown in Table 2.1 below;

Table 2.1 Summary of Research Gaps

Author	Title	Research Findings	Research Gap
Andema, Kendrick and Norton (2013)	The digital literacy in Ugandan teacher education	The study indicates that the main challenges in the adoption of digital literacy are the cost of internet connectivity, increasing power outages and digitally irrelevant teaching material	The study was not conducted within the local research context, which is the Kenyan universities.
Chepkonga (2015)	Relationship of ICT training of principals in ICT	The findings indicate that the principals' educational level and	The study does not take into consideration the digital literacy

	integration in management public secondary schools in Nairobi County, Kenya	ICT integration in the management of public secondary schools were positively related	implementation within the university which was the focus of current research
Ephantus (2017)	ICT infrastructure preparedness for e-learning implementation in Kenyan Universities	The study indicates that inadequate ICT infrastructure was a major challenge hindering the implementation of E-learning in Kenyan universities	The research does not examine how personnel competencies and strategic plans affect the implementation of e-learning in Kenyan universities
Mirkena (2018)	The policy and practice of ICT integration in education in Kenya. The research adopted a case study of the Digital Literacy Programme	The study indicates that most of the organization have failed in designing effective policies that can guide the implementation process	The did not focus on the implementation of digital literacy in Kenyan universities
Sutter and Kihara (2019)	Determinants of successful implementation of digital literacy project in public primary schools in Baringo County, Kenya	The study indicates that school leadership, instructional strategies and having an elaborate ICT policy positively influenced the implementation of digital literacy	The study focused on the implementation of digital literacy in primary school while current research examined digital literacy in universities
Wanza and Oluoch (2019)	Determinants of implementation of the digital literacy	The study indicates that the level of operation, the experience of the	The does not examine how strategic plans influence the

	program in Makueni County, Kenya	personnel and connectivity enhanced implementation levels	implementation of a digital literacy program

2.5 Conceptual Framework

Kothari (2008) defines a conceptual framework as a guiding tool for researchers in their inquiry. The conceptual framework presented the depicted interaction between the research variables.

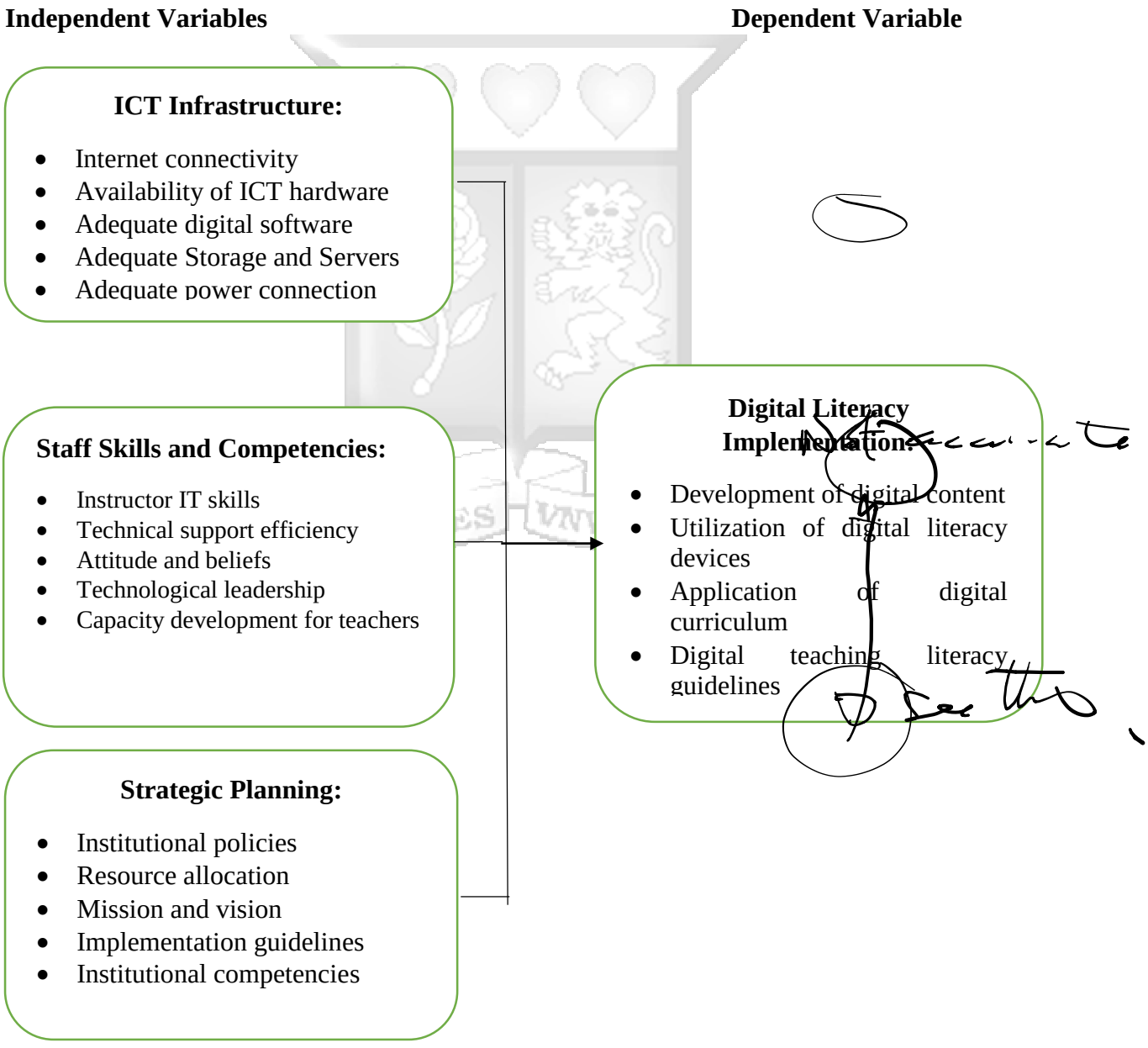

Figure 2.1 Conceptual Framework

The main objective of the study was to examine the key drivers for the implementation of digital literacy programs in Kenyan Universities. The above conceptual framework identifies the three key drivers: ICT infrastructure, the staff competencies, and skills as well as the strategic planning within the institutions. The dependent variable was the digital literacy implementation. The research variables are operationalized, as shown in Table 2.2 below:

Table 2.2 Operationalization of Research Variables

Variable	Constructs	Data Analysis	Supporting Literature
ICT Infrastructure	• Internet connectivity • Availability of ICT hardware • Adequate digital software • Adequate Storage and Servers • Adequate power connection	Descriptive analysis Inferential analysis	Budhedeo (2016); Osang, Ngole, and Tsuma (2013); Andema, Kendrick, and Norton (2013); Ephantus (2017)
Staff competencies and skills	• Instructor IT skills • Technical support efficiency • Attitude and beliefs • Technological leadership • Capacity development for teachers	Descriptive analysis Inferential analysis	Oyedokun, Oyewumi, Lawal, and Medinat (2018); Mingaine (2013); Wanza and Oluoch (2019); Chepkonga (2015)
Strategic plans	• Institutional policies • Resource allocation • Mission and vision • Implementation guidelines • Institutional competencies	Descriptive analysis Inferential analysis	Budu and Ackah (2016); Osman (2017); Mirkena (2018); Sutter and Kihara (2019)
Digital literacy implementation	• Development of digital content • Utilization of digital literacy devices	Descriptive analysis Inferential analysis	(Mahinda, 2019); (Tarus, Gichoya, & Muumbo, 2015); (Murgor, 2015).

- Application of digital curriculum
- Digital teaching literacy guidelines

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focussed on the various aspects of the research methodology that guided the study. The chapter presents the research design that was adopted in the study, the population of the research, the sampling design, and the data collection instruments. Further, the data collection procedures, the reliability tests, validity tests as well as the data analysis and presentation were detailed.

3.2 Research Design

A research design is the organization of settings for assembling and analysis of data in a manner that combines relevance to the purpose of research (Kombo & Tromp, 2006). It is a blueprint, plot, and an edifice of investigation used in obtaining answers to research questions (Kothari & Garg, 2014). This research adopted a descriptive research design. The design involves the collection of some standardized information in a structured format (Saunders, Lewis, & Thormhill, 2014). Therefore, a descriptive research design fitted well with this study that sought to examine the critical drivers for the implementation of digital literacy programs in Kenyan Universities.

3.3 Population and Sampling

3.3.1 Target Population

Sekaran and Bougie (2010) define a population as all the elements on which the inference can be made in research studies, Orodho (2003). The unit of observation was personnel working in the 40 public and private universities. The study was based in Nairobi City County, owing to the high presence of universities within the county. Furthermore, with the improved infrastructure network and high student numbers within the county, an examination of the implementation of the digital literacy within the county was key to making recommendations that can be replicated within other counties.

The study focussed on the main campus of the public (16) and private universities and institutions with interim authority (24) within Nairobi County. The study focussed on satellite campuses of public universities whose main campuses are not situated within the county. Three respondents within each university were sought (Registrar academics, Director of information communication and technology as well as the directors of open learning). The top officials are

being selected as the key staff in charge of effecting digital literacy programs; hence they are expected to have adequate information for solving the research problem.

Table 3.1 Target Population

Job Category	No of Universities	Population	Percentage
Director ICT	**40**	**40**	**25%**
Directors of Open Learning	**40**	**40**	**25%**
Lecturers (2) per university	**40**	**80**	**50%**
Total Population	**40**	**160**	**100%**

3.3.2 Sampling Design and Sample Size

Kothari and Garg (2014) define the sampling frame as the list which contains all the sampling units. The sampling frame for the study was the staff who was drawn from the 40 public and private universities in Nairobi City County. The sample of the research refers to a smaller group selected from the larger group, which is used to make an inference to the larger population (Fraenkel & Wallen, 2006). The sample size can also be defined as the number of items that can be nominated from a universe (Kothari, 2008), which should not be too large nor too small but rather a representation of the target population. The sample size for the study was calculated using the Yamane formula as shown below;

n =sample size,

N = population size

e =level of precision.

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

$$\frac{160}{1 + 160\ (0.05)^2} = 114$$

The sample respondents for the study were 114 respondents. The study utilized stratified sampling in selecting respondents from each category of the population. This ensured there was equal representation of the patricipants drawn from each job category within the universities (Kothari & Garg, 2014). To ensure equal representation, the study apportioned the respondents per each category, as shown below:

Table 3.2 Sample Respondents Apportionment

Participants Category	Percentage	Respondents
Director ICT	**25%**	**28**
Directors of Open Learning	**25%**	**28**
Lecturers (2) per university	**50%**	**58**
Total Population	**100%**	**114**

3.4 Data Collection Instruments

Data is made up of the various types of information that are collected for research or assessment (Fraenkel, Wallen, & Hyun, 2012). Accordingly, such data can either be written essays, responses to the researcher's questions, or written replies to a survey questionnaire or secondary data. The current study utilized both primary and secondary data. The research relied on a structured research questionnaire that contained close-ended questions making data collection and analysis easier using quantitative techniques. The research questionnaire adopted a 5-point Likert scale. The study relied on peer-reviewed journal and reports as the main source of secondary data in the review of previous empirical literature connected to the variables of the study.

3.5 Data Collection Procedures

According to Goddard and Melville (2006), the collection of data is a process of obtaining data for a given research study. Consequently, there are three main methods to obtain information concerning data for research (Fraenkel & Wallen, 2006). These methods include collection by the researchers themselves (with no or very little involvement from other people), direct collection from respondents of the study, and lastly, collection from others. The study relied on self-administered data collection procedures. This ensured that the researcher is available for any queries by the respondents and enhanced the upholding of confidentiality of the respondents. The study sought a letter of authorization from the NACOSTI and research approval from Strathmore University.

3.6 Research Quality

To enhance the quality of the research instrument and data being sought in this research, the study conducted a pretest. The study undertook a pre-test to support both reliability and validity tests. The study core tests were carried out among 10 percent of the sample respondents in Nairobi City County. They were not considered for the main research.

3.6.1 Reliability Tests of Research Instrument

A reliability test is used to measure a research instrument and figure out whether the instrument can be used as a measuring tool or not (Fraenkel & Wallen, 2006). It is the degree to which the research instrument measures can be free from random error and hence, giving out reliable results (Zikmund, Babin, Carr, & Griffin, 2013). The study adopted the Cronbach Alpha test to examine the internal consistency of the research constructs. The study adopted all constructs with an Alpha score of above 0.7. The results of the reliability analysis are shown in Table 3.3.

Table 3.3 Reliability Statistics

Variable	N	Cronbach's Alpha	N of Items
Digital literacy implementation	11	.781	5
ICT infrastructure	11	.715	5
Staff skills and competencies	11	.741	6
Strategic plans	11	.728	5

The results above indicate that the four variables of the study had Cronbach alpha scores that were above 0.7, which was the critical value for acceptance of the constructs in the main study. Hence, the study adopted the research instrument for the main data collection.

3.6.2 Validity Tests of Research Instrument

Validity can be defined as the extent to which the results obtained represent a phenomenon being studied (Kothari & Garg, 2014). The study ascertained the rationality of the research instrument by adopting content validity. This was applied with the assistance of the research supervisor in ascertaining the appropriateness and completeness of the research instrument in capturing all the study variables. The study further conducted face validity with the help of an expert in Digital Literacy Programs in Kenya to examine if the research instrument can be adequate in measuring the interaction between study variables.

3.7 Data Analysis and Presentation

The collected data was cleaned and edited for any errors before coding into SPSS 25 for subsequent analysis. The research utilized quantitative analysis through utilization of both descriptive and inferential analysis. The study adopted descriptive analysis in tabulating the responses obtained through use of frequencies, means and standard deviation. The study employed Spearman rank correlation to establish the correlation between the research variables. The research further employed multivariate regression in testing the significance and

the magnitude of influence of the independent variables on the dependent variable of the research. The study also ensured that diagnostics tests were applied before conducting inferential analysis. The analyzed research data was presented using figures and tables as deemed appropriate.

3.7.1 Diagnostic Tests

The adoption of the linear regression technique comes with key assumptions that should be examined to ensure there is no violation in the regression model. The study adopted both normality tests and collinearity tests (Fraenkel, Wallen, & Hyun, 2012).

3.7.1.1 Normality Tests

Tests for normality of any research data are essential in determining whether or not the data obtained was modeled properly by a normal distribution. The most common numerical tests for normality are the Kolmogorov-Smirnov test and the Shapiro-Wilk test. The most appropriate test is the latter for relatively large sample sizes that range between 50-2000 items.. The study tested for normality assumption using the Shapiro-Wilk Test.

3.7.1.2 Collinearity Tests

Multicollinearity is the occurrence of the predictor variables being strongly correlated, such that it makes it difficult for one to determine the actual contribution of the respective predictor variables to the variance in the dependent variable (Zikmund, Babin, Carr, & Griffin, 2013). The confirmatory tests for multicollinearity were conducted using the Variance Inflation Factor (VIF) and its reciprocal tolerance values.

3.7.2 Data Analysis

The study relied on quantitative research data that was collected using a quantitative research instrument. The collected quantitative data was sorted and edited before coding into SPSS 24 for subsequent analysis. The study employed a quantitative approach in the data analysis using both descriptive and inferential analysis. The descriptive analysis of the research was conducted using frequencies, means, standard deviations, and sums. The inferential analysis of the study adopted Spearman rank correlation analysis, linear regression, ANOVA analysis, and regression coefficients in interpreting research findings. The results of the research were presented graphically using charts, bar graphs, and tables. The below regression model was utilized in analyzing the magnitude of the relationship between the key drivers and the digital literacy implementation within universities.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where;

Y = Dependent variable (digital literacy implementation)

α = the model intercept

β_{1-3}= Coefficient of independent variables

$\mathbf{X_1}$ – ICT infrastructure

$\mathbf{X_2}$ – staff competencies and skills

$\mathbf{X_3}$ – Strategic plans

$\boldsymbol{\varepsilon}$ - error Term

3.8 Ethical Considerations

The study ensured that ethical research guidelines were adhered to within the research process. The study ensured that the respondents of the research are not coerced to partake in the research process. Further, the study ascertained that the confidentiality of the research respondents is maintained within the study. Ethical clearance was sought from the Ethical Review Committee of Strathmore University before undertaking the research. The study also applied for a research license from NACOSTI and the respective universities before collecting the research data. The study also ensured that the research adheres to all the research guidelines as advanced by Strathmore University.

CHAPTER FOUR

PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter presented the findings of the research. The chapter had the following main sections; background information, the descriptive results, the tests for linear regression assumptions, and the inferential analysis between the independent and dependent variables.

4.2 Background Information

The background section was concerned with the presentation of the response rate as well as the demographic profile of the study respondents.

4.2.1 Response Rate

According to Kothari and Gang (2014), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good, and a response rate of 70% and over is excellent. The study was able to obtain a response rate of 60% (N=68), which was deemed good for statistical analysis. Only 40% (N=46) of the scripts were not returned. This was largely attributed to education institutions being shut down and lack of personal contact information to follow up with respondents.

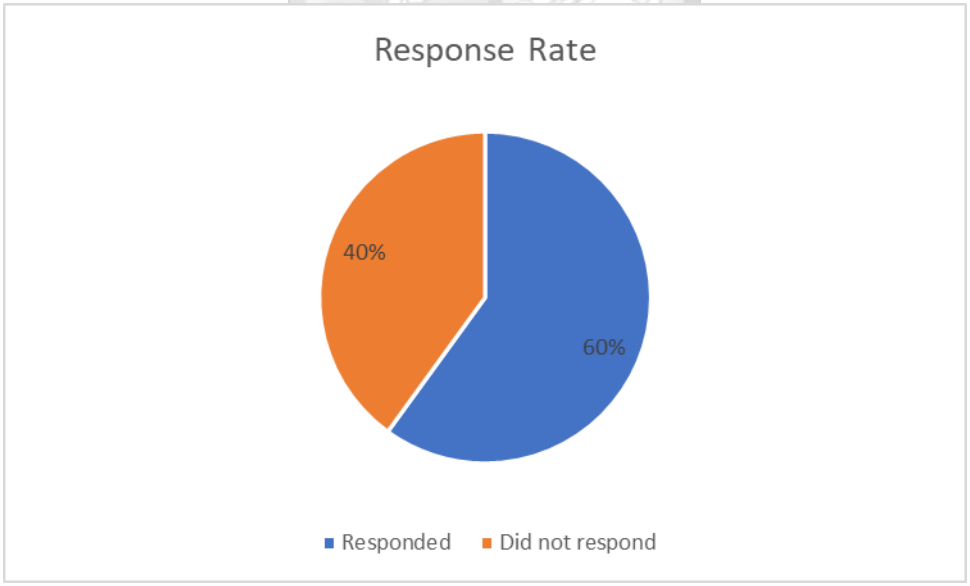

Figure 4.1 Response Rate

4.2.2 Gender of Respondents

The table below presents the results of the gender distribution of the respondents who took part in this study.

Table 4.1 Gender of Respondents

	Frequency	Percent
Male	46	67.6
Female	22	32.4
Total	68	100.0

The results above show that the majority of the study respondents that 68% were male staff members within universities. In comparison, 32% of the respondents were female participants.

4.2.3 Age of the Respondents

The table below presents the results of the age distribution of the respondents who took part in this study.

Table 4.2 Respondents Age

	Frequency	Percent
30-40 years	19	27.9
41-50 years	41	60.3
51-60 years	8	11.8
Total	68	100.0

Findings above show that majority of the participants of the study 60% (N=41) were between the age 41-50 years, 28% (N=19) of the participants were between 30-40 years while only 12% (N=8) of the respondents were between 51-60 years.

4.2.4 Type of Institution

The results of the research show that 60% of the respondents were drawn from public universities. In comparison, only 40% of the participants were drawn from private universities within Nairobi County, as shown in the figure below.

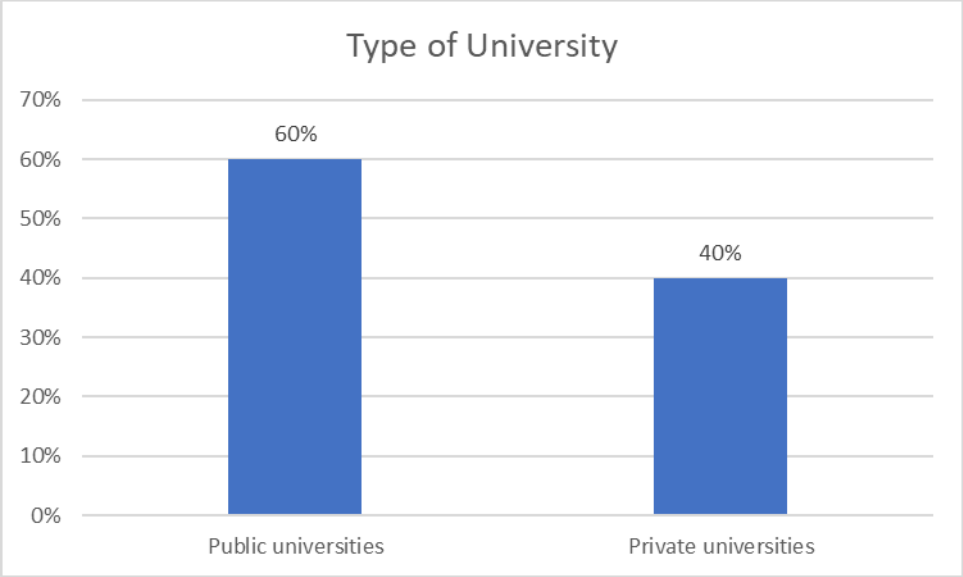

Figure 4.2 Type of University

4.2.5 Years of Service in the University

The research further examined the length of service within the university among the study respondents, and the findings are shown below.

Table 4.3 Length of Service in University

	Frequency	Percent
0-2 years	7	10.3
3-6 years	16	23.5
7-9 years	32	47.1
Over ten years	13	19.1
Total	68	100.0

The results show that most of the respondents 47% had served within the universities for between 7-9 years, 24% had served for between 3-6 years. In contrast, only 19% of the participants had served within the university had served for more than ten years.

4.2.6 Respondents Position at Workplace

The study reviewed the respondent's job position within the universities. The results show that the majority of the participants, 53% were lecturers, 41% were the heads of open-learning departments. In comparison, only 6% of the respondents were the Director of ICT in the universities, as shown below.

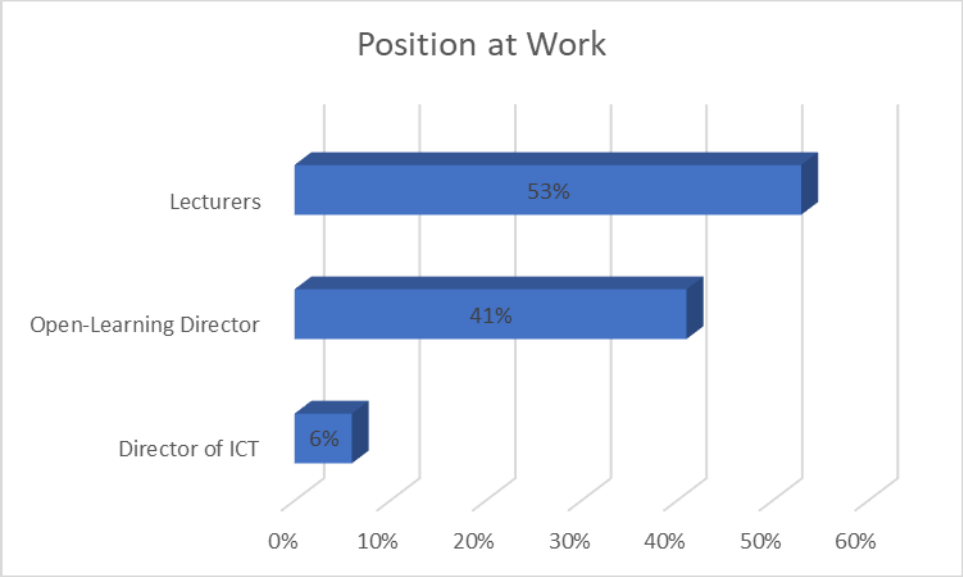

Figure 4.3 Position in the Institution

4.3 Descriptive Analysis

The study relied on descriptive statistics in the presentation of the summary of the responses obtained from the research. The mean and standard deviation results were used to describe the data based on the responses that were received for each variable. The mean described the average response for the variable based on the Likert scale value. The standard deviation described the variances between the responses that were received.

4.3.1 Digital Literacy Implementation

The study's dependent variable was the digital literacy implementation in the universities, and the results are shown in the table. The key for interpretation is as follows; NDA- neither agree nor disagree, SDA- strongly disagree, DA- disagree, A- agree, SA- strongly agree.

Table 4.4 Descriptive Statistics for Digital Literacy Implementation

Statement	NAD	SDA	DA	A	SA
The university support staffs in the development of digital content to be integrated into the curriculum	10.3%	4.4%	29.4%	44.1%	11.8%
The university has put adequate measures in place to facilitate utilization of digital literacy	0%	8.8%	11.8%	52.9%	26.5%

The university has invested heavily in digital literacy devices for utilization by faculty and students	4.4%	8.8%	17.6%	44.1%	25%
The university has formulated guidelines for digital literacy teaching within the institution	0%	8.8%	19.1%	48.5%	23.5%
The university has allocated adequate finances for the execution of digital literacy	2.9%	0%	27.9%	39.7%	29.4%

The responses indicate that 44.4% of the respondents agreed that university support staff in the development of digital content be integrated into the curriculum, while only 4.4% strongly disagreed. The study shows that 52.9% of the respondents were in agreement that the university has put adequate measures in place to facilitate the utilization of digital literacy. In contrast, 11.8% disagreed. The findings indicate agreement among 44.1% of the respondents that the university has invested heavily in digital literacy devices for utilization by faculty and students. Concerning the university has allocated adequate finances for the execution of digital literacy, 39.7% of the respondents agreed, while 27.9% disagreed.

4.3.2 ICT Infrastructure

The first variable of the study examined the capacity of the university in terms of the information communication and technology infrastructure in place. The results are presented.

Table 4.5 Descriptive Statistics for ICT Infrastructure

Statement	NAD	SDA	DA	A	SA
The university has invested heavily in internet connectivity to support digital learning	7.4%	7.4%	13.2%	39.7%	32.4%
The university has acquired all the necessary ICT hardware to support digital learning	4.4%	19.1%	16.2%	38.2%	22.1%
The university has developed and acquired adequate software for utilization in digital learning	5.9%	1.5%	14.7%	55.9%	22%

The university has put in place data handling infrastructure to support storage of digital content	0%	1.5%	23.5%	51.5%	23.5%
There is adequate power connection within the institution to ensure smooth digital learning	1.5%	2.9%	14.7%	57.4%	23.5%

Regarding the university has invested heavily in internet connectivity to support digital learning, there was agreement among 39.7% and strong agreement among 32.4% of the respondents. The results also show that 55.9% of the respondents were in agreement that the university has developed and acquired adequate software for utilization in digital learning. The findings indicate that 51.5% of the respondents agreed that the university has put in place data handling infrastructure to support the storage of digital content, with 23.5% of the respondents disagreeing. The results show that 57.4% of the respondents agreed that there is adequate power connection within the institution to ensure smooth digital learning. In contrast, 14.7% of the respondents disagreed.

4.3.3 Staff Competencies and Skills

The second variable of the research examined the staff competencies and skills among the university staff, and the findings are presented below. The respondents were presented with six statements, and the results are shown below.

Table 4.6 Descriptive Statistics for Staff Competencies and Skills

Statement	NAD	SDA	DA	A	SA
The university has recruited staff with adequate IT skills to manage the rollout of digital literacy programs	7.4%	0%	17.6%	58.8%	16.2%
The university has a standby technical support unit to ensure smooth utilization of digital learning	11.8%	8.8%	14.7%	45.6%	19.1%
The staff within the university have a positive attitude towards the integration of digital learning	14.7	0%	11.8%	66.2%	7.4%
The staff within the university have belief in the benefits of a digital literacy program	16.2%	7.4%	7.4%	32.4%	36.8%

The management of the institution has exhibited technology leadership in the rollout of digital literacy programs	10.3%	7.4%	16.2%	51.5%	14.7%
The university regularly arranges capacity building retreats for instructors on the emerging digital learning practices	8.8%	0%	16.2%	63.2%	11.8%

Concerning the staff within the university have a positive attitude towards the integration of digital learning, there was agreement among 66.2% of the respondents and disagreement among 11.8% of respondents. The result shows that 51.5% of the respondents agreed that the management of the institution has exhibited technology leadership in the rollout of digital literacy programs. In contrast, 14.7% of the respondents strongly agreed. The findings indicate that 63.2% of the respondents were in agreement that the university regularly arranges capacity building retreats for instructors on the emerging digital learning practices while only 16.2% of the respondents disagreed with the statement.

4.3.4 Strategic Planning

The third variable of the research examined the strategic planning within the university, and the findings are presented below.

Table 4.7 Descriptive Statistics for Strategic Planning

Statement	NAD	SDA	DA	A	SA
The university has a clear mission on the need for integration of digital literacy programs	16.2%	1.5%	23.5%	51.5%	7.4%
The university vision clearly outlines the goals and objectives of adopting digital literacy programs	5.9%	7.4%	22.1%	47.1%	17.6%
The university has designed elaborate guidelines to oversee implementation of digital literacy	10.3%	2.9%	32.4%	41.2%	13.2%
The institution has adequate competencies to sustain a digital learning environment	11.8%	7.4%	16.2%	51.5%	13.2%

The university has mobilized for the necessary resources to sustain the digital learning environment	14.7%	0%	10.3%	60.3%	14.7%

The findings indicate agreement among 47.1% of the respondents that the university vision clearly outlines the goals and objectives of adopting digital literacy programs with 22.1% indicating disagreement. The result show agreement among 41.2% of the respondents that the university has designed elaborate guidelines to oversee the implementation of digital literacy. In contrast, 32.4% and 10.3% of the respondents disagreed and neither agreed/disagreed respectively. The findings show that 60.3% of the respondents agreed that the university has mobilized for the necessary resources to sustain the digital learning environment. The findings also indicate that 14.7% of the respondents neither agreed nor disagreed with the statement.

4.4 Diagnostic Tests

The research utilized collinearity and normality tests as the main diagnostic tests adopted in this study.

4.4.1 Collinearity Tests

Multicollinearity is a statistical phenomenon in which two or more predictor variables in a multiple regression model are highly correlated (Goddard & Melville, 2006). The study adopted the Variance Inflation Factor (VIF) to test the collinearity between the predictor variables in the study.

Table 4.8 Collinearity Statistics

Model		Sig.	Collinearity Statistics	
			Tolerance	VIF
1	(Constant)	.002		
	ICT Infrastructure	.001	.608	1.645
	Staff Skills Competencies	.000	.367	2.726
	Strategic Plans	.000	.400	2.499

a. Dependent Variable: Digital Literacy Implementation

Zikmund, Babin, Carr, and Griffin (2013) indicated that a tolerance value of less than 0.20 and a VIF of 5 or 10 and above indicates a multicollinearity problem. The findings of the study

indicate that the three independent variables had a tolerance value above 0.20 and VIF values less than five, thus indicating there were no collinearity problems within the research.

4.4.2 Normality Tests

The study tested for normality assumption using the Shapiro-Wilk Test.

Table 4.9 Normality Statistics

	Statistic	df	Sig.
Digital literacy implementation	.818	67	.806
ICT infrastructure	.789	67	.770
Staff competencies and skills	.799	67	.775
Strategic planning	.706	67	.729

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The normality test was tested using the Shapiro-Wilk Test ($p>0.05$ for all variables). This was considered since the sample population was less than 2000 subjects. Shapiro-Wilk Test test is used to detect all departures from normality. The data is considered to come from a normal distribution if the significance value is greater than 0.05. The results of the normality test showed that the variables of the study had significance values of above .05, which shows the data was normally distributed; digital literacy implementation (Sig = .806>.05), ICT infrastructure (Sig = .770>.05), staff competencies and skills (Sig = .775>.05) and strategic planning (Sig = .729>.05).

4.5 Correlation Analysis

Correlation between variables is a measure of how the variables are related. The study adopted a Spearman rank correlation to determine the relationship between the independent variables and the dependent variable.

Table 4.10 Correlation Statistics

			Digital Literacy Implementation	ICT Infrastructure	Staff Skills and Competencies	Strategic Plans
Spearman's rho	Digital Literacy Implementation	Correlation Coefficient	1.000			
		Sig. (1-tailed)	.			
		N	68			
	ICT Infrastructure	Correlation Coefficient	.395**	1.000		
		Sig. (1-tailed)	.000	.		
		N	68	68		
	Staff Skills and Competencies	Correlation Coefficient	.456**	.497**	1.000	
		Sig. (1-tailed)	.000	.000	.	
		N	68	68	68	
	Strategic Plans	Correlation Coefficient	.601**	.458**	.470**	1.000
		Sig. (1-tailed)	.000	.000	.000	.
		N	68	68	68	68

**. Correlation is significant at the 0.01 level (1-tailed).

The study results show that there is a positive and significant association between ICT infrastructure and digital literacy implementation (Rho = .395, Sig= .000<.05). The findings of the study further indicated there is a positive and significant association between staff skills and competencies and the digital literacy implementation within universities (Rho = .456, Sig= .000<.05). The study results showed a positive association between strategic plans and the digital literacy implementation in universities (Rho = .601, Sig= .000<.05).

4.6 Regression Summary

The main objective of the study was to determine the critical drivers of digital literacy implementation in universities. The findings are shown below. The regression analysis was conducted to establish the significance and strength of the influence of the strategic plans, ICT infrastructure, staff skills competencies on the digital literacy implementation within universities in Kenya.

Table 4.11 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.678[a]	.459	.434	2.64281	2.192

a. Predictors: (Constant), Strategic Plans, ICT Infrastructure, Staff Skills Competencies

b. Dependent Variable: Digital Literacy Implementation

The study sought to determine the strength of the relationship between critical drivers and digital literacy implementation. The results indicate that 45.9% (R^2=*.459*) of the variations in the digital literacy implementation are determined by the strategic plans, ICT infrastructure, staff skills competencies within the universities. Ephantus (2017) notes that the availability of ICT infrastructure is key to e-learning implementation within universities. Chepkonga (2015) indicates that improving ICT training of staff was essential for the integration of digital learning. Sutter and Kihara (2019) note that instructional strategies are critical to the execution of digital literacy programs.

Table 4.12 ANOVA Summary

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	379.865	3	126.622	18.129	.000[b]
	Residual	447.003	64	6.984		
	Total	826.868	67			

a. Dependent Variable: Digital Literacy Implementation

b. Predictors: (Constant), Strategic Plans, ICT Infrastructure, Staff Skills Competencies

The study sought to determine the statistical significance of the regression model utilized in the research. The ANOVA test was done at a 95% level of significance (α=0.05), critical value f=1.96. The results above show that strategic plans, ICT infrastructure, staff skills, and competencies had a positive and significant relationship with the level of digital literacy implementation in universities (F-value = 18.129, Sig = .000<.05).

Table 4.13 Regression Coefficients Summary

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	7.231	2.227		3.246	.002

	ICT Infrastructure	.093	.147	.075	2.634	.001
	Staff Skills Competencies	.069	.106	.099	2.650	.000
	Strategic Plans	.483	.127	.553	3.804	.000

a. Dependent Variable: Digital Literacy Implementation

The resulting regression equation was;

$$\mathbf{Y = 7.231 + .093X_1 + .069X_2 + .483X_3 + 2.227}$$

The constant (7.231) was statistically significant (Sig=.002<.05). The results show that ICT infrastructure **(β_1= .093)** is statistically significant (Sig=.001<.05). This indicates that a change in the level of ICT infrastructure by one unit will result in a .093 change in the digital literacy implementation in universities. The findings indicate that staff skills and competencies **(β_2= .069)** is statistically significant (Sig=.000<.05). This indicates that a change in the level of staff skills and competencies by one unit will result in a .069 change in the digital literacy implementation in universities. The results show that strategic plans **(β_1= .483)** are statistically significant (Sig=.000<.05). This indicates that a change in the level of strategic plans by one unit will result in a .483 change in the digital literacy implementation in universities.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This chapter presented the summary and discussion of the study and the results of the research, respectively. The chapter further presents the conclusions, recommendations drawn, and the suggestions for further research based on the findings of the study.

5.2 Summary

The education sector in Kenya has witnessed several changes that have ultimately led to increased intake within the institutions of higher learning (universities). The increase in the number of students seeking university education contributed to increased pressure on the available capacity of the universities. To supplement the excess intake levels, universities have been rolling out digital literacy programs to enhance the access and quality of university education. However, the implementation of digital literacy programs has not been seamless; hence, this study sought to determine the critical drivers to the implementation of digital literacy programs. The study examined the effect of ICT infrastructure, staff skills, and competencies, and strategic plans.

The study was guided by the technological diffusion theory and the resource-based view theory. The technological diffusion theory was fundamental in the study in the evaluation of the various digital learning space and capacity within the university. The resource-based view contributed to the study in the identification of the unique capabilities and resources of the universities that can foster their implementation of digital literacy. The systematic review of empirical literature helped the study in identifying the gaps that informed the need for this research.

The study adopted a survey research design with the unit of analysis being the 40 public and private universities in Nairobi City County. The study targeted the heads of ICT, open learning, and lecturers within the universities. The study adopted a structured questionnaire in the data collection and relied on a mix of quantitative analysis techniques. The study was able to obtain a response rate of 60%, which was deemed sufficient for statistical analysis. The correlation test indicated there is a significant and positive association between ICT infrastructure, staff skills, and competencies, strategic plans, and digital literacy implementation. The regression results show that the three independent variables determine 45.9% of variations in digital literacy implementation. The regression coefficients indicated that the most significant driver for digital literacy implementation was the strategic plans with a coefficient (.483), followed

by ICT infrastructure with a coefficient (.093) and the least significant predictor of digital literacy implementation was staff skills and competencies with a coefficient of (.069).

5.3 Discussion of Results

5.3.1 Information Communication Technology Infrastructure

The first study variable sought to examine the level of ICT infrastructure within the universities. The findings of the study showed agreement among respondents that the universities have made significant investments in internet connectivity to support digital learning. Budhedeo (2016) revealed that enhancing internet connectivity and investment in ICT applications was essential for the utilization of ICT in schools. Similarly, Raihan and Shamim (2013) found out that having adequate ICT infrastructure was key to the utilization of digital learning in South Korea institutions. The above findings resonate with this study observation, which indicated that universities have acquired necessary ICT hardware as well as developing the required software for utilization in digital learning. Ephantus (2017) made a similar observations that improving investment towards ICT infrastructure and facilitating better internet connectivity within Kenya universities is critical to the implementation of e-learning.

The participants also showed agreement that the universities have put in place data handling infrastructure and have access to power connection for seamless digital learning. The study is supported in the literature by Osang, Ngole, and Tsuma (2013), who posited that improved technological infrastructure availability was critical to mobile learning in Universities. Andema, Kendrick, and Norton (2013) further revealed that ICT infrastructure was one of the key determinants of digital literacy execution in Uganda. Nchunge, Sakwa, and Mwangi (2013) found out that ICT infrastructure was the major impediment to the implementation of digital learning within Kenyan schools. The study results show that ICT infrastructure **(β_1= .093)** has a statistically positive and significant (Sig=.001<.05) effect on digital literacy implementation in universities. The results showed that there is a positive and signficant magnitude of effect of ICT infrastructure on digital literacy implementation.

5.3.2 Staff Skills and Competencies

The study's second variable examined the level of staff skills and competencies in the universities. The results show congruence among respondents that the university has ensured there is the recruitment of staff with the necessary IT skills to foster digital learning. Ozdamar-Keskin, Ozata, Banar, and Royle (2015), in a study in Turkey, also found out that having the

basic competencies and IT skills among faculty members was instrumental to digital literacy utilization. The participants agreed that the university has a standby technical support department and has fostered the staff attitude towards digital learning integration. Oyedokun, Oyewumi, Lawal, and Medinat (2018), in their research, revealed that a high level of ICT competencies, professional skills, and technical capabilities was key to maintaining and utilizing ICT within universities.

Findings showed agreement among respondents that the university staff has a belief in the benefits of digital literacy programs. These results are not in line with Mingaine (2013), who noted that most of the staff members in Kenyan schools were not aware of the ICT tools in place and had trust issues with the adoption of ICT. The results indicated that the management of the university has exhibited technological leadership and conduct regular capacity building to foster staff instructor's capacity. The above results are supported by Chepkonga (2015), who suggested that improving the school heads ICT training was key to the integration of ICT within schools in Kenya. Wanza and Oluoch (2019) also revealed that staff experience, enhancing employee training, and competencies were critical to the implementation of digital literacy in Kenya. The findings indicate that staff skills and competencies (**β_2= .069)** have a statistically positive and significant (Sig=.000<.05) effect on digital literacy implementation in universities. The results implied that staff skills and competencies have a significant magnitude of influence on the level of digital literacy implementation within universities in Kenya.

5.3.3 Strategic Plans

The study further analyzed the strategic planning within the university. The study results indicate that the university has developed goals and objectives for the effective implementation of ICT. The findings indicated agreement among participants that the institutions have mobilized adequate resources to support digital literacy implementation. The research shows that respondents disagreed with the level of guidelines drawn for overseeing the implementation of digital literacy within the universities. Osman (2017) also notes that poor learning and implementation guidelines limited the implementation of ICT programs in Universities. Mirkena (2018) also posited that a lack of supportive attitude among staff, inadequate resource capacity, and policies affected ICT integration in universities. Chepkonga (2015) further suggested that reviewing the ICT policies in place and integrating ICT in the management of schools can be essential to the adoption of digital literacy.

The findings show that participants disagreed that the universities have put in place a clear mission for digital literacy implementation. This is in line with Budu and Ackah (2016). They found that the significant challenge to the adoption of ICT learning was lack of execution strategies, inadequate institutional capacity, and lack of clear guidelines and staff skills in universities. The study indicated disagreement among participants that the university has the adequate competencies needed to sustain a digital learning environment. Sutter and Kihara (2019) found that institutions must have the requisite infrastructure, effective leadership, and strategic capacity to achieve successful digital literacy implementation. Zahari, Mustapa, Nasser, Dahlan, and Ibrahim (2018), in their study, also found out that having adequate plans for implementation are critical to the realization of the digital goals of universities. The results show that strategic plans **(β_1= .483)** have a statistically positive and significant (Sig=.000<.05) effect on digital literacy implementation in universities. The above suggested that strategic plans have the most significant influence on digital literacy implementation within public universities in Kenya.

5.4 Conclusions

The study sought to determine the critical drivers for digital literacy implementation in Universities. The research concludes that ICT infrastructure, staff skills and competencies, and strategic plans have a positive and significant effect on digital literacy implementation. The study concluded that 45.9% of changes in digital literacy implementation could be attributed to ICT infrastructure, staff skills, and competencies, and strategic plans. Regarding the ICT infrastructure, the study concludes that adequate internet connectivity, power connection, digital infrastructure, and adequate ICT hardware positively improve digital literacy implementation. The study concludes that having skilled staff members, enhancing staff recruitment, staff attitude, and training of staff within the universities have supported digital literacy implementation positively. The research further concludes that having a clear vision, setting goals and objectives is key to fostering digital literacy implementation.

5.5 Recommendations

5.5.1 Policy Recommendations

The findings of the study have shown that digital literacy implementation has been achieved within universities at varying levels. The study recommends that the education sector policymakers can leverage on the findings of the study to improve the level of implementation through better infrastructural layout and resource allocation to universities to ensure that implementation is not only achieved within urban locations. The study further recommends

that the Ministry of Education officials should conduct regular workshops to train universities on the critical processes required to achieve a better digital learning environment in Kenya.

5.5.2 Managerial Recommendations

Concerning the ICT infrastructure within universities in Kenya, the research recommends that the management should foster their technological capacity through investment in emerging digital technologies. The study further recommends that universities should enhance their investment in cloud computing as this will foster the availability of digital learning remotely in a secure environment as well as ensure seamless connectivity.

Concerning the staff skills and competencies, the study recommends that universities should support the professional development of their faculty members to ensure they are cognizant of the various digital technologies used in digital learning. The management of universities should instill belief among staff members on the benefits of the digital literacy programs as this will ensure there is seamless implementation. The study further recommends that universities should strive to recruit staff with necessary IT skills who can help in building technological capacity among other members of staff as well as support maintenance of the digital literacy programs.

Regarding strategic planning, the research recommends that universities should form collaborations with leading telecommunication firms and web solution firms to develop relevant systems to support the digital learning capacity of the institutions. The study further recommends that management teams within the institutions should seek the expert services of leading digital learning service providers in formulating strategic plans for the implementation of digital literacy programs. This will help in identifying the objectives and benchmarks for the effective execution of digital literacy within universities.

5.6 Suggestions for Further Research

The study showed that strategic planning within the institution had a high effect on digital literacy implementation despite the institution facing planning challenges. Thus, the researchers suggest that further studies should be conducted to examine the effect of strategy implementation drivers on digital learning adoption in Universities in Kenya. This will be integral, especially with the evident challenges universities have faced during the COVID-19 pandemic, which has disrupted education in the country.

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APPENDICES

Appendix I: Introduction Letter

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Strathmore UNIVERSITY BUSINESS SCHOOL

5th March 2020

RE: FACILITATION OF RESEARCH – EVERLINE WANGU KAMAU

This is to introduce Everline Wangu Kamau who is a Master of Business Administration (MBA) Student at Strathmore University Business School, admission number MBA 73180/18. As part of our MBA Program, Everline is expected to do applied research and undertake a project. This is in partial fulfilment of the requirements of the MBA course. To this effect, she would like to request for appropriate data from your organization.

Everline is undertaking a research paper on **"Key Drivers for the Implementation of Digital Literacy Programs in Kenyan Universities."** The information obtained from your organization shall be treated confidentially and shall be used for academic purposes only.

Our MBA seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct use to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest and of practical value to your organization.

We appreciate your support and shall be willing to provide any further information if required.

Yours sincerely,

Caroline Tiara.
Manager – Graduate Programs

Appendix II: Questionnaire

This questionnaire is an attempt to assess the ***"the critical drivers for the implementation of digital literacy programs in Kenyan Universities in Nairobi City County".*** Please respond by ticking (√) in the appropriate box in the blank spaces provided that closely matches your view or write your answers in the space provided. Please answer the questions honestly and diligently following the instructions given. The answers you give was used for the research purpose only and your identity was treated with uttermost confidentially.

Section A: Bio-data

1. **Gender**

   Male [ ]

   Female [ ]

2. **Age of Respondents**

   30-40 [ ]

   41-50 [ ]

   51-60 [ ]

   61 years and above [ ]

3. **What type of institution do you work within?**

   Public Universities [ ]

   Private Universities [ ]

   Other Specify …….

4. **Years of service**

   0-2 Years [ ]

   3-6 Years [ ]

   7-9 Years [ ]

   Over 10 Years [ ]

5. **Which level of management do you operate in?**

   Director of ICT [ ]

   Directors of Open Learning [ ]

Lecturers [ ]

PART B: the critical drivers for the implementation of digital literacy programs in Kenyan Universities in Nairobi City County

Please tick the level of agreement of the following statements

1= neither agree nor disagree, 2= Strongly diasagree, 3= Disagree, 4= Agree, 5=Strongly agree

No	Digital Literacy Implementation	1	2	3	4	5
6.	The university support staffs in the development of digital content to be integrated in the curriculum					
7.	The university has put adequate measures in place to facilitate utilization of digital literacy					
8.	The university has invested heavily in digital literacy devices for utilization by faculty and students					
9.	The university has formulated guidelines for digital literacy teaching within the institution					
10.	The university has put in allocated adequate finances for execution of digital literacy					

Please tick the level of agreement of the following statements

1= neither agree nor disagree, 2= Strongly diasagree, 3= Disagree, 4= Agree, 5=Strongly agree

No	ICT infrastructure	1	2	3	4	5
11.	The university has invested heavily in internet connectivity to support digital learning					

12.	The university has acquired all the necessary ICT hardware to support digital learning					
13.	The university has developed and acquired adequate software for utilization in digital learning					
14.	The university has put in place data handling infrastructure to support storage of digital content					
15.	There is adequate power connection within the institution to ensure smooth digital learning					

Please tick the level of agreement of the following statements

1= neither agree nor disagree, 2= Strongly diasagree, 3= Disagree, 4= Agree, 5=Strongly agree

No	**Staff Skills and Competencies**	**1**	**2**	**3**	**4**	**5**
16.	The university has recruited staff with adequate IT skills to manage rollout of digital literacy programs					
17.	The university has a standby technical support unit to ensure smooth utilization of digital learning					
18.	The staff within the university have positive attitude towards integration of digital learning					
19.	The staff within the university have belief in the benefits of digital literacy program					
20.	The management of the institution has exhibited technology leadership in rollout of digital literacy programs					

21.	The university regularly arranges capacity building retreats for instructors on the emerging digital learning practices					

Please tick the level of agreement of the following statements

1= neither agree nor disagree, 2= Strongly diasagree, 3= Disagree, 4= Agree, 5=Strongly agree

No	**Strategic plans**	**1**	**2**	**3**	**4**	**5**
22.	The university has a clear mission on the need for integration of digital literacy programs					
23.	The university vision clearly outlines the goals and objectives of adopting digital literacy programs					
24.	The university has designed elaborate guidelines to oversee implementation of digital literacy					
25.	The institution has the adequate competencies to sustain a digital learning environment					
26.	The organization has mobilized for the necessary resources to sustain digital learning environment					

Thank you for your Time

Appendix III: NACOSTI Research Licence

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **616315**

Date of Issue: **23/March/2020**

RESEARCH LICENSE

This is to Certify that Miss.. everline wangu Kamau of Strathmore University, has been licensed to conduct research in Nairobi on the topic: KEY DRIVERS FOR THE IMPLEMENTATION OF DIGITAL LITERACY PROGRAMS IN KENYAN UNIVERSITIES for the period ending : 23/March/2021.

License No: **NACOSTI/P/20/4401**

616315

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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Appendix IV: Ethical Review Committee Authorization

Appendix V: List of Universities

1. Africa International University
2. Africa Nazarene University
3. Cooperative University College of Kenya
4. Daystar University
5. Dedan Kimathi University of Technology
6. East Africa School of Theology
7. Egerton University
8. Genco University
9. Great Lakes University of Kisumu
10. International Leadership University
11. International University of Professional Studies
12. Jomo Kenyatta University of Agriculture and Technology
13. Kabarak University
14. KAG East University
15. KCA University
16. Kenya Methodist University
17. Kenyatta University
18. Kiriri Women's University of Science And Technology
19. Kisii University
20. Laikipia University
21. Maasai Mara University
22. Masinde Muliro University of Science and Technology
23. Moi University
24. Mount Kenya University
25. Multimedia University of Kenya
26. Pan Africa Christian (PAC) University
27. Pioneer International University
28. Riara University
29. South Eastern Kenya University
30. St. Paul's University
31. Strathmore University
32. Technical University of Kenya
33. The Catholic University of Eastern Africa
34. The East African University

35. The Management University of Africa
36. The Presbyterian University of East Africa
37. The University of Nairobi
38. United States International University
39. University of Eastern Africa Baraton
40. Zetech University