

**DIGITAL TRANSFORMATION OCCASIONED BY COVID 19 AND  
SERVICE DELIVERY AMONG PUBLIC UNIVERSITIES IN  
NAIROBI COUNTY**

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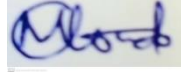
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## DECLARATION

This research project is my original work and it has not been presented and submitted to any university or college for examination.

Signed



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## **DEDICATION**

This research project is dedicated to the following who supported me in the various stages of the research work. Special thanks go to my husband Wycliffe Anguche, my son Basil Ommia Lessan and my daughter Ella Elodie Mmbone for constantly being present and supportive during the entire period of my studies. My mother Gladys Chondo for the prayers and well wishes that she always extended my way.

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## **ABBREVIATIONS AND ACRONYMS**

**RBV** Resource based view

**LMS** Learning Management System

**SPSS** Statistical Package for Social Sciences

**SERVQUAL** Service Quality

## **ABSTRACT**

Digital revolution has infiltrated public institutions, putting the emphasis of research, education, training and academia on information workers. In ensuring responsive service delivery in public universities, digital transformation and internet resources need information professionals to create compliant systems that provide students excellent services. The specific objectives of the study were to establish the extent to which digital transformation has been adopted by Public Universities in Nairobi County during Covid 19 and to establish how digital transformation has impacted on service delivery in Nairobi County during Covid 19. A descriptive cross-sectional design was employed for the study. The population for the study was confined to students in all main campuses in the public universities within Nairobi County. There are 900,046 undergraduate and post graduate students in the main campuses in the public universities in Nairobi County. The research used a stratified sampling to get the appropriate sample size. The sample size for the study was 399 respondents. It was found out that virtual classroom and learning management influence digital transformation to a moderate extent while digital library, education websites and virtual meeting platforms influence digital transformation to a great extent. The study established a positive relationship between service delivery in education and digital transformation. It was concluded that there is significant relationship between digital transformation and service delivery in education. The study recommends that the institution should continuously improve its learning management systems and keep abreast with global technology trends in order to ensure that they offer their students quality education and an impeccable learning experience.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

In all industries, digital technologies are fundamentally transforming companies. In order to take advantage of these digital advancements, businesses are adapting to harness the advantages of new technology (Mansfield, 2008). Organizations need to update current services and business processes quickly to maintain their competitiveness in the digital era (Uskenbayeva, Kalpeyeva, Satybaldiyeva, Moldagulova, & Kassymova, 2019). Organizations are motivated by the need to respond to consumer demands, remain competitive and generate value and productivity via the provision of better operations. Among these digital trends is Robotic Process Automation which enables a system to function without direct human interaction (Groover, 2014). The key drivers of transformation by organizations are productivity enhancement and continuous process improvement (Lakshmi, Vijayakumar, & Sricharan, 2019).

Organizations are undergoing dramatic change because of the maturity of digital technologies and their ubiquitous spread across all marketplaces. In addition to the increased attention from consumers, businesses are confronting ever harder difficulty owing to globalization and applying pressure to change digitally ahead of others, aiming to survive and achieve competitive leads. Organizations that effectively oversee digital innovations can hope to acquire at least one of three capacities: better customer understanding, streamlined processes and new business framework lines (Fitzgerald, Kruschwitz, Bonnet, & Welch, 2013). As a growing technology, capable of improving

business results, Robotic process automation has the capability to backing these capacities. Robotic Process Automation takes on an altogether different role contingent upon the procedure and the business. Through its automation proficiencies, Robotic process automation enables companies to handle operational difficulties, for example, routine assignments.

The study was guided two theories: Diffusion of innovation theory and resource based view perspective. The idea of innovation dissemination says that the decision to use a new invention is based on its claimed advantages, complexity, and compatibility with existing systems and easy to use as well as the noticeability of the results. Wernefelt established resource-based perspective (1984). A high is prevailed more in a high dependency mix environment, which can impede inflow and outflow of resources of actors like suppliers (Wernefelt, 1984).

### **1.1.1 Digital Transformation**

Digital transformation is digital technology integration in all business sectors, changing dramatically your function and delivering client value (Lee et al. 2007). Digital transformation involves using digital technology to develop or modify existing business processes, culture and customer experience to suit changing company requirements and market needs. This re-imagination of digital business is a digital change (Fitzgerald, Kruschwitz, Bonnet, & Welch, 2013). Clear goals, an integrated strategy, leadership, flexibility and appropriate skills are all key components to effective digital transformation. The strength of a strategic digital framework rests in its aims. Less digitally mature businesses prefer to concentrate on and use certain technologies to enhance their overall operations whereas more advanced organizations develop digital

strategies in order to change their enterprises completely. McKinsey's (2020) study states that technology promotes corporate value in four respects: product innovation, automation, greater connection, and better decisions.

Companies operate in various technological systems, so that an integrated approach to digital transformation is essential. Customers do not only interact once, they each need their own system and process through multiple contact points throughout their customer journey..Research by Digital McKinsey (2019) shows that many leaders tend to be too cautious with regard to digital transformation. That kind of shift requires company-wide adoption, and managers need to tackle the technology-business gap. The landscape of business is constantly evolving, so that companies today should be ready to work alongside them. Implementing innovative technologies for skilled IT professionals with a disruptive technology that can transform firm ideas into an actionable plan that will lead to the digital transformation.

A computerized library empowers a firm or foundation convey preparing material and examples to representatives or understudies. Brown and Streams (2018) set that learning the board framework has become fundamental to educating and learning. Greater part of colleges have set up a LMS and in the US LMS reception by foundations remains at almost 100% and by workforce at 88%. According to Johnson, Becker and Cummins et al. (2016) online learning have the ability to promote personalized student learning. At the same time, they provide the institution with insights on the efficiency of instruction delivery. On the flip side, learning analytics around the world is quite imbalanced. According to Elmore and Stephens (2012), educational Websites are not just a communication device but also a portable information collection and recollection tool for

most students. Virtual meeting platforms are video applications and software that bring people together over the internet. According to Lee et al. (2007) there are different types of virtual meeting platforms used in learning institutions which include; Zoom, Webex, Google Meet, facetime, Microsoft Teams, Adobe Connect.

### **1.1.2 Service Delivery**

According to Chafouleas, Johnson, Overstreet and Santos (2016) service delivery entails components of a firm that define the manner in which different processes interact between the clients and the service providers as a consequence of interactions the customer discovers value or loses. Service is an intangible economic activity that cannot be stored and does not lead to ownership. It entails information exchange, knowledge and any kind of assets (Ahmad, 2005). Service delivery implies whenever a product or service is offered to customers, whether or not it is supplied. This indicates that a good service delivery method enhances the delivery of products to clients and increases the value.

The SERVQUAL methodology, which was developed to detect the gap in impression between what the business thinks it is providing to customers and what the consumer perceives, will be used to assess service delivery. The four elements of the SERVQUAL paradigm are reliability, response, assurance and empathy. The first aspect of service delivery to consider is reliability. This relates to the company's capacity to provide correct service. It also includes the company's capability to provide the service on schedule, every time, and without errors. Customer service entails putting in place mechanisms to ensure that your customers are completely satisfied with your company. Heskett, thank you for your time and effort (1987). Reliability, tangibility,

responsiveness, accessibility, and empathy are examples of service delivery indices (Parasuram, 2006).

The response of service delivery examines the capacity of the business to quickly react to the demands of the client. If businesses fail to react to a client and, in particular, if there is no clear cause or justification, the consumers have a bad impression. Because facilities are not utilized effectively and services rely on their usage, having access to them will restrict certain services. Services that are difficult to obtain are considered low quality, whereas those that are easy to acquire are considered high quality (So, 2000). The assurance depends on the employee's capacity to trust and trust the client. This is based on the knowledge and skill of the employee to make pleasant and courteous communication.

Four components of this are: competency, customer compliance, efficient communication and attitudes. For services to be seen as services, it should include all characteristics that meet the expectations of consumers. It should be classified as high service with all its main operational features and all quantifiable aspects (Fogli, 2006). The capacity of an employee to demonstrate real care and concern for consumers establishes empathy. For empathy to be successful, the employee must demonstrate it on a regular basis. Delays in the supply of service will lead to a loss of meaning in services and thus a service must be provided in good time before the customer gets irritated. As a result, excellent service is synonymous with operating within a certain range of tolerance. It will be deemed excellent service provided if the service operates as anticipated and planned (Ahmad, 2005).



### **1.1.3 Education**

According to Council on Higher Education, (2014) education is an array of different means to communicate and mediate a curriculum without necessarily requiring instructors and learners to be in the same place at the same time. It is as well a mode of provision of knowledge delivery, concerned with the design of programs that presuppose the spatial and/or temporal separation of instructors and learners for the majority, and possibly the complete, of the education experience (Council on Higher Education, 2014). The aim of education is to focus on learning design for discharge of teaching, knowledge, hold up and evaluation with or devoid of supporting technology that endeavor to offer educational opportunities to learners who are not physically ‘on site’ Council on Higher Education, (2014). Apart from sequential and spatial disjointing concerns in instruction situation, there is a ‘transactional distance’ that exists in all teaching and learning interactions and that may well be exacerbated in education context.

The concept of transaction connotes the interplay between environment, the individuals and the pattern of behaviors in situation. The first distance-learning program in the present-day brains was borne by Sir Isaac Pitman in the 1840s. This involved an instruction procedure of shorthand by mailing texts transcribed into shorthand on postcards and getting transcriptions from his learners’ in feedback for evaluation. The aspect of learner response was an important innovation of Pitman's system. This technique was achievable by the initiation of standardized postage rates across England in 1840. This first establishment proved exceptionally lucrative, and the Phonographic correspondence society was started three years afterward to institute distance education on a more official basis. The Society cemented the way for the later configuration of Sir

Isaac Pitman tertiary institutions across the country; with the first correspondence institute being fully functional in 1873 at the United States.

#### **1.1.4 The Covid-19 Pandemic**

The corona virus disease 2019 acronymic as (COVID-19) is a contagious airborne disease that strains the respiratory in humans caused by the SARS-CoV-2; it is an ailment that can affect the lungs and airways. The pandemic has had a lot of economical trigger thus causing an increase in inflation rate in some parts of the state's economy. According to the health care research lab report (2021), there has been no attested cure for it since its first conferment of the ailment in the patients by the World Health Organization (WHO) Wuhan City, Hubei Province, in China in August 2019. The COVID-19 case fatality ratio in comparison with the SARS of 2003 has had a trivial total death toll (WHO, 2020a; WHO, 2020b) which is notably greater.

The COVID-19 Framework for Global Immediate Socioeconomic Response cautions that the pandemic is much more than health emergencies, affecting the hearts of society and economy. While the effect of the pandemic may vary by nation, global poverty and inequalities will almost definitely increase, making the SDGs even more important to achieving (Albers & Rundshagen, 2020). The covid-19 catastrophe has caused a worldwide distress. Though there is in elevation imagination implicated on the uncertainty risk a highly mixed dependency environment prevailed which can impede for inflow and outflow of resources of actors like suppliers. This has jeopardized the livelihoods of all globally. Among other impacts of pandemic, it has also touched on financial markets products like the bonds among other stocks widening the distress level in the economy.

### **1.1.5 Public Universities in Nairobi County**

Public universities in Nairobi county have seen many changes from their external environment which need them to respond promptly to important actors in higher education (Muteti, 2015). This has seen public universities in Nairobi introducing parallel programmes targeting those students who could not meet direct entry in conjunction with regular programmes which are subsidized by government to augment inadequate allocation from exchequer (Wangenge, 2016). Fierce competition from private and international institutions to conduct an aggressive student recruitment campaign requires strategic management to play the important role of the university institution in strengthening its quest for a sustained competitive advantage (Mathooko and Ogutu, 2014).

According to the TIFA (2020) study carried out at three public institutions in Nairobi County offering open and distant learning programs, students have chosen face to face or combined teaching and learning techniques. Of the 500,000 students, only 19,000 were registered for open and remote study. These show the difficulties facing students in online or distant courses and choose to participate in conventional programs. Less than half (about 45%) of students who participated in remote learning programs accessed materials on the online platforms of their institution; the remainder got it through e-mail or a physical copy. Public universities in Nairobi must have invested in online learning systems, digital libraries and internet access for digital universities (Banya, 2016). The issue is that government universities have faced significant cash flow difficulties due to a steep drop in registration over the last three years and insufficient public financing.

## **1.2 Research Problem**

Higher education institutions should provide the necessary information, technological facilities and resources in the current digital environment in order to support research, teaching and learning activities. The digital revolution has infiltrated public institutions, putting the emphasis of research, education, training and academia on information workers. In changing the character and function of public universities, the digital transformation and Internet resources need information professionals to create compliant systems that provide clients excellent services. Public universities in Nairobi must offer innovative digital technologies that allow institutions and consumers to access essential information and knowledge resources in a timely manner. Where, for whatever reason, significant expenditures are not made in developing and installing new digital systems, the resources are just squandered. The COVID-19 epidemic has resulted in a public university issue as instructors rapidly shift to digital techniques in online courses and utilize platforms such as zoom or skype that are not well suited to broader online courses. The online platforms do not encourage pupils to engage very well.

With the intensification of rivalry in education, players are obliged to develop better methods such as online learning and parallel curricula which allow them to obtain a competitive advantage over their rivals. A competitive strategy aims to achieve a profitable and durable position against the rivalries of industry. Anne and Wrath (2013) In spite of the Kenyan Government intentional movement towards expanding university education by setting up new universities and broadening programs provided by the 2030 Kenya Vision 2030 to industrialize, Kenyan Universities remain globally low as only Universities of Nairobi and Strathmore (Kandiri,2012). In the 2011 Web metric survey, a

university ranked among the top 50, out of a 12 000 institutional group in Africa, and no university in Kenya ranked in a 2012 survey by the World Universities' Academic Rankings, thus ensuring the competitiveness of Kenyan universities has grown a focus following these low ranks (Kikuyu, M'chebere, & Gichunge,2).

Soto (2020) studied the transition to high-speed digital transformation. The increase and development of collaborative digital technology at best eliminates or at least reduces corporate silos, while allowing in-house and external innovation teams to collaborate and exchange information in real time. Similarly, Olorundare et al. (2020) studied the effect on digital transformation and the economy of the COVID-19 Contagion. It was found that digital transformation can only be carried out on the basis of the availability of digital channels with developed countries benefiting from readily available infrastructure, in order to speed digital companies up their implementation during the COVID-19 pandemic compared to growing economies. The accelerated digital transformation: the case of Online University Caused by Covid-19 is studied by Madsen, Haslam and Nielsen, (2020). It has been observed that significant changes made possible by digital technology are usually linked with a prolonged process of transition via various phases. Tesfaye (2020) studied the impact of COVID on financial systems and markets in the Ethiopian private sector. Covid 19 has shown to have a damaging impact on financial systems.

Based on past studies conducted both locally and internationally, it is obvious that there is a research vacuum in knowledge because the Covid 19 public universities in Nairobi, Kenya, have not carried out research into digital transitions. It will address the following question to what extent digital transformations have been adopted by Public Universities in

Nairobi during Covid-19? How does digital transformations impacted on service delivery of education during Covid-19?

### **1.3 Research Objective**

The following were the study objectives:

- i. To establish the extent to which digital transformation has been adopted by Public Universities in Nairobi County during Covid 19.
- ii. To establish how digital transformation has impacted on service delivery in Nairobi County during Covid 19.

### **1.4 Value of the Study**

The research study helped university management by giving insight into the significance of digital transformation. Study findings provided the basis for successful university digital transformation choices. The study provides insights into institutions across the world, who have carried out process improvements but have not performed post-implementation evaluations, are intending to adopt and want to understand more about how digital transformation works.

Researchers and academics also utilized the findings of this survey to contribute knowledge on the topic of digital transformation. It also helped a lot of academics to develop their study on areas of interest not previously explored. The research contributes to current literature on digital transformation and Covid-19, as well as related issues, for academics. It served as an incentive for future research to strengthen and expand the present study in Kenya in particular.

Finally, policymakers were utilized the above research on developing and implementing policies that will be employed in enforcing the laws and regulations of marketing standards that guarantee market practitioners are ethical while doing their responsibilities. On the other hand, the government were utilized the aforementioned research to comprehend the developing trends in the education sector. The government is able to handle the market problems confronting most of the institutions in Kenya via this study.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The literature includes the main ideas behind the research and actual investigations in the field of digital transformation and Covid 19 cloud. The chapter will examine the relation between digital transformation and service delivery in education during Covid 19.

#### **2.2 Theoretical Literature Review**

This research was based on two theories: Diffusion of innovation theory and Resource-based view perspectives.

##### **2.2.1 Diffusion of Innovation Theory**

Rogers introduced the spread of innovation theory in 1962 after researching innovation. It is noted in the research that an idea or product nature perceived can gain momentum and diffusion (spreading) takes place within a particular population or social structure. The consequence of this diffusion activity is that individuals who are in the social structure embrace fresh ideas, habits or new goods in the process of innovation. The perception of the concept, behavior or product as fresh or creative is believed to be essential to the adoption process. Thus Diffusion is made possible in the circumstances. It is argued in the study of Hager (2006) that in the social system innovation does not take place concurrently. The process displays differences in people's appetite to innovation. The theory is primarily focused on the way prospective adopters view innovations in regard to correlative favorable or unfavorable conditions.



In the present environment, the significance of this idea is that innovation has been a major actor in the university's growth and development and that it is definitely a suitable moment to examine the tactics taken by universities in the Covid 19 epidemic. To gain a competitive edge, universities rely on the four aspects of innovations in five kinds of invention. The theory has also been seen as limited in its view of the operating environment of organizations. This hypothesis, like other business cycle theories, takes out other variables which drive business environment variations. Innovation is not the lone factor but just one of the elements that generate environmental variations (Megha, 2016). The spread of the innovative method in this research is important for understanding the changes in digital transformation acceptance and use of innovations.

### **2.2.2 Resource Based View**

Birge was the first to suggest this concept way back in 1984. According to this idea, organizations examine their competitive advantage by conducting strategic advantage evaluations. The RBVs state that every company has its own unique collection of physical and intangible resources, as well as the ability to make use of those resources. They vary in this way, and it's one of the contributing factors. As each company's resources are utilized to their fullest potential, each business gains a competitive edge (Alvarez & Busenitz, 2001). The smart use of resources and the effectiveness of an organization are intertwined.

An organization's competitive advantage may be gained via the improvement of scarce resources, as proposed by Barney (1996). A firm's competitive advantage is founded on the uniqueness and rarity of its resources. It's essential to learn about the strengths and weaknesses of each company, and then to identify and differentiate them from one other.

What the company can do is not simply to reduce the time it has, but to manage the finances it has. Learning et al. (1969) believe that the key to a company's success or long-term development resides in its ability to cultivate distinctive talent. According to RBV, successful firms have stronger organizational design. Because of their cheaper prices, better products, and improved performance, they have become more popular (Das & Teng2000).

This research relies heavily on the notion of the resource-based approach, which helps explain how the combination of resources through time leads to the creation of unique skills that contribute to performance and competitive advantage. Digital transformations that lead to better service delivery are made possible by a company's resources.

### **2.3 Digital Transformations Occasioned by Covid 19 in Education**

Wade (2015) describes digital transformation as the integration of computer technology in goods, processes and strategies of a company. Organizations pursue digital transformation to engage and serve their employees and consumers and therefore enhance their competitiveness. The research will look into digital transformation in terms of digital library, learning management system, virtual classroom, educational Websites, and Virtual Meeting Platforms.

#### **2.3.1 Digital Library**

Matta et al. (2015) established a Digital library to address the organization understanding of digital transformation processes. The approach was to develop a digital transformation strategy, which served as a core framework for incorporating the entire planning, prioritization and execution of innovation initiatives within an organization. The

framework explores the use of technology, value creation enhancements, organizational changes, and financial elements as key components of digital transformation strategies that are independent from industry and business. The use of technology presented the organization's attitude towards emerging technologies, and its willingness to leverage them. Baruah (2010) points out that use of such technology leads to improved student performance, low cost, ease and increased accessibility to course material and development of fundamental skills for learners as ICT is embedded in the curriculum.

### **2.3.2 Learning Management System**

Baruah (2010) conducted an investigation into the consequences of e-learning technology on the retention of students in the Indian Indira Gandhi Open University Open and Distance Learning (ODL) program. E-learning is learning through use of virtual classrooms, electronic application, web based and computer based learning. It was also found out that there is a perception that institutions incur high costs in preparing course material for ODL as compared to conventional teaching method whose costs are fixed costs for the structures. Pomerantz, Brown and Creeks (2018) place that learning the executives framework has become fundamental to educating and learning. Larger part of colleges have set up a LMS and in the US LMS reception by organizations remains at almost 100% and by workforce at 88%. This outlines the significance of LMS for viable guidance conveyance. However much LMS is viable it must be mixed with up close and personal strategies for educating. Pomerantz, Brown and Streams (2018) bring up that mixed guidance has better learning results when contrasted with up close and personal or internet learning alone.

### **2.3.3 Virtual Classroom**

Paul (2014) examined the relationship between virtual classrooms and quality of education. In advanced education, the primary goal of schooling objectives isn't just to communicate information, yet additionally to spread moral norms which are significant in the public eye at large and this must be conceivable assuming the various gatherings engaged with sending information can have the option to pass on trust to the students also. According to Johnson, Becker and Cummins et al. (2016) learning analytics have the ability to promote personalized student learning. At the same time, they (learning analytics) provide the institution with insights on the efficiency of instruction delivery. On the flip side, learning analytics around the world is quite imbalanced. Johnson, Becker and Cummins et al. (2016) give the example of Australia where adoption of learning analytics is still in the early stages. Findings of a study by the Office of Teaching and Learning on assessing the state of learning analytics in Australia's higher education, illustrate that majority of initiatives are limited in scale and with a narrow focus on boosting retention.

### **2.3.4 Educational Websites**

Liu and Briggs (2015) undertook a study to investigate the state of mobile services in United States of America's top 100 academic libraries. From the same study by the ACRL, over 67% of students use their hand held devices for academic use as written by Liu and Briggs (2015). According to Elmore and Stephens (2012), mobile telephones are not just a communication device but also a portable information collection and recollection tool for most students. Therefore, academic libraries cannot turn a blind eye to the trend cites Liu and Briggs (2015). Results from the study conducted by Liu and

Briggs (2015) show that the top 100 university libraries in the US have adapted mobile services. Motor applications, mobile sites, mobile OPAC, mobile access to data bases, text message, QR code and e-books are the most prevalent services.

### **2.3.5 Virtual meeting platforms**

Organizations in the advanced age have consistently utilized means to interface and speak with distant workers and customers; the Coronavirus pandemic has been an incredible impetus for the expansion in the utilization of virtual gathering stages. A portion of the virtual gatherings stages utilized in state funded colleges incorporate; Skype a simple to utilize application that permits you to associate with a solitary individual or a gathering of individuals. It is a notable stage that many gathering members in all probability as of now have individual records for administration use. Zoom meeting is allowed to use for limitless time and offers limitless gatherings with a 40-minute time limit for each. Microsoft groups are a sub-component of the Microsoft Office 365 stage. Google meet gives the client a relegated dial number so virtual gatherings can remain private inside the group, a reasonable access line with no dropped calls, and similarity with both Apple and Android gadgets.

### **2.4 Service Delivery in Education**

Coombs (1985) describes service delivery in education as a qualitative component evaluated by student learning. In this context, the relevance of what is taught and learnt implies the quality of service education. It also includes how well the accomplishment of learning matches now and the future. The measure of service delivery in education include; responsiveness, assurance, flexibility and service delivery. The response of quality of service examines the capacity of the business to quickly react to the demands

of the client. If businesses fail to react to a client and, in particular, if there is no clear cause or justification, the consumers have a bad impression. Because facilities are not utilized effectively and services rely on their usage, having access to them will restrict certain services. Services that are difficult to obtain are considered low quality, whereas those that are easy to acquire are considered high quality ( Balunywa, 1998).

Sarah, Elias and Lydia (2011) analyzing the business student's views of the quality of service provided at Kenyan institutions. It is shown that confidence generates trust in pupils when services are provided professionally, with respect to their teacher. In fact, trust from service seekers can be increased by many ways, including by showing a specialist approach to handling issues, presenting certificates and further professional documents to interested parties, in order to remove fears and doubts, and above all by acting ethically at all times when performing tasks. According to Fares et. al., (2013), it is imperative that organizations and institutions as well can do whatever they say they will do in the course of their operations. Winning the loyalty of customers is basically a matter of living up to the promise. Just like any businesses, private universities ought to impress the clients in order to achieve a repeat purchase of the services, and more importantly enhance the goals of higher learning especially in Kenya.

**Table 2.1 Summary of Literature Review**

<b>Author</b>	<b>Topic</b>	<b>Objectives</b>	<b>Methodology</b>	<b>Findings</b>	<b>Research Gap(s)</b>
Baruah(2010)	E-learning technologies on student retention in the Open and Distance Learning (ODL) program within India's Indira Gandhi National Open University	The impacts of e-learning technologies on student retention in the Open and Distance Learning (ODL) program within India's Indira Gandhi National Open University	Cross-sectional	Use of such technology leads to improved student performance, low cost, ease and increased accessibility to course material	The study was not conducted in the Kenyan context therefore presenting a contextual gap.
Liu and Briggs (2015)	Investigate the state of mobile services in United States of America's top 10 academic libraries.	Establish the state of mobile services in United States of America's top 10 academic libraries.	Cross-sectional	Over 67% of students use their hand held devices for academic use.	The study was not conducted in the Kenyan context therefore presenting a contextual gap.
Pomerantz, Brown and Brooks (2018)	Effect of learning management system on teaching and learning.	To establish the effect of learning management system on teaching and learning.	Factor analysis	Learning management system has become vital to teaching and learning.	The study was based on factor analysis while the above study will deal with Cross-sectional survey
Johnson,	Impact of	To establish	Descriptive	Learning	The study

Becker and Cummins et al. (2016)	learning analytics on student performance in Indian Universities.	the effect of learning analytics on student performance in Indian Universities	research	analytics have the ability to promote personalized student learning.	was not conducted in the Kenyan context therefore presenting a contextual gap
Matta et al. (2015)	Impact of Digital Transformation on performance of a firm	To establish digital Transformation on performance of a firm	Factor analysis	Digital Transformation Framework to address the organization understanding of digital transformation processes.	The study was based on factor analysis while the above study will deal with Cross-sectional survey
Ismail (2017)	E-learning technologies on student retention in the Open and Distance Learning (ODL) program within South Africa	The impacts of e-learning technologies on student retention in the Open and Distance Learning (ODL)	Cross-sectional	Use of such technology leads to improved student performance, low cost, ease and increased accessibility to course material	The study was not conducted in the Kenyan context therefore presenting a contextual gap.
Paul(2014)	Digital transformation and quality of education.	Relationship between digital transformation and quality of education.	Cross-sectional	There is a positive relationship between digital transformation and quality of education.	The study never examined digital transformation during Covid 19 in which the above study will address.
Ghulam,	Digital	To establish	Descriptive	There is a	The study



Khan and Affaq (2014)	transformation on customer satisfaction in higher education institutions.	the digital transformation on customer satisfaction in higher education institutions.	research	significant relationship between digital transformations on customer satisfaction in higher education institutions.	never examined digital transformation during Covid 19 in which the above study will address.
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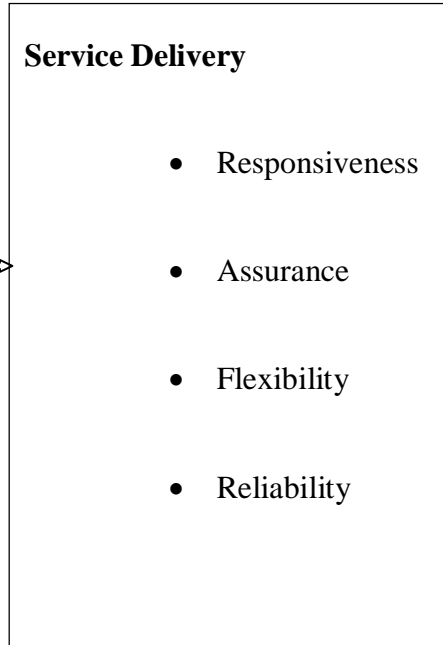
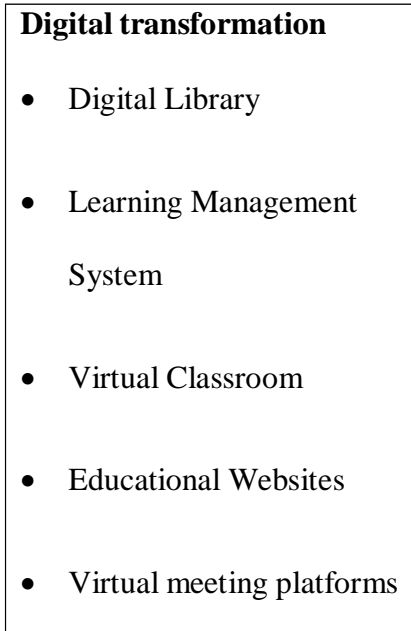
## 2.5 Conceptual Framework

As per Youthful (2009), the reasonable system is a schematic exertion that shows how reliant and autonomous factors relate. Hulla, Karre, Mallet, Ramsauer (2019) attested that virtual homeroom result into responsiveness to guarantee the assistance searchers of the way that their interests and needs are catered for at some random time. On the other hand, Gama, (2018) digital library and learning platforms are important tools for assurance depending on the employee's capacity to trust and trust the client. The teacher training unit at Becker, Cummins & Davis, et al. (2017) is an essential player in education websites owing to its dependability among students. Learning system management has led to flexibility in the field of learning and just-in-time training for students to improve both internal operations of course and the supply of excellent education.

### Figure2.2: Conceptual Framework

**Independent variable**

**Dependent Variable**



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This section focused on research technology that encompasses research design, population research, sample design, data collecting systems, data collection and data analysis.

#### **3.2 Research design**

Research design is a field of academic study dedicated to identifying study methodology (Kothari, 2014). According to Ghauri & Gronhaug, 2005, research design entails devising a specific strategy or a specific data collection structure, as well as subsequent statistical analysis, which includes the research strategy and the researcher's primary objectives. Cross-sectional design was used for this study.

#### **3.3 Population of the study**

Target population is defined by Babie& Halley (2007) to be the total collection of possible research participants who meet specific set criteria by the research. Wambua (2011) contends that a population element refers to the subject under study like individual, a company, a database, or even the total quantitative data that define the measurement standards. The population for the study was confined to students in all Main campus public universities in Nairobi County due to the time constraints and the cost implications involved in collecting data for the whole country. Table 3.1 shows the

population of post graduate and undergraduate in Main campus Public Universities in Nairobi County.

**Table 3.1: Distribution of the Target Population**

<b>University</b>	<b>Undergraduate</b>	<b>Post Graduate</b>
University of Nairobi	423,465	58,760
The Technical University of Kenya	235,899	20,567
Multimedia University	145,788	15,567
<b>Total</b>	<b>805,152</b>	<b>94,894</b>

**Source:** Kenya National Bureau of Statistics (KNBS) (2020)

### 3.4 Study Sample

Sample size comprises of a rundown of things/components from which an example is drawn (Scott and Morrison, 2007). An examining outline is significant in light of the fact that it characterizes the review populace. The review's example system incorporates a rundown of all Principle grounds State funded colleges in Nairobi Region. As indicated by KNBS (2021), there are 900,046 college understudies and post alumni in Principle grounds state funded colleges in Nairobi region. An example is only a subset of the populace which addresses the entire populace (Swimmer& Dominick, 2006).To achieve a representative sample from the population the study will use simple random sampling because it gives every respond equal chance to particulate as all of them are subjected to digital transformation.

The research used a stratified sample and a corresponding method to get the appropriate total sample size and sample for each category. Stratified random sampling method is used where all the undergraduate students and post graduate had an equal chance of being selected as a sample. The simple random sampling was also used to give equal chance of all participants during data collection in the field. The simple random sampling was achieved by requesting student roll call from which sample responded to selected randomly from university register.

The appropriate sample size that was utilized in the study is to be calculated using Slovene's (1978) The Slovene's (1978) formula was applied in determining fixed sample size from a population of 900,046. The Slovene's formula is enumerated below;

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

N = Population

e = Acceptable margin of error

n = Sample

The study employed a confidence interval of 95% and a margin of error of 5%. In applying Slovene's formula, fixed (total) sample size was;

$$\frac{900,046}{1 + 900,046 (0.05)^2}$$

$$n = \frac{900,046}{1 + 900,046 (0.0025)}$$

$$n = 399$$

The calculated sample size was proportionately distributed across the various categories as shown in Table 3.2.

**Table 3.2: Sample Size**

University	Undergraduate	Proportionate sample size(x/9)	Post Graduate	Proportionate sample size(x/9)
		$\frac{900,046}{9} * 39$		$\frac{900,046}{9} * 39$
University of Nairobi	423,465	187	58,760	26
The Technical University of Kenya	235,899	104	20,567	9
Multimedia University	145,788	64	15,567	9
<b>Total</b>	<b>805,152</b>	<b>355</b>	<b>94,894</b>	<b>44</b>

### 3.5 Data Collection

In this study primary data was utilized. Primary data was collected via the structured questionnaire. The questionnaire consisted of close ended questions. The first portion contained demographic statistics, while the second section contained information on the

degree to which digital transformation has been adopted among public universities in Nairobi County and the third component consisted of information on the impact of digital transformation on service delivery in education among Public Universities in Nairobi County during Covid-19. The target respondents were undergraduate students and post graduate students in Main campus Public Universities in Nairobi County since the respondents are well versed with digital transformation and are the direct consumers of the service. The questionnaires were delivered via drop and pick technique. The study also adopted Google form especially for graduate students who were not easy to get.

### **3.6 Data Analysis**

The questionnaires were modified for consistency after data collection in order to attain completeness. The surveys were cleaned up with edition, tabulation and coding, anomalies in the responses identified and exact numerical values entered for future research answers (Kombo&Tromp, 2007). Descriptive statistics was used to evaluate data including central tendency (mean) and dispersion measurements (variances and standard deviation). Tables and diagrams were employed to show the data. SPSS software was used to conduct all the analyses. The first and second goals were analyzed using the multiple linear regressions model given below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Where: Y is Service Delivery

$\beta_0$  is the model's constant

$\beta_1$  to  $\beta_5$  are the regression coefficients

$X_1$  = Digital Library  $X_2$  = Learning Management System

X<sub>3</sub> = Virtual Classroom    X<sub>4</sub>=Educational Websites    X<sub>5</sub>=Virtual meeting platform

E=Error Term

**Table 3.1 Summary Table of the Analysis**

<b>Objectives</b>	<b>Data Collection Method</b>	<b>Data Analysis Method</b>
i) The extent to which digital transformation has been adopted by Public Universities in Nairobi County during Covid 19.	Questionnaire	Descriptive Statistics Multiple regression Analysis
ii) To establish how digital transformation has impacted on service delivery in education during Covid 19.	Questionnaire	Descriptive Statistics Multiple regression Analysis



## **CHAPTER FOUR**

### **DATA ANALYSIS, PRESENTATION AND DISCUSSION OF FINDINGS**

#### **4.1 Introduction**

Research results are presented in this part, analyzing data used and discussing how digital transformations have impacted on service delivery in education during Covid-19.

#### **4.2 Response Rate**

Out of 399 questionnaires that were administered, 320 were returned for data processing representing 80.2% of the respondents. This response rate was considered sufficient for data analysis. The findings support Cooper and Schindler, (2003) assertion that rates higher than 50% are acceptable in analyses. Babbie (2010) likewise considers a return rate of 60% to be good, and a return rate of seventy to be outstanding. The findings were sufficient for data analysis.

#### **4.3 Demographic Information**

This section is dedicated to respondent's basic details. The data aided in comprehending the gender, age bracket and year joined University.

##### **4.3.1 Gender of Respondents**

The researcher sought to classify the participants according to gender. As shown in table 4.1, most of the respondents were female at 54.4% and male were 45.6%. This implies that majority of the students in public universities were female.

**Table 4.1: Gender of Respondents**

<b>Gender</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Male</b>	<b>146</b>	<b>45.6</b>
<b>Female</b>	<b>174</b>	<b>54.4</b>
<b>Total</b>	<b>320</b>	<b>100</b>

#### **4.3.2 Age of Respondents**

The researcher's target was to classify the participants according to age. As shown in table 4.2, most respondents were between age 18-22 years at 37.5%, 31.3% were between 22-26 years, 26-30 years were at 20.3% and lastly 30 and above were at 10.9%.

**Table 4. 2: Age of Respondents**

<b>Age</b>	<b>Frequency</b>	<b>Percentage</b>
18-22	120	37.5
22-26	100	31.3
26-30	65	20.3
30 and above	35	10.9
<b>Total</b>	<b>320</b>	<b>100</b>

#### **4.3.3 Year joined the University**

The researcher aimed at classifying the participants according to year joined campus. As shown in table 4.3, most respondents joined campus in the year 2019 at 32.8% in the year 2015 and 2016 were at 28.8%, 2017 was at 5.3% and lastly 2018 at 4.4%. This implies that most students were continuing students who had better understanding of digital transformation.

**Table 4.3: Year joined the University**

	<b>Frequency</b>	<b>Percentage</b>
2015	92	28.8
2016	92	28.8
2017	17	5.3
2018	14	4.4
2019	105	32.8
<b>Total</b>	<b>320</b>	<b>100</b>

#### **4.4 Digital Transformation**

The independent variable of this research was digital transformation. It was essential to determine the opinions of respondents on their digital transformation. Using a 5-point Likert scale, strategic replies were rated as either "to a very great degree," "big extent," "moderate amount," "small extent," or "Not at all" by the respondents. Only the most favorable responses received 5 points, while those that were negative received 4, 3, 2, and 1 point, accordingly for each of these tactics in each of the questions asked. For this study, a mean score of 4.0<5.0 great extent, 3.0<4.0 moderate extent, 2.0<3.0 small extent, and 1.0<2.0 didn't agree was selected as the mean score.

##### **4.4.1 Virtual classroom**

The researcher's objective was to establish the extent to which virtual classroom was adopted. It was established that lecturers offer classes through a live stream by Mean 4.23 and std deviation 1.17. Students fully participate in the Q&A sessions, which show an

average difference of 3.90 and 0.89. In addition, online discussion enriches student's exchange of ideas having a 3.45 as mean and a 0.98 as standard deviations. Interactive applications are beneficial having 3.43 as mean 1.19 as a std deviation. Finally, unreliable and unstable internet connectivity has interfered with learning exercise having a 3.23 as mean and a 1.07 as standard deviations. The overall mean was 3.62 which imply that virtual classroom influence digital transformation to a moderate extent. Table 4.4 presents virtual classroom lecturer-student interaction.

**Table 4.4: Virtual classroom**

<b>Statement</b>	<b>N</b>	<b>Mean</b>	<b>Std. Dev</b>
Lecturers offer classes through a live stream	320	4.23	1.17
Online discussion enriches students exchange of ideas	320	3.45	0.98
Interactive applications are beneficial to me	320	3.43	1.19
I fully participate in the Q&A sessions	320	3.90	0.89
Unreliable and unstable internet connectivity has interfered with learning exercise	320	3.23	1.07
<b>Composite Statistics</b>	<b>320</b>	<b>3.62</b>	<b>1.06</b>

**Source: Field Data (2021)**

#### **4.4.2 Education websites**

The researcher's purpose was to establish the extent to which education websites was adopted. It was established that browsing classmates' works acts as check and balance for me with a (Mean 4.34, SD 0.35). Browsing classmates' works acts as check and balance

for me with a (Mean 4.26, SD 0.61), while trained on how to navigate on the educational website with a (Mean 4.23, SD 0.79). Fully involved in the e-learning activities since they are intellectually stimulating with a (Mean 4.11, SD 0.35). Websites that provide instructional and informative (reference) materials are used by students to obtain learning content with a (Mean 3.90, SD 0.56). The overall mean was 4.17 implies education websites influence digital transformation to a great extent. Table 4.5 presents education websites lecturer-student interaction.

**Table 4.5: Education websites**

<b>Statement</b>	<b>N</b>	<b>Mean</b>	<b>Std Dev</b>
Websites that provide instructional and informative (reference) materials are used by students to obtain learning content.	320	3.90	.56
Browsing classmates' works acts as check and balance for me	320	4.26	.61
I am fully involved in the e-learning activities since they are intellectually stimulating.	320	4.11	.35
The information on the educational websites is safe and unauthorized person cannot access.	320	4.34	.35
I have being trained on how to navigate on the educational website	320	4.23	.79
<b>Composite Statistics</b>	<b>320</b>	<b>4.17</b>	<b>.53</b>

**Source: Field Data (2021)**

#### 4.4.5 Digital Library

The researcher's intention was to establish the extent to which digital library was adopted. It was established that confident in my ability to use the system as shown by a mean of 4.30 and a std deviation of 0.92, confident in my abilities to work with technology having a mean of 4.20 and 0.89 as standard deviation while the technology enables quick access to data having a 4.11 as mean and a 1.10 as standard deviation. The available application software of digital library is not up-to-date to ensure integrity of the information processed with a mean of 3.80 and a standard deviation of 0.99. Motivated to learn about and utilize the digital library. The overall mean was 4.02 implies digital library influence digital transformation to a great extent. Table 4.6 presents digital library lecturer-student interaction.

**Table 4.6: Digital Library**

<b>Statement</b>	<b>N</b>	<b>Mean</b>	<b>Std Dev</b>
I'm confident in my abilities to work with technology.	320	4.20	0.89
I'm motivated to learn about and utilize the digital library.	320	3.52	1.08
I am quite confident in my ability to use the system.	320	4.30.	0.92
The technology enables quick access to data.	320	4.11	1.10
The available application software of digital library are not up-to-date to ensure integrity of the information processed	320	3.80	0.99
<b>Composite Statistics</b>	<b>320</b>	<b>4.02</b>	<b>0.99</b>

**Source: Field Data (2021)**

#### **4.4.4 Learning Management System**

The researcher aimed at establishing the extent to which learning management system was adopted. It was established that digital/online learning only for example learning that excludes physical/face to face lectures by Mean 4.18 and std deviation 0.95. Use of online mobile platforms and applications enhances my learning experience which shows an average difference of 3.90 and 0.89. In addition, Use of online mobile platforms and applications enhances my learning experience having a 3.73 as mean and a 1.06 as standard deviation. Digital technology motivates me to want to learn and research more beyond my study scope with a mean of 3.60 and std deviation 1.05. Library open Public Access Catalog is an essential tool for the learning process with a mean of with a mean of 3.57 and std deviation 0.99. Finally, e-repository and journals has improved my academic performance having a 3.00 as mean and a 1.02 as standard deviation. The overall mean was 3.57 implies learning management system influence digital transformation to a moderate extent. Table 4.7 presents learning management system lecturer-student interaction.

**Table 4.7: Learning Management System**

<b>Statement</b>	<b>N</b>	<b>Mean</b>	<b>Std. Dev</b>
I prefer digital/online learning only i.e. learning that excludes physical/face to face lectures	320	4.18	0.95
Use of online Mobile Platforms and Applications enhances my learning experience	320	3.73	1.06
Library Open Public Access Catalog is an essential	320	3.57	0.99

tool for the learning process			
E-repository and journals has improved my academic performance	320	3.00	1.02
Digital technology motivates me to want to learn and research more beyond my study scope	320	3.60	1.05
<b>Composite Statistics</b>	<b>320</b>	<b>3.57</b>	<b>1.01</b>

**Source: Field Data (2021)**

#### **4.4.5 Virtual Meeting Platforms**

The researcher's objective was to establish the extent to which virtual meeting platforms were adopted. It was established that manage discussions with comrades through virtual meeting platforms with a mean 4.63 and std deviation 0.547. Lecturers offer classes through virtual meeting platforms having a 4.54 as mean and a 0.505 as standard deviation. Knowledge sharing through online virtual meeting platforms is great, with a mean of 4.26 and a variation from 611. In addition to this, fully participate in the virtual meeting platforms having a 4.23 as mean and a 0.798 as standard deviation. Finally, students and lecturers have been trained on how to use the virtual meeting platform used with a mean difference of 4.11 and 0.504. The overall mean was 4.35 which imply that virtual meeting platforms influence digital transformation to a great extent. It was found out that most learning institutions use Google meet, Microsoft teams, kernet and zoom meeting. Table 4.8 presents virtual meeting platforms system lecturer-student interaction.



**Table 4.8 Virtual Meeting Platforms**

<b>Statement</b>	<b>N</b>	<b>Mean</b>	<b>Std Dev</b>
Students and lecturers have been trained on how to use the virtual meeting platform used	320	4.11	.504
Lecturers offer classes through virtual meeting platforms	320	4.54	.505
I fully participate in the virtual meeting platforms	320	4.23	.798
I manage discussions with comrades through virtual meeting platforms	320	4.63	.547
Knowledge sharing through online virtual meeting platforms is great	320	4.26	.611
<b>Composite Statistics</b>	<b>320</b>	<b>4.35</b>	<b>.652</b>

**Source: Field Data (2021)**

#### **4.5 Service Delivery**

Under this research, service delivery was a dependent variable. The respondents' opinions on the service delivery in education had to be established. The following analysis has been adopted to distinguish the extent: mean value of 4.0<3.5 to a large extent, a moderate extent of 3.0<4.0, a small extent of 2.0<3.0 and an average score of 1.0<2.0 to a small degree. 10 statements were used to evaluate service delivery in education among public universities in Nairobi.

##### **4.5.1 Responsiveness**

The researcher's desire was to establish the extent to which responsiveness influence service delivery. It was established that through digital transformation services are provided promptly in my university at mean of 4.63, standard deviation 0.487, the

university employees are happy and willing to serve students and lecturers at mean of 4.60, standard deviation 0.490. Lastly, the institution’s digital transformation enhances responses on issues raised in which they are handed instantly .The overall mean was 4.56 which implies that responsiveness influence service delivery in education to a great extent.Table 4.9 presents responsiveness in service delivery.

**Table 4.9: Responsiveness**

<b>Responsiveness</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
Through digital transformation services are provided promptly in my university	320	4.63	0.487
The university employees are happy and willing to serve students and lecturers	320	4.60	0.493
The institution’s digital transformation enhances responses on issues raised in which they are handed instantly.	320	4.57	0.498
<b>Mean</b>	<b>320</b>	<b>4.56</b>	<b>0.498</b>

#### **4.5.2 Assurance**

The researcher’s objective was to establish the extent to which assurance influence service delivery. It was established that the support staffs have the required skills to resolve problems and answer questions at mean of 4.57, standard deviation 0.554, through digital transformation there is assurance and confidence in the university at mean of 4.56, S.D 0.528. The employee are consistently courteous to the students and lecturers was at mean of 4.56, S.D 0.555.The overall mean was 4.54 which implies that assurance influence service delivery in education to a great extent.Table 4.10 presents assurance in service delivery.

**Table 4.10: Assurance**

<b>Reliability</b>		<b>Mean</b>	<b>Stdev</b>
The support staff have the required skills to resolve problems and answer questions	320	4.57	0.554
Through digital transformation there is assurance and confidence in the university	320	4.56	0.528
The employee are consistently courteous to the students and lecturers	320	4.56	0.555
<b>Mean</b>	<b>320</b>	<b>4.54</b>	<b>0.551</b>

### **4.5.3 Flexibility**

The researcher's aim was to establish the extent to which flexibility influence service delivery. It was established that the university's staffs are not overburdened with work that prevents them from responding to user requests at mean of 4.54, standard deviation 0.582, the digital transformation has ensured flexibility among students and lecturers at mean of 4.53, standard deviation 0.583. Lastly, the learning hours are convenient to all students and lecturers due to online classes at mean of 4.53, standard deviation 0.557. The overall mean was 4.49 which imply that flexibility influence service delivery to a great extent. Table 4.11 presents flexibility in service delivery.

**Table 4.11: Flexibility**

<b>Flexibility</b>		<b>Mean</b>	<b>Stdev</b>
The university's staffs are not overburdened with work that prevents them from responding to user requests.	320	4.54	0.582
The digital transformation has ensured flexibility among students and lecturers	320	4.53	0.583
The learning hours are convenient to all students and lecturers due to online classes	320	4.53	0.557
<b>Mean</b>	<b>320</b>	<b>4.49</b>	<b>0.586</b>

**4.5.4 Reliability**

The researcher's main purpose was to establish the extent to which reliability influence service delivery. It was established that there is sufficient capability at the institution to provide excellent student services at mean of 4.50 standard deviation 0.532, followed by the university delivers network services in a timely manner at mean of 4.41, standard deviation 0.625. The university delivers network services in a timely manner at mean of 4.44, standard deviation 0.567. The overall mean was 4.50 which imply that reliability influence service delivery in education at great extent. The aggregate mean was 4.53 that imply that public universities in Nairobi have achieved good service delivery in education to a great extent. Table 4.12 presents reliability in service delivery.

**Table 4.12: Reliability**

<b>Reliability</b>		<b>Mean</b>	<b>Stdev</b>
There is sufficient capability at the institution to provide excellent student services.	320	4.50	0.532
My university strives to live up to its vision statement	320	4.41	0.625
The university delivers network services in a timely manner	320	4.44	0.581
<b>Mean</b>	<b>320</b>	<b>4.50</b>	<b>0.567</b>

#### 4.6 Correlation Analysis

The above Table 4.13, there is positive correlation between digital library and service delivery at Pearson's correlation coefficient of 0.715. Learning management system and service delivery with Pearson's correlation coefficient of 0.750 and level of significance being 0.01. On the other hand, Virtual classroom had positive relationship correlation with service delivery at a Pearson's correlation coefficient of 0.6320 significant positive relationship correlation with service delivery. Educational websites moderately significant positive relationship correlation with service delivery at a Pearson's correlation coefficient of 0.420 and level of significance of 0.05. Finally, Virtual meeting platform has a significant relationship with service delivery at a Pearson's correlation of 0.565 and p-value of 0.01.

**Table 4. 13: Correlation Analysis**

		<b>DL</b>	<b>LM</b>	<b>VC</b>	<b>EW</b>	<b>VM P-</b>	<b>OSD R</b>
<b>DL-Digital library</b>	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	320					
<b>LM-learning management system</b>	Pearson Correlation	.690**	1				
	Sig. (2-tailed)	.01					
	N	320	320				
<b>VC-Virtual classroom</b>	Pearson Correlation	.613*	.631*	1			
	Sig. (2-tailed)	.05	.05				
	N	320	320	320			
<b>EW-Educational websites</b>	Pearson Correlation	.624**	.624*	.241*	1		
	Sig. (2-tailed)	.01	.05	.05			
	N	320	320	320	320		
<b>VMP-Virtual meeting platform</b>	Pearson Correlation	.639**	.563*	.334**	.325*	1	
	Sig. (2-tailed)	.01	.05	.01	.05		
	N	320	320	320	320	4320	
<b>SDR-Service delivery</b>	Pearson Correlation	.715**	.750**	.6320*	.420*	.565*	1
	Sig. (2-tailed)	.01	.01	.01	.05	.01	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (1-tailed).

#### 4.7 Regression Analysis

Regression analyses were used to ascertain how service delivery in education is supported by digital transformation utilizing the determination coefficient ( $r^2$ ) and also to forecast the connection among variables by use of  $\beta$  coefficient. In order to determine the percentage of the dependent variable (service delivery in education) being predicted by five predictor factors, analyses of multiple regression was performed (Digital library, learning management system, virtual classroom educational websites, and virtual meeting platforms).

##### 4.7.1 Model Summary

Multiple regressions were used to examine the influence of predictor factors on the dependent variables. In Table 4.14 at significance level of 0.005, the outcomes show that R and  $R^2$  were 0.876 and 0.767 respectively. The correlation coefficient of  $R=0.876$  indicates that digital transformation and service delivery in education are strongly linked. The model's predictors account for 76.7% of service delivery variation, while extra factors not included in the model account for the remaining 23.3%.

**Table 4. 14: Model Summary**

Model	R	R <sup>2</sup>	Adjusted Square	R Std. Error of the Estimate
1	.876 <sup>a</sup>	.767	.684	.419

Predictors: (Constant), Digital library, learning management system, virtual classroom educational websites, virtual meeting platform

**Source: Field Data (2021)**

#### 4.7.2 Goodness of Fit of the Model

Analysis of Variance (ANOVA) and a regression model were used by the researcher to analyse the data (ANOVA). As shown in Table 4.15,  $F(5, 34) = 9.193$  was significant at 95% level of confidence. Digital transformation and service delivery in education may be linked, according to this paradigm. There is 95% confidence that Digital transformation is a significant predictor of service delivery in education based on the p-value of the ANOVA ( $P < 0.05$ ).

**Table 4.15: ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.090	5	1.618	9.193	0.000 <sup>b</sup>
	Residual	2.460	314	.176		
	<b>Total</b>	<b>10.550</b>	<b>319</b>			

**Source: Field Data (2021)**



### 4.7.3 Model Regression Coefficients

The regression coefficients illustrated in Table 4.16 show that a relationship exists between digital transformation and service delivery in education. Digital library posted  $p=0.000 < 0.05$ , learning management system posted  $p=0.000 < 0.05$ , virtual classroom posted  $p= 0.019 < 0.05$  and educational websites posting  $p=0.000 < 0.05$ . Virtual meeting platform posted  $p= 0.000 < 0.05$ . This Significance test was conducted at  $\alpha=0.05$  in which the significance exists when  $p$  records a value  $< 0.05$ . The results show that the parameters of digital transformation possess significance with service delivery in education.

The linear model then stands to be;

$$Y=0.179+0.149X_1+0.239X_2+0.200 X_3+0.170X_4+0.167X_5$$

As per the findings, when all other independent factors are held constantly, increasing the digital library transformation parameter in relation to digital transformation by a single unit will result to a 0.149 change in service delivery, increasing learning management system parameter in relation to virtual classroom by a single unit will result to a 0.239 change in service delivery , increasing virtual classroom in relation to digital transformation by a single unit will result to a 0.200 change in service delivery. Educational websites in relation to digital transformation by a single unit will result to a 0.170 change in service delivery. Finally increasing virtual meeting platform in relation to digital transformation by a single unit will result in a 0.167 change in service delivery in education.

**Table 4. 16: Regression Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B ( $\beta$ )	Std. Error			
(Constant)	.179	.756		4.236	.000
Digital library	.149	.239	.165	3.263	.000
Learning management system	.239	.125	.305	4.912	.000
Virtual classroom	.200	.273	.126	4.733	.000
Educational websites	.170	.273	.124	4.622	.000
virtual meeting platform	.167	.156	.139	4.071	.000

a. Dependent Variable: Service Delivery

#### 4.8 Discussion of Findings

It was found out that virtual classroom influence digital transformation at moderate extent. This was backed by the following statements; lecturers offer classes through a live stream and I fully participate in the Q&A sessions. These results confirm those of Johnson, Becker and Cummins et al. (2016) learning analytics have the ability to promote personalized student learning. At the same time, they (learning analytics) provide the institution with insights on the efficiency of instruction delivery. Baruah (2010) points out that use of such technology leads to improved student performance, low cost, ease and increased accessibility to course material and development of fundamental skills for learners as ICT is embedded in the curriculum.

It was established that education websites influence digital transformation at great extent. This was backed by the following statements; the information on the educational websites is safe and unauthorized person cannot access and being trained on how to navigate on the educational website. The findings agree with Elmore and Stephens (2012), mobile telephones are not just a communication device but also a portable information collection and recollection tool for most students. Therefore, academic libraries cannot turn a blind eye to the trend cites Liu and Briggs (2015).

It was found out that digital library influence digital transformation to a great extent. This was backed by the following statements; the information on the educational websites is safe and unauthorized person cannot access and Browsing classmates' works acts as check and balance for me. The findings agree with Baruah (2010) points out that use of such technology leads to improved student performance, low cost, ease and increased accessibility to course material and development of fundamental skills for learners as ICT is embedded in the curriculum. The findings also agree with Pomerantz, Brown and Brooks (2018) posit that digital library as become vital to teaching and learning.

It was found out that learning management system influence digital transformation to a moderate extent. This was backed by the following statements; use of online Mobile Platforms and applications enhances my learning experience. This agrees with Baruah (2010) E-learning is learning through use of virtual classrooms, electronic application, web based and computer based learning. It was also found out that there is a perception that institutions incur high costs in preparing course material for ODL as compared to conventional teaching method whose costs are fixed costs for the structures.

It was found out that virtual meeting platforms influence digital transformation to a great extent. It was found out that most learning institutions use google meet, Microsoft teams, kennet and zoom meeting. This agree with Coomb(2018) Google meet furnishes the client with an appointed dial number so virtual gatherings can remain private inside the group, an unmistakable access line with no dropped calls, and similarity with both Apple and Android gadgets.

According to the findings, digital transformation and service delivery in education have a positive relationship. So as to discover how service delivery in education is impacted by digital transformation in public universities in Nairobi County., regression analysis was used. The determination coefficient was determined as an excellent match for the data, with  $R^2=0.767$ , indicating that it is a reliable predictor. The statistical significance of the entire model of regression was shown by the p-value of 0.000 (0.05). These results back with a Ngaira (2018) the major digital transformation a positive effect on service delivery in education.

The results of the research also pertain to the resource based theory, which refers to predicated on the premise that firms analyze their competitive advantage through processes of evaluating their strategic advantages. The findings show that for digital transformation to be implemented a firm must have enough resources. These results match the assertions from Barney (1996) propose that organizations succeed by improving resources that offers rare sources of competitive edge.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

An overview of the study's results, conclusions, recommendations, and limitations is provided in this chapter, as well as some research-related suggestions. This is done in accordance with the study's objective.

#### **5.2 Summary of the Findings**

The aim of this research was to establish the effect of digital transformation occasioned by Covid 19 and service delivery in education among public universities in Nairobi County. It was found out that majority of the students in public universities were female and are below the age of 26 years. Most students joined campus in 2019 hence they are continuing students who had better understanding of digital transformation.

It was found out that virtual classroom and learning management systems influence digital transformation to a moderate extent. This was backed by the following statements; Lecturers offer classes through a live stream and students fully participate in the Q&A sessions. Use of online Mobile Platforms and applications enhances learning experience.

It was found out that digital library, education websites and virtual classrooms influence digital transformation to a great extent. This was backed by the following statements; the information on the educational websites is safe and unauthorized person cannot access and being trained on how to navigate on the educational website. Google meet furnishes the client with an appointed dial number so virtual gatherings can remain private inside

the group, an unmistakable access line with no dropped calls, and similarity with both Apple and Android gadgets.

A connection exists between digital transformation and strategy responses, according to the research results. The regression model used in this research was shown to be a decent predictor in the regression analysis. The models was statistically significant, as demonstrated in a variance analysis by p-value fewer than 0.05. Digital library, learning management system, virtual classroom educational websites, virtual meeting platform were statistically significant.

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

The study concludes that virtual classroom and learning management influence digital transformation to a moderate extent. In higher education, the principle objective of training objectives isn't just to send information, yet in addition to proliferate moral guidelines which are significant in the public eye at large and this must be conceivable assuming the various gatherings associated with communicating information can have the option to pass on trust to the students also.

The study concludes that digital library, education websites and virtual classrooms influence digital transformation to a great extent. A digital library enables institution deliver training material and lessons to employees or students. Virtual meetings platforms leads to improved student performance, low cost, ease and increased accessibility to course material and development of fundamental skills for learners as ICT is embedded in the curriculum.

The study also made a conclusion that there is a significant association existing between digital library, learning management system, virtual classroom educational websites, virtual meeting platform and service delivery hence the model of research is significant. The outcome of the study conforms to the diffusion of innovation theory and resource-based view.

#### **5.4 Recommendations**

Digital transformation is essential for higher institutions of learning in Kenya since technology is advancing at an incredible rate. The research would recommend that the learning institutions should adopt e-learning platforms to improve the learning activities in higher institutions of learning in Kenya. Management should be involved as they are the decision makers and thus need to be involved in the entire process.

In this digital era, institutions of higher learning cannot ignore the importance and need of incorporating digital technology in the learning process. Due to the significance of digital technology on learning, the study recommends that the institution should continuously improve its learning management systems and keep abreast with global technology trends in order to ensure that they offer their students quality education and an impeccable learning experience.

The study recommends that institutions of higher learning should provide run through tutorials on the library website on how students can access and navigate the digital library on campus and off campus as well as usage of the library OPAC system. The study also recommends that the institution should continuously improve their student services systems to make them as simple as possible but efficient.

### **5.5 Limitations of the study**

One of difficulties was that students were the target respondents for the study. Many were extremely busy; therefore there was not enough time to answer the surveys when the researcher provided them with the questionnaire. To guarantee that the questionnaire was properly completed, the instrument validity was checked to make sure aims of investigation are clear, brief and addressed before distributing them.

The onset of Covid 19 necessitating people working from home and maintaining social distance limited the interactions the researcher could have with the respondents. Follow up questions had to be done remotely via a phone call or zoom meetings. These limitations further made it harder to adequately validate some of the responses as would have been the case in face to face meetings.

### **5.6 Suggestions for Further Studies**

A quantitative cross-sectional study was used in this investigation. It simply recorded the views and impressions of participants. The cross-sectional research was chosen since it was the most acceptable strategy for dealing with the challenges due to time and money restrictions. Therefore, comparable research on the basis of qualitative methods such as interviews is necessary.

Further, this study only focused on Public universities in Nairobi County. This leaves gaps in the effect of digital transformation occasioned by Covid 19 and service delivery in education in other Universities such as Moi, Kenyatta and private Universities.



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## **APPENDICES**

### **Appendix I: Questionnaire**

#### **SECTION A: DEMOGRAPHIC INFORMATION**

1. Gender (tick appropriately)

Male  Female

2. Age Bracket

18-22  22-26  26-30  30 and above

3. Which year did you join University?

2015  2016  2017  2018  2019

#### **SECTION B: DIGITAL TRANSFORMATION**

Indicate your level of agreement with each of the following statements regarding digital transformation at the university. (1) Very Large Extent (2) Large Extent (3) Moderate (4) Small Extent (5) not at all

<b>DIGITAL TRANSFORMATION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Virtual classroom</b>					
Lecturers offer classes through a live stream					
Online discussion enriches students exchange of ideas					
Interactive applications are beneficial to me					
I fully participate in the Q&A sessions					
Unreliable and unstable internet connectivity has interfered with learning exercise					
<b>Education websites</b>					
Websites that provide instructional and informative (reference) materials are used by students to obtain learning content.					
Browsing classmates' works acts as check and balance for me					
I am fully involved in the e-learning activities since they are					

intellectually stimulating.					
The information on the educational websites is safe and unauthorized person cannot access.					
I have being trained on how to navigate on the educational website					
<b>Digital library</b>					
I'm confident in my abilities to work with technology.					
I'm motivated to learn about and utilize the digital library.					
I am quite confident in my ability to use the system.					
The technology enables quick access to data.					
The available application software of digital library are not up-to-date to ensure integrity of the information processed					
<b>Learning Management System</b>					
I prefer digital/online learning only i.e. learning that excludes physical/face to face lectures					
Use of online Mobile Platforms and Applications enhances my learning experience					
Library Open Public Access Catalog is an essential tool for					



the learning process					
E-repository and journals has improved my academic performance					
Digital technology motivates me to want to learn and research more beyond my study scope					
<b>Virtual Meeting Platforms</b>					
Which virtual meeting platform has your institution adopted for learning?  1.Google Meet  2.Zoom  3.Microsoft teams  4.Webex  5.Facetime  6.Skype  7.Adobe Connect  8.Kennet  9.Others					

	1	2	3	4	5
Students and lecturers have been trained on how to use the virtual meeting platform used					
Lecturers offer classes through virtual meeting platforms					
I fully participate in the virtual meeting platforms					
I manage discussions with comrades through virtual meeting platforms					
Knowledge sharing through online virtual meeting platforms is great					

**SECTION C: Service Delivery in Education**

Indicate your level of agreement with each of the following statements regarding service delivery in education. Using a scale of 1 - 5, tick the appropriate answer from the alternatives provided. (1) Very Large Extent (2) Large Extent (3) Moderate (4) Small Extent (5) Not at all

<b>Service Delivery</b>	1	2	3	4	5
<b>Responsiveness</b>					
Through digital transformation services are provided promptly in my university					

The university employees are happy and willing to serve students and lecturers					
The institution's digital transformation enhances responses on issues raised in which they are handed instantly.					
<b>Assurance</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
The support staff have the required skills to resolve problems and answer questions					
Through digital transformation there is assurance and confidence in the university					
The employee are consistently courteous to the students and lecturers					
<b>Flexibility</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
The university's staffs are not overburdened with work that prevents them from responding to user requests.					
The digital transformation has ensured flexibility among students and lecturers					
The learning hours are convenient to all students and					

lecturers due to online classes					
<b>Reliability</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
There is sufficient capability at the institution to provide excellent student services.					
My university strives to live up to its vision statement					
The university delivers network services in a timely manner					