



**UNIVERSITY OF NAIROBI**  
**DEPARTMENT OF COMPUTING AND INFORMATICS**

**FACTORS INFLUENCING EDUCATION DURING THE COVID-19 PANDEMIC: A  
CASE OF PRIMARY SCHOOLS IN KAJIADO COUNTY**

**BY**  
**IMMACULATE WANGECI MACHARIA**

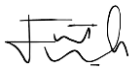
**THIS RESEARCH PROJECT IS SUBMITTED IN PARTIAL FULFILMENT OF THE  
REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN  
INFORMATION TECHNOLOGY MANAGEMENT (MSC. ITM)**

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## DECLARATION

### Student Declaration

I Immaculate Wangeci Macharia, of registration number P54/35058/2019 declare that this MSc. Project entitled Factors influencing education during the COVID-19 pandemic: A case of primary schools in Kajiado County to the best of my knowledge and belief, it is my original work and has not been submitted for examination in any other university for an award of any other degree.


Signature:  Date: 24/8/2021

Name: Immaculate Wangeci

P54/35058/2019

### Supervisor's Declaration

This research has been submitted for review with my approval as a university supervisor.

Signature:  Date: 24/8/2021

Name: Prof. Elisha Toyne Opiyo

University of Nairobi

Department of Computing and Informatics

## **ACKNOWLEDGEMENT**

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## **ABSTRACT**

The World Health Organization declared COVID-19 a public emergency threatening global health due to its infectious nature causing millions of deaths around the world. On March 13, 2020, Kenya reported the first case of COVID-19 which prompted the Government of Kenya to temporarily close down public places as a measure of curbing the spread of this virus. Social distancing was recommended as one of the measures to stop the transmission of the virus. The Ministry of Education encouraged the use of remote learning to ensure continuity of education. However, implementation of remote learning was faced with numerous obstacles. It is therefore important to understand the adoption components and the challenges that face the implementation of distance learning. This research explored critical factors influencing education during the COVID-19 pandemic in Kenya. Descriptive survey research design was used to carry out the research. The target population was primary schools in Kajiado County. The study consisted of both teachers and students. Questionnaires were used to collect data and descriptive analysis was used. From the analysis, ICT infrastructure, digital skills and financial challenges had a significant influence on education in Primary Schools in Kenya and had a negative impact on the students who lacked them.

Keywords: Education, COVID-19

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## **List of Acronyms and Abbreviations**

MoE- Ministry of Education

KICD- Kenya Institute of Curriculum Development

ICT -Information Communication Technologies

TV- Television

UTAUT - Unified Theory of Acceptance and Use of Technology

ITU- International Telecommunication Union

TVET - Technical and Vocational Education and Training

COVID-19 - Coronavirus disease 2019

Wi-Fi- Wireless Fidelity

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background

Education is a key factor in national cohesion, social mobility, and economic growth. The Government of Kenya has made numerous efforts to ensure and promote developments in education at every level. Education and training in Kenya is offered under four main levels: pre-primary, basic education, TVET and University. In addition, Kenya's 2010 Constitution guarantees all Kenyan children the right to education. According to Article 53(1), every child has the right to a free and compulsory basic education. Unfortunately, the outbreak of COVID-19 interrupted learning for more than 1.5 billion learners globally and over 18 million learners in Kenya which threatens the achievement of Sustainable Development Goal No. 4 on access to quality, equitable and inclusive education (MoE, 2020). The disruption of face-to-face learning brought a shift to distance learning as the best alternative to ensure children continued receiving their education country wide.

During this pandemic, digital technologies have become essential instruments for obtaining critical healthcare information, guidance, work, education and news (ITU, 2020). This has underlined the role ICT has played in dissemination of important information to the masses. The internet has played a pivotal role in the many problems facing governments by transferring information and guidance to their population (van Deursen, 2020). Various sectors of the economy had to quickly think of ways of incorporating ICT in their businesses to ensure their survival. In addition, ICT has been used by people to keep in touch with their loved ones. Distance learning was highly adopted and accepted by many schools in Kenya as a way to ensure continuity of education. Churches and mosques have had to use the internet to reach their congregants. Businesses on the other hand have resorted to selling their goods and services online.

The Communications Authority of Kenya designated the EDU TV channel of the Kenya Institute of Curriculum Development as a mandatory must-carry channel on all approved broadcasting signal distributors and pay TV platforms alongside national public broadcaster KBC. This was intended to encourage students to continue learning in accordance with the government directive

to close all schools. Moreover the Authority obtained the required authorization for licensed radio and TV stations to re-transmit the educational content of KICD during the watershed period. The Authority also encouraged broadcasters from other related outlets to air educational material. Although this was a good initiative from the government, the students who have no access to radio and television were disadvantaged. In addition, Kishara & Ngunyi, (2020) argued it lacks frameworks for assessing learning and provides no way to monitor learners' progress.

In Kenya, the learning experiences during COVID-19 of students in private and public schools reveal the fundamental pedagogies and differences in learning approaches. The former have a learner-centered education that is dependent on technology and international competition, while the latter have a teacher-centered education that is resistant to or unable to use technology (Kishara & Ngunyi, 2020).

Technology is being used in order to improve the education system at all levels, meaning that its effective use can promote and enhance teaching and learning (Solano et al., 2017). E-learning systems are being used to help manage, deliver and track learning and teaching activities during this school closure period (Almaiah et al., 2020). However, there exists hindrances to digital inclusion which Schmida et al. (2017), found the lack of infrastructure, low income, user capabilities, digital literacy, incentives for access, relevant content, and social acceptance are all hurdles to internet access. According to Soomro et al., (2020), digital divide refers to the difference between individuals who have access to ICT and others who have limited or no access to ICT. Digital Inclusion on the other hand, addresses issues relating to opportunity, access, knowledge, and skills at the level of digitization policy (Hamburg & Lütgen, 2019). The end goal is to have inclusive education, which entails students having access to common pre-school facilities, schools, and community educational settings, as well as an adequate network of support services (Hamburg & Lütgen, 2019).

Understanding the adoption aspects as well as the primary hurdles that existing e-learning systems encounter is critical to their successful use (Almaiah et al., 2020). Therefore this research aims at exploring the critical factors influencing education during the COVID-19 pandemic in Kenya which was conducted remotely.

## **1.2 Problem Statement**

While learning facilities remained closed, the ministry, through the Kenya Institute of Curriculum Development, created online content that learners could access through various channels of technology such as radio, television, and the internet. However, in some remote areas, students' access to e-learning was restricted due to a shortage of broadband internet and the high cost of Wi-Fi (Battle, 2020). With the adoption of remote teaching to support distance learning and online education vulnerable and marginalized households may not have access to these mediums (MoE, 2020). Almaiah et al., (2020) indicated that it is still unclear on the essential issues and elements that shape successful e-learning system use during the COVID-19 pandemic therefore a knowledge gap has been found in the major factors and challenges affecting e-learning usage during this pandemic.

## **1.3 Objectives**

### **1.3.1 General Objective**

To assess the factors influencing education during the COVID-19 pandemic.

### **1.3.2 Specific Objective**

1. To establish the influence of ICT Infrastructure on education in primary schools
2. To establish the influence of financial challenges on education in primary schools
3. To establish the influence of digital skills on education in primary schools
4. To establish the influence of technical support on education in primary schools

## **1.4 Research Questions**

1. What was the influence of ICT Infrastructure in education during the COVID-19 pandemic?
2. What was the impact of financial challenges on education during the COVID-19 pandemic?
3. What was the influence of digital skills on education during the COVID-19 pandemic?
4. What was the influence of technical support on education during the COVID-19 pandemic?

## **1.5 Hypotheses**

H<sub>1</sub>: During the COVID-19 Pandemic, ICT infrastructure had an impact on education

H<sub>2</sub>: During the COVID-19 Pandemic, digital skills had an impact on education

H<sub>3</sub>: During the COVID-19 Pandemic, financial constraints had an impact on education

H<sub>4</sub>: During the COVID-19 Pandemic, technical support had an impact on education.

## **1.6 Significance of the study**

The findings of the study will be useful to scholars, academicians and the Ministry of Education.

### **1.6.1 Ministry of Education**

The findings of the study may be used as a useful tool for decision making and will provide key information for education stakeholders on the factors influencing education during the COVID-19 pandemic and highlight the challenges faced,

### **1.6.2 Scholar and Academicians**

Researchers and future academics will benefit from the study because it will serve as a source of reference as well as offer areas for further research that future scholars can pursue.

## **1.7 Delimitation of the study**

Political goodwill is significant because it influences meaningful information policies, regulatory for the education sector. However, due to the complicated and sensitive political environment in Kenya, this study will be limited to the government's direct role in infrastructure policy and technological development.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter reviews literature on technology, summarizes the factors affecting education, reviews literature on education during COVID-19 and the conceptual framework is developed.

#### **2.2 Technology Overview**

Technology has become a necessity in today's society and it is quite unfortunate not all students have equal access to it. Despite technological advancements, studies claim that the digital gap still exists (Centeio, 2017). An estimated 3.6 billion individuals are still unconnected, with the majority living in Least Developed Countries, where only two out of every ten people are online (ITU, 2019). In least developed countries, around 15% of families have access to the internet at home. Many internet users in these counties access the internet from places like work, schools, and universities (ITU, 2017).

The Kenya Digital Economy Blueprint report 2019 observed, people from all sectors of the economy and at all levels of the skills spectrum must be provided with the essential digital capabilities in order to benefit from any technology. The report mentioned when people have the knowledge and skills to use technology, then that is when it has a positive impact. Therefore it is necessary for the Government of Kenya to improve the skills of its people through various initiatives such as digital literacy in the primary schools.

The Kenya Digital Economy Strategy report 2020, emphasizes the importance of the government and industry stakeholders to collaborate so as to support the extension and modernization of digital and physical infrastructure, which will boost investment and innovation and promote the Kenya's digital economy's growth.

Low cost, ease of use, ubiquity and interactive nature are some of the advantages of using e-learning systems which act as critical source of information. Despite the purpose of adopting an e-learning system is to reach out to all sectors of society, only the rich gain from such a system due to current national policy, infrastructure, and socioeconomic conditions. (Akbar, 2005). According to Mulenga & Marbán (2020), students can learn online if they have the requisite digital devices, internet connectivity, inexpensive internet charges and adequate supply of electricity.

## **2.4 Factors affecting Remote Education**

### **2.4.1 Digital Skills**

It is vital for teachers to be able to use and incorporate ICT into their classrooms (Sipila, 2010). Having access to ICTs is not sufficient but also being able to interpret and understand the information once they have access to these ICTs is equally crucial. Antonio & Tuffley (2014), affirmed that the availability of ICT does not guarantee that people will have the necessary skills to profit from them. According to ITU (2018), the rate of ICT literacy among primary school students is lower than expected. Therefore, there is a need for people to be equipped with the necessary ICT skills to be able to survive and thrive in the digital world.

### **2.4.2 ICT Infrastructure**

National infrastructure networks such as highways, broadband networks, satellites, the National Addressing System, and energy supply are recognized as important facilitators of the digital economy in Kenya's Digital Economy Strategy Report 2020. The expense of procuring, managing and maintaining ICT infrastructure has been cited as a major hurdle in institutions of learning's deployment and adoption of e-Learning (Aung & Khaing, 2015). Lack of access to network connections, electricity, devices, software and applications are some of the challenges associated with infrastructure. It is important for the government and other stakeholders to invest in innovative technologies and national broadband (Schmida et al., 2017).

### **2.4.3 Financial Challenges**

Children from poor households are more likely to live in underserved neighborhoods, attend under-resourced schools. Furthermore, these children and their families are more likely to have limited access to the internet and related technologies (Katz et al., 2017). The average people access the internet via their mobile phones and it would be on a prepaid option since the post-paid plans are quite costly furthermore, the wired networks and the fixed lines are either unavailable or too expensive (Henry, 2019). The rich have an edge because they are able to discover new sources of information first because they can afford access to them while they are new (Antonio & Tuffley, 2014).

#### **2.4.4 Technical Support**

Technical support is crucial to addressing not only hardware and software issues, but also in assisting users who are trapped in a system or program (Nawaz & Khan, 2012). Osika, (2004) indicated that the support of the entire institution is required for successful technology programs.

#### **2.4 Education during the COVID-19 pandemic in Kenya**

The majority of public school pupils received their courses via KICD-facilitated television and radio broadcasts, while private schools encouraged students to use online platforms (Barasa, 2021). However, COVID-19 pandemic has had a negative implication on Kenya's economy with direct and indirect repercussion on the poor, vulnerable and the marginalized households who rely on informal employment. Their capability to finance expenses like school supplies and learning materials has been harmed. Because the Ministry of Education adopted remote teaching to support distance learning and online education delivered through radio, television, and the internet, learners from low income, vulnerable, and marginalized households may not have access to these mediums of learning, further widening the access and quality education gap. Furthermore, parental engagement with learners seeking home-based learning proved to be difficult owing to low levels of ICT expertise and device accessibility, as well as other competing priorities at the household level (MoE, 2020).

Hakijamii (2020), indicated that most teachers and education stakeholders have little knowledge of how to disseminate information online, lacked detailed costs of teaching and preparation for online classes and remote assessment proved challenging. Thereby, resulting in a lag in the implementation of online learning.

MoE proposed the following policy suggestions for adoption that have yet to be enacted in order to address education's digital challenges for marginalized and vulnerable learners:

1. ICTs are being used to help the most underprivileged and marginalized students gain access to high-quality education.
2. Funding supports the development of adequate ICT infrastructure to address equality, access, and quality issues in education for disadvantaged and marginalized students.
3. Use of ICTs to promote alternate modes of delivery (satellite, computers, radio, television and mobile phones) to reach the vulnerable and marginalized learners.



4. Negotiate low pricing with providers for educational institutions to make ICT infrastructure more affordable.

Despite the efforts made by the MoE and other stakeholders to ensure learning continuity, there were challenges encountered that affected the efforts made to mitigate the effect of COVID-19 in the education sector.

## **2.5 Theoretical framework**

### **2.5.1 Technology Acceptance Model**

Technology acceptance model helps in understanding how users respond to adopting new technology and what causes people to accept or reject information technology. The model argues that individuals create attitudes and intentions toward attempting to use a new technology before beginning efforts to use the system. The model has two components that influence an individual's desire to adopt new technology which are perceived ease of use and perceived usefulness. The first variable, perceived usefulness explains that individuals prefer to use or not use an application to the degree that they think it will help them do their work better. The second variable which is perceived ease of use degree refers to the extent to which a person believes that using a particular system would be with no effort. These two variables will create a specific attitude towards using a system that is positive or negative. When an individual thinks that the system will be easy to use and will be useful then they will form a positive attitude and are likely to use the system (Davis, 1989).

### **2.5.2 UTAUT MODEL**

Venkatesh et al., (2003) suggested the Unified Theory of Acceptance and Use of Technology (UTAUT) model that explains the users' technology acceptance and usage intention. UTAUT comprises of four major determining factors which are; performance expectancy, social influence, effort expectancy and facilitating conditions. Facilitating conditions are defined as the factors in the environment that make an act easy to accomplish. The facilitating conditions are identified as the direct determinant of adopting the behavior. Performance expectancy refers to the degree of believing that the person using the system will perform better. Effort expectancy refers to the degree of convenience regarding the use of the system. Social influence refers the degree to which

someone considered to be important to the individual believes he or she should use the new system. In addition, UTAUT has 4 intermediate variables that predict the association between primary characteristics and behavioral intention and use behavior: gender, age, experience, and voluntariness of use. This model is best fit for this research since it shows the facilitating conditions have a direct impact on the use of technology and therefore the facilitating conditions in this research are the independent variables (ICT infrastructure, digital skills, financial challenges and technical support) that influenced education which was being conducted remotely at the onset of the COVID-19 pandemic.

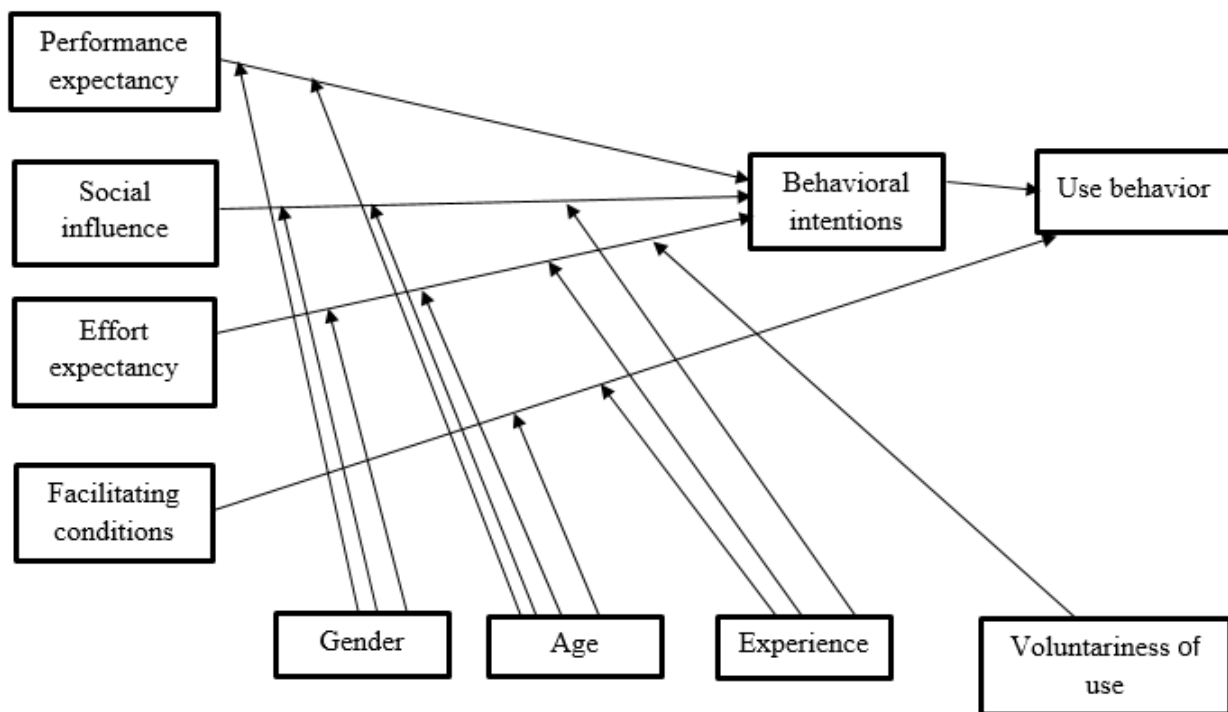


Figure 1: UTAUT MODEL

## 2.7 Conceptual Framework

This research conceptualized factors influencing education during COVID-19 pandemic. The independent variables are ICT infrastructure, digital skills, financial challenges and technical support. The dependent variable being the education during COVID-19 pandemic

### INDEPENDENT VARIABLES

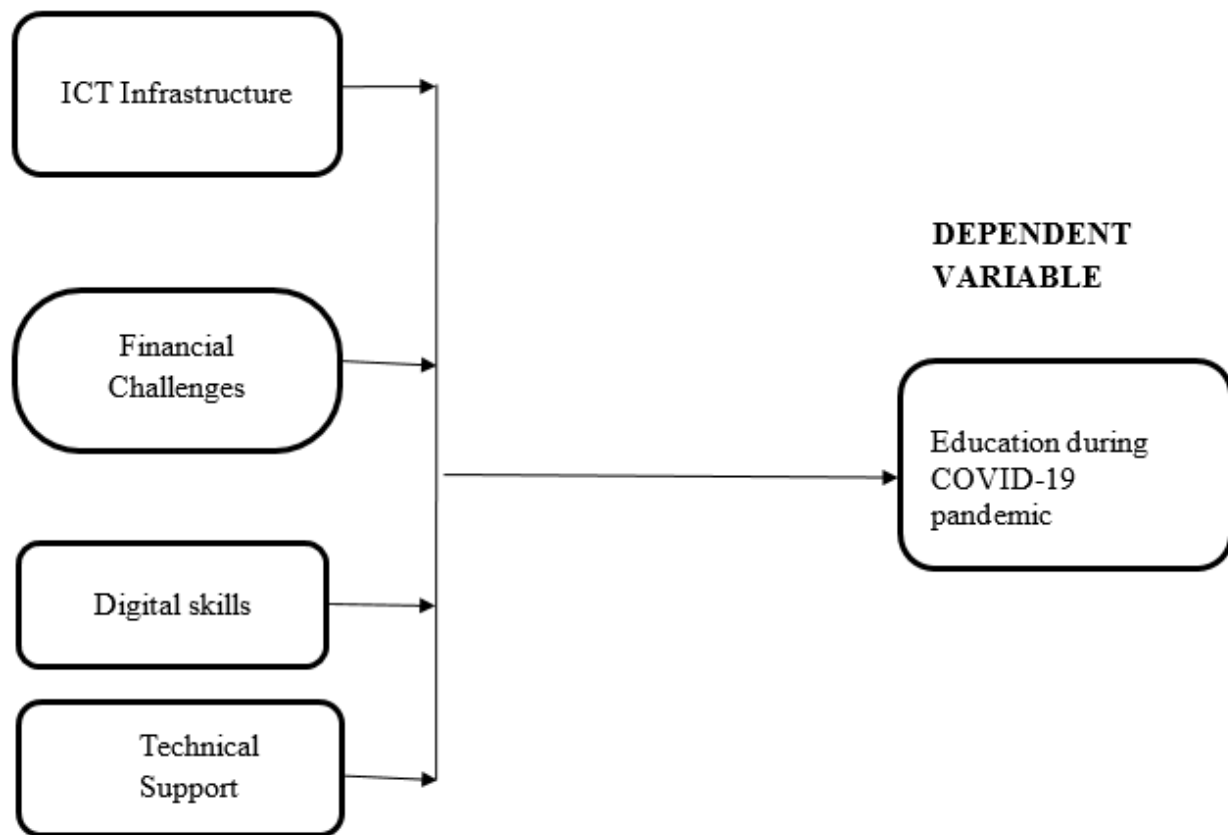


Figure 2 : The conceptual framework

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter contains the approach that will be applied to conduct the research. It includes the research philosophy, research design, the target population, data collection, data analysis methods and how the project will be managed.

#### **3.2 Research Philosophy**

The philosophical paradigm basis for this research was positivism. According to Oates (2005), positivism is characterized by measurement and modelling which involves making observations, measurements and producing models. It was also based on objectivity which is impartial observation, hypothesis testing and quantitative data analysis. This research was able to test the various hypotheses on the different factors influencing education during the COVID-19 pandemic and do a quantitative data analysis.

#### **3.3 Research design**

This research was based on a descriptive survey research design. The main purpose of descriptive research is description of the state of affairs as it exists at present (Kothari, 2004). Descriptive research answers what, where, how and when questions, but not why questions. Survey was used for this research to analyze the different factors influencing education during the COVID-19 pandemic.

#### **3.4 Target population**

According to Kothari (2004), population refers to all elements under consideration in any subject of study. The target population was primary schools in Kajiado County. The study consisted of both teachers and students.

#### **3.5 Sample size and sample selection**

According to Kothari (2004), an ideal sample size is one that is neither excessively large nor too small. In addition, the sample size should be sufficient to produce a confidence interval with the

specified width. The total number of primary schools in Kajiado County is five hundred and twenty three (523). This study determined the sample size using the Cochran's Formula.

$$n_0 = \frac{z^2 pq}{x^2}$$

Where:

n = sample size;

Z = the table value for the level of confidence, for 95% level of confidence = 1.96;

e = margin of error = 0.05;

p = proportion to be estimated = 0.5

$$((1.96)^2 (0.5) (0.5)) / (0.05)^2 = 385.$$

For 523 primary schools,

$$n = \frac{n_0}{1 + \left(\frac{n_0 - 1}{N}\right)}$$

Where:  $n_0 = 385$ , and  $N = 523$

Therefore, the sample size will be composed of 230 schools.

Purposive sampling was used to select students and teachers from primary schools in Kajiado County. Purposive sampling is the process of selecting specific units of the universe to make up a sample on the assumption that a little mass chosen from a large one will be representative of the entire universe (Kothari, 2004). This design is chosen because of the time and money savings that this sampling method provides.

### 3.5 Data collection

The data collection instruments for this study were questionnaires. A questionnaire, according to Kothari (2004), consists of a set of questions typed in a specific order and the respondents must answer the questions on their own. The questionnaires for this study consisted of open and closed ended questions for the respondents to record their answers. The advantage of using questionnaires is that they are not expensive even when the population is big and geographically dispersed. In addition, huge samples can be used in questionnaires resulting in more dependable and reliable results (Kothari, 2004).

### 3.6 Data analysis

Data analysis entails a number of interconnected tasks, including the establishment of categories, their application to raw data via coding, tabulation, and statistical inferences (Kothari, 2004). Data from the questionnaire was coded and logged in the computer using Simple Statistics on SPSS. This entailed coding both open-ended and closed-ended questions in order to perform simple descriptive analyses and generate data status reports. Absolute and relative (percentage) frequencies were used in descriptive statistics. Frequency tables were used to present the data for easy comparison. Regression analysis was used to show the relationship between the independent variables and dependent variable.

### 3.8 Operationalization

Operationalization is the process that involves linking concepts to variables and shows how the concepts were measured.

Table 1: Operationalization of Variables

<b>Variable</b>	<b>Indicator</b>	<b>Measure</b>
<b>Independent Variable</b>		
ICT infrastructure	Ownership/ Possession/ Access	Yes/ No Strongly agree -5/ Agree-4/ Neutral-3/ Disagree-2/ Strongly disagree-1
Digital skills	Training received/ Self-rating	Expert -4/ Knowledgeable -3/ Limited knowledge -2/ No knowledge -1

Financial challenges	Cost/ Affordability	Strongly agree -5/ Agree -4/ Neutral -3/ Disagree -2/ Strongly disagree-1
Technical support	Presence	Strongly agree -5/ Agree -4/ Neutral -3/ Disagree -2/ Strongly disagree -1
<b>Dependent Variable</b>		
Education during COVID-19 Pandemic	Continuity/ Influence of independent variables	Strongly significant - 4/Significant - 3/Somehow significant - 2/ Insignificant -1

### 3.9 Ethical consideration

To ensure that the research was done in an ethical manner. The respondents had a right that the data obtained from them is kept confidential. In addition, the right to give informed consent was adhered to; the participants were made fully aware of the nature of the research and their involvement in the research.

## CHAPTER 4 DATA ANALYSIS

### 4.1 Introduction

This study was interested in determining the factors that influenced digital education during the pandemic period, frequency analysis was performed from the collected data from a sample of 230 respondents. The analysis is performed in SPSS version 25, and the results are interpreted. There are no missing values; hence, all the responses are captured for analysis.

### 4.2 Data Analysis

#### 4.2.1 School Representation

Under this question, the respondent was interested in identifying the demography of the students in the study by identifying their schools. The categories represented were public and private schools.

Table 2: Type of school

		Frequency	Percent
Valid	Private school	121	52.6%
	Public school	109	47.4%
	Total	230	100.0

The students from private schools were more than those from the public schools, representing 52.6%, while the latter represented 47.4%.

#### 4.2.2 ICT Infrastructure

Since the study is interested in assessing the influence of digital education in schools during the COVID-19 pandemic, it was essential to understand whether the students and teachers from the different schools own the gadgets necessary for digital learning.



Table 3: Personal ownership of devices

		Frequency	Percent	Valid Percent
Valid	No	120	52.2	52.2%
	Yes	110	47.8	47.8%
	Total	230	100.0	100.0

The table representation indicates that most students in public and private schools do not have the devices. These devices enabled them to undertake digital lessons from their homes.

Table 4: Family ownership of devices

		Frequency	Percent	Valid Percent
Valid	No	60	26.1	26.1%
	Yes	170	73.9	73.9%
	Total	230	100.0	100.0

Most digital education services are through the internet, either live learning or reading of educational materials posted by the respective teachers of the school. Subscription to internet services is key as it would enable the students to have easier access to the educational resources presented by the school. Table 3 gives a clear illustration of the same.

Table 5: Internet services subscription

		Frequency	Percent	Valid Percent
Valid	No	82	35.6	35.6%
	Yes	148	64.4	64.4%
	Total	230	100.0	100.0

64.4% of the respondents have subscribed to the internet services, while 35.6% have not subscribed to the internet services, according to the results obtained from the respondents.

### Cross tabulation on internet subscription and type of school

Cross-sectional analysis is performed to determine the type of school the students are represented with anyone in the family having subscribed to the internet services.

Table 6: Cross tabulation on internet subscription and type of school

Count		Anyone in your family who has subscribed to internet services		Total
		No	Yes	
Type of school	Private school	16	101	117
	Public school	66	47	113
Total		82	148	230

43.9% of the respondent's families have an internet subscription in private schools, unlike only 20.4% in public schools. The financial challenges crippled digital education for the students from the public schools during the pandemic period.

#### 4.2.3 Financial Challenge

On the affordability of digital devices and digital devices, most of the respondents could not afford the online learning from the general statistics, with those disagreeing being 56.1%.

Table 7: Affordability of digital devices and internet

		Frequency	Percent	Cumulative Percent
Valid	Disagree	88	38.3	
	Agree	63	27.4	65.7
	Neutral	13	5.6	71.3

	Strongly disagree	41	17.8	89.1
	Strongly agree	25	10.9	100.0
	Total	230	100.0	

Moreover, it is noted that the cost of learning through digital platforms was very high compared to times when the pandemic was not there. The respondents were able to identify that the cost of digital learning was high.

Table 8 : Costs being significant/insignificant while studying through the digital means during the pandemic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	significant	120	52.1	52.1	52.1
	somehow significant	19	8.2	8.2	60.3
	strongly significant	91	39.7	39.7	100.0
	Total	230	100.0	100.0	

The costs for digital learning were high during the pandemic hence posing a great challenge. Therefore, it is evident that the financial difficulties were more during the pandemic for digital learning.

#### 4.2.4 Technical Support

##### **The influence of technical support on distance/online education during the pandemic**

The table below shows that 56.5% of the respondents found technical support to be insignificant while 34.8% of the respondents found technical support to be significant.

Table 9: Importance of technical support during remote learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Significant	80	34.8	34.8	34.8
	Somehow significant	20	8.7	8.7	43.5
	Insignificant	130	56.5	56.5	100.0
	Total	230	100.0	100.0	

#### 4.2.5 Digital Skills

##### **Influence of digital skills on education during the pandemic in primary schools**

The respondents indicated, 65.2% had limited to no knowledge in terms of rating their digital skills.

Table 10: Digital skills rating

		Frequency	Percent	Cumulative Percent
Valid	Knowledgeable	80	34.8	34.8
	Limited Knowledge	120	52.2	87
	No Knowledge	30	13	100
	Total	230	100.0	

#### 4.2.6 Education during the COVID-19 Pandemic

54.8% of the respondents disagreed that digital learning ensured continuity in education, while 43.9% agreed that it ensured the education program continued during the pandemic period.

Table 11: Continuity of education during the pandemic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	66	28.8	28.8	28.8
	Disagree	98	42.5	42.5	71.2
	Neutral	3	1.4	1.4	72.6
	Strongly agree	35	15.1	15.1	87.7
	Strongly Disagree	28	12.3	12.3	100.0
	Total	230	100.0	100.0	

#### 4.2.7 Regression Analysis

The regression model is used in determining whether the independent variables have an influence on the digital education that was initiated in most schools during the pandemic period. In this case, the independent variables are technical support, digital skills, financial challenges and ICT infrastructure among the primary school students. The level of significance for the study is 0.05.

The regression results are as obtained in the table below:

**Table 12: Regression model**

Table 12: Regression model

<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.858 <sup>a</sup>	.736	.717	.681
a. Predictors: (Constant), Technical support, ICT Infrastructure, Financial challenges, Digital skills				

The model summary from table indicates:

R is 0.858 which indicates that technical support, ICT infrastructure, financial challenges and digital skills have a strong relationship with education during the COVID-19 pandemic.  $R^2$  is

0.736 which indicates that 73.6% of change in education during the COVID-19 pandemic are influenced by ICT infrastructure, technical support, financial challenges and digital skills.

The preceding table is a *coefficients table* which shows the association of the independent variables to the dependent variable.

Table 13: Coefficients table

<b>Coefficients<sup>a</sup></b>						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.471	255		-2.631	.011
	ICT Infrastructure	.475	300	.041	.583	.030
	Financial challenges	.393	306	-.356	-5.022	.000
	Digital skills	.252	590	.705	9.560	.001
	Technical support	-.367	470	.056	.781	.438
a. Dependent Variable: Education during COVID-19 Pandemic						

ICT Infrastructure has a significant influence on education during the pandemic in primary schools since the p-value (0.030) is less than the level of significance which in this case is 0.05. Digital skills have a significant effect on remote education during the pandemic since the p-value (0.001) is less than the level of significance (0.05). Financial challenges have a significant effect on remote education during the pandemic since the p-value (0.000) is less than the level of significance (0.05). Due to this factor, financial challenges are significant in the influence on digital learning during the pandemic period. Finally, technical support does not have a significant effect on education during the pandemic. The main reason being the p-value (0.438) is greater than the level of significance (0.05), hence the null hypothesis is not rejected.

Table 14 : Hypothesis Testing

<b>Hypothesis</b>	<b>P-value</b>	<b>Conclusion</b>
H <sub>1</sub> : During the COVID-19 epidemic, ICT infrastructure has a significant impact on primary school education	.030 < 0.05	The null hypothesis is rejected in favor of the alternative hypothesis(H <sub>1</sub> )
H <sub>2</sub> : During the COVID-19 epidemic, financial constraints had a significant impact on primary school education	.000 < 0.05	The null hypothesis is rejected in favor of the alternative hypothesis(H <sub>2</sub> )
H <sub>3</sub> : During the COVID-19 pandemic, digital skills had a significant impact on education in primary schools	.001 < 0.05	The null hypothesis is rejected in favor of the alternative hypothesis(H <sub>3</sub> )
H <sub>4</sub> : Technical support does not have a significant effect on education in primary schools during the COVID-19 pandemic	.438 > 0.05	The null hypothesis is not rejected

#### 4.2.8 Proposed Framework

##### INDEPENDENT VARIABLES

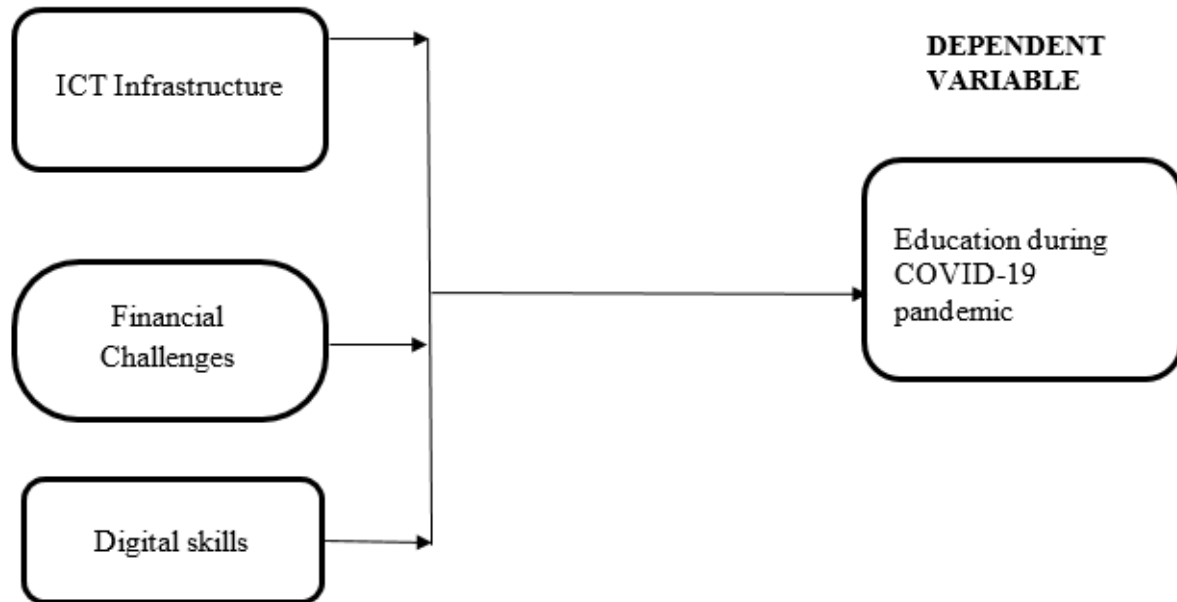


Figure 3 : Proposed Framework



## CHAPTER 5

### CONCLUSION AND RECOMMENDATION

#### 5.1 Summary of the Findings

The research findings might be summarized based on each of the study's objectives.

**Objective 1: To establish the influence of ICT Infrastructure on education in primary schools**

ICT Infrastructure has a strong impact on distance education in primary schools. This is due to the fact that some students lacked access to the hardware, software and network aspect that was pivotal in the implementation of remote learning. From this research it is noted that some people had access to ICTs, a good number did not therefore this negatively had an impact on the success of the digital learning execution to all students.

**Objective 2: To establish the influence of digital skills on education in primary**

Digital skills have a significant influence on remote education and it is attributed to the fact that the ability to use the ICTs effectively was vital. From the study, it is found that the respondents agreed that if they had the digital literacy then the transition to remote learning would have been smoother. Lack of digital skills affected negatively the education which was conducted remotely during the onset of the pandemic. Digital skills, according to the Kenya Digital Economy Strategy report 2020, would enable every Kenyan to have access to digital technology, have the literacy and know-how to use it, and be able to participate in and create with it. If technologies and all other complementary factors were in place, but people did not have the skills to use such technologies, there would be no impact. Therefore more efforts need to go into ensuring that students and teachers are equipped with adequate ICT Skills which will come in handy in such scenarios.

**Objective 3: To establish the influence of financial challenges on education in primary schools**

Financial challenges have a huge effect on digital education driven by the tough economic times that this pandemic brought. People lost their source of livelihood due to job losses or businesses being shut down which meant it had a negative impact on the ability to finance remote learning for their children. From the analysis it was found the cost that came with distance learning was high therefore making it hard to sustain education during the pandemic.

**Objective 4: To establish the influence of technical support on education in primary schools**

Technical support did not have a significant effect on remote education. Technical support is necessary when the user is not able to use the ICT devices due to its malfunction or breakdown. In as much as technical support is important from the analysis it was found its influence on the education during the pandemic was not significant.

## **5.2 Conclusion**

In conclusion, despite the education program that was carried out online and remotely being essential during the pandemic period, most students in the different families faced challenges. These challenges were mostly witnessed due to the unpreparedness among them and even the school. It is also seen that the respondents did not have sufficient digital skills for the program. Further, some of the families did not have access to the ICT for remote learning. The training for the transition to distance learning was needed as an essential process during the pandemic period. However, in as much as continuity of education using distance learning was critical; from the research findings, financial issues, lack of adequate digital skills and ICT infrastructure negatively affected its successful implementation.

## **5.3 Recommendation on other areas of study**

There is a need for more research on the challenges encountered during the implementation of distance learning during the COVID-19 pandemic in other counties in Kenya and even other countries, identify lessons learnt and what Kenya could draw from other countries so that we are better prepared in case of any other huge education disruption.

## **5.4 Limitations**

The study focused on Kajiado County and the results of this county may not reflect the reality of other counties in Kenya. The study was also restricted to the variables, and could be adjusted to produce different outcomes.

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## Appendix:

### Questionnaire

#### **THE FACTORS INFLUENCING EDUCATION DURING THE COVID-19 PANDEMIC: A CASE OF PRIMARY SCHOOLS IN KAJIADO COUNTY**

My name is Immaculate Wangeci, a student at The University of Nairobi pursuing Master of Science in Information Technology Management. I humbly request if you could participate in this questionnaire. The research topic is on THE FACTORS INFLUENCING EDUCATION DURING THE COVID-19 PANDEMIC: A CASE OF PRIMARY SCHOOLS IN KAJIADO COUNTY. Information derived from this questionnaire is only for research purposes. Instructions: Please indicate your response by [✓] or [X]

#### Section A- Introduction

##### 1. Profession

Student [ ]

Teacher [ ]

##### 2. Type of school

Private school [ ]

Public school [ ]

#### Section B- ICT Infrastructure

##### 3. I own a desktop, laptop, tablet, phone, radio or tv

Yes [ ]

No [ ]

##### 4. Anyone in your family i.e parent who owns any of the electronic devices listed above

Yes [ ]

No [ ]

##### 5. Anyone in your family who has subscribed to internet services

Yes [ ]

No [ ]

##### 6. Through which medium were studies being done in your school during the closure of school due to COVID-19 Pandemic?

Whatsapp [ ]

Google meet [ ]

Microsoft Teams [ ]

Radio [ ]

TV [ ]

Zoom [ ]

Other [ ]

7. If other, please indicate the medium used .....

8. Do you agree/disagree that good network coverage i.e for radio/tv/internet was important to lean online during the pandemic?

Strongly agree [ ]

Agree [ ]

Neutral [ ]

Disagree [ ]

Strongly disagree [ ]

Section C- Digital Skill

9. To what extent do you rate your digital skills i.e ability to use digital devices, communication applications?

Expert [ ]

Knowledgeable [ ]

Limited knowledge [ ]

No knowledge [ ]

10. To what extent do you agree/disagree that if you were equipped with digital skills then the transition to online learning would have been easier?

Strongly agree [ ]

Agree [ ]

Neutral [ ]

Disagree [ ]

Strongly disagree [ ]

Section D- Technical Support

11. To what extent do you agree/disagree that technical support was important to you during classes?

Strongly significant [ ]

Significant [ ]

Somehow significant [ ]

Insignificant [ ]

12. Did you receive training/support on how to use the various digital platforms i.e google meet, whatsapp, Microsoft Teams, TV, and Radio

Strongly agree [ ]

Agree [ ]

Neutral [ ]

Disagree [ ]

Strongly disagree [ ]

Section E- Financial Challenges

13. Was access to digital devices and internet for online/remote learning been affordable to you during the pandemic?

Strongly agree [ ]

Agree [ ]

Neutral [ ]

Disagree [ ]

Strongly disagree [ ]

14. Were the costs more significant/insignificant while studying through the digital means during the pandemic?

Strongly significant [ ]

Significant [ ]

Somehow significant [ ]

Insignificant [ ]

Section F- Education during the pandemic

15. To what extent do you think digital education ensured continuity of education during the pandemic?

Strongly significant [ ]

Significant [ ]

Somehow significant [ ]

Insignificant [ ]



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