# EVALUATING THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ON PROMOTING SUSTAINABLE DEVELOPMENT IN KAJIADO EAST, KAJIADO COUNTY, KENYA

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## DECLARATION

This project is my original work and has not been presented for a degree in any other University'.

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This research project has been submitted for the examination with my approval as the appointed University supervisor

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## DEDICATION

I sincerely dedicate this work to my mother, Mary Atieno, whose love, sacrifices, and steadfast support have been my beacon of hope during this journey. I want to express my sincere gratitude to my brothers and my beloved sister, Atieno, whose support and unwavering faith in me have enabled me to keep going. Sincere gratitude is extended to Mbithe Kasanga, whose love, encouragement, and moral support have served as a continual source of inspiration. I can honestly say that having you in my life has changed things. Without the collective support, love, and prayers of each one of you, the successful completion of this assignment would not have been possible.

May the blessings and peace of Allah be upon you all.

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## ABSTRACT

This study investigated the contribution of ICT (information and communication technology) to Kajiado County's sustainable development, with a particular emphasis on Kajiado East Constituency. The overall goal was to determine how ICT supports sustainable development. The specific goals were to determine how internet connectivity coverage affects rural youth's digital literacy, how mobile money usage affects small-scale business transactions, and how digital platforms are used to access agricultural extension services. In order to guarantee representation across various occupations, 74 respondents were selected from the target group, which consisted of Kajiado East inhabitants, using stratified random selection. Questionnaires and interview schedules were used to gather data, and test-retest reliability and content validity were confirmed through piloting. Descriptive statistics like frequencies and percentages were employed to present the outcomes of the analysis of both qualitative and quantitative data. The results showed that 95% of people owned a cell phone, which is almost universal., but only 58% of respondents reported reliable internet connectivity, with cost and coverage being major barriers. Digital literacy levels among rural youth were moderate, with 52% demonstrating basic ICT knowledge while significant skills gaps limited effective utilization. Mobile money services were widely adopted, with 87% of respondents using them daily for small-scale business transactions, enhancing convenience, security, and efficiency. However, only 35% reported using digital platforms for accessing agricultural extension services, indicating low uptake despite their potential to improve farming outcomes. According to the study's findings, ICT plays a critical role in promoting sustainable development in Kajiado East, especially through mobile money and connectivity, but its full potential is limited by infrastructure constraints, affordability, and digital literacy gaps. It recommends expanding affordable internet access, strengthening digital skills training among rural youth, and promoting digital agricultural platforms to enhance productivity, inclusion, and rural livelihoods.

## TABLE OF CONTENTS

**DEDICATION** ..... **iii**
**ACKNOWLEDGEMENT** ..... **iv**
**ABSTRACT** ..... **v**
**TABLE OF CONTENTS** ..... **vi**
**LIST OF TABLES** ..... **viii**
**LIST OF FIGURES** ..... **ix**
**ACRONYMS AND ABBREVIATIONS** ..... **x**
**OPERATIONAL DEFINITION OF TERMS** ..... **xi**
**CHAPTER ONE** ..... **1**
**INTRODUCTION** ..... **1**
1.0 Introduction ..... 1
1.1 Background ..... 1
1.2 Statement of the problem ..... 8
1.3 General objective ..... 10
1.4 Research Questions ..... 10
1.5 Significance of the study ..... 11
1.6 Scope of the study ..... 12
1.7 Chapter Summary ..... 12
**CHAPTER TWO** ..... **13**
**LITERATURE REVIEW** ..... **13**
2.0 Introduction ..... 13
2.1 Theoretical Literature Review ..... 13
2.2 Empirical Literature Review ..... 19
2.3 Summary and Research Gaps ..... 25
2.4 Conceptual framework ..... 28
2.5 Operationalization of variables ..... 29
2.6 Chapter Summary ..... 31
**CHAPTER THREE** ..... **32**
**RESEARCH DESIGN AND METHODOLOGY** ..... **32**

3.0 Introduction ..... 32
3.1 Research Design ..... 32
3.2 Target Population ..... 32
3.3 Sample and Sampling Technique ..... 33
3.4 Data Collection Instruments ..... 34
3.5 Pilot Study ..... 34
3.6 Data Collection Procedure ..... 35
3.7 Data Analysis and Presentation ..... 36
3.8 Ethical Considerations ..... 36
3.9 Chapter Summary ..... 37
**CHAPTER FOUR ..... 38**
**RESEARCH FINDINGS AND DISCUSSION ..... 38**
4.0 Introduction ..... 38
4.1 Findings ..... 38
4.2 Discussion of the finding ..... 60
4.3 Chapter Summary ..... 62
**CHAPTER FIVE ..... 64**
**SUMMARY, CONCLUSIONS AND RECOMMENDATIONS ..... 64**
5.0 Introduction ..... 64
5.1 Summary of Findings ..... 64
5.2 Conclusions ..... 67
5.3 Recommendations ..... 68
5.4 Implication of the Current Study ..... 70
5.5 Suggestions for Further Research ..... 71
**REFERENCES ..... 73**
**APPENDICES**
**APPENDIX I: LETTER OF INTRODUCTION**
**APPENDIX II: QUESTIONNAIRE**
**APPENDIX III: RESEARCH BUDGET**
**APPENDIX IV: WORK PLAN AND TIMELINE**
**APPENDIX V: THE LETTER FROM THE UNIVERSITY**

## LIST OF TABLES

**Table 1** Research Gaps ..... 25
**Table 2** Operationalization of variables ..... 30
**Table 3** Internet Connectivity Among Respondents ..... 45
**Table 4** Frequency of Internet Use ..... 46
**Table 5** Affordability of Internet Services ..... 48
**Table 6** ICT Skills Proficiency ..... 49
**Table 7** Confidence in ICT Use ..... 50
**Table 8** Frequency of ICT Application ..... 51
**Table 9** Reliability of Internet Connection ..... 52
**Table 10** Frequency of Mobile Money Use ..... 53
**Table 11** Types of Mobile Money Transactions ..... 55
**Table 12** Perceived Benefits of Mobile Money Services ..... 56
**Table 13** Use of Mobile Applications for Agricultural Services ..... 57
**Table 14** Use of SMS Services for Agricultural Information ..... 58
**Table 15** Use of Online Platforms for Agricultural Extension Services ..... 59

## LIST OF FIGURES

**Figure 1** Conceptual framework..... 29
**Figure 2** Response Rate..... 39
**Figure 3** Gender Distribution ..... 40
**Figure 4** Age of Respondents ..... 42

## ACRONYMS AND ABBREVIATIONS

**CAK** – Communications Authority of Kenya

**CBK** – Central Bank of Kenya

**CMS** – Contract Management Style

**DLP** – Digital Literacy Programme

**ICT** – Information and Communication Technology

**IMF** – International Monetary Fund

**ITU** – International Telecommunication Union

**KICD** – Kenya Institute of Curriculum Development

**M-Pesa** – Mobile Money Platform (Kenya)

**OECD** – Organisation for Economic Co-operation and Development

**PPP** – Public Sector Procurement Performance

**SDGs** – Sustainable Development Goals

**SPSS** – Statistical Package for Social Sciences

**UN** – United Nations

**UNESCO** – United Nations Educational, Scientific and Cultural Organization

**WHO** – World Health Organization (appears in global ICT/health references)

## OPERATIONAL DEFINITION OF TERMS

**Economic growth** is directly influenced by ICT, as it opens new opportunities for innovation, job creation, and entrepreneurship. By leveraging digital tools, communities can expand trade, access new markets, and boost incomes. As ICT adoption increases, it fuels a cycle of development that uplifts the entire economy

**ICT adoption** enhances access to information and services, bridging gaps in education, healthcare, and governance. When people and organizations embrace ICT, they improve productivity, efficiency, and connectivity, which are essential for modern development. However, challenges such as high costs, low digital literacy, and limited access to devices can hinder widespread ICT use.

**Infrastructure** is a critical enabler of ICT adoption. Without stable electricity, internet connectivity, and communication networks, the implementation and use of digital technologies become difficult, especially in rural areas like Kajiado East. Adequate infrastructure ensures that individuals, businesses, and institutions can access and benefit from ICT tools effectively.

**Sustainable development** benefits greatly from ICT through smarter service delivery, improved economic activities, and better environmental management. ICT supports smart farming, resource monitoring, and online business platforms, which promote economic growth while preserving the environment. In this way, ICT acts as a catalyst for balanced and inclusive development.

# CHAPTER ONE

# INTRODUCTION

## 1.0 Introduction

The study's background, problem statement, aims, research questions, and importance are the main topics of this chapter. Additionally, it addresses the study's scope and chapter summary.

## 1.1 Background

Globally, and particularly in Europe, where ICT has been essential to economic growth, there is broad recognition of the role that ICT plays in promoting sustainable development, social, and environmental transformations. European countries, such as Finland, Estonia, and the United Kingdom, have made significant strides in integrating ICT into their development strategies, contributing to sustainable economic growth, improved social services, and enhanced governance.

However, while Europe has effectively integrated ICT into its development strategies, challenges persist in less-developed and rural areas where access to technology and digital literacy remain significant obstacles. This creates a clear global divide in ICT access and usage that impacts sustainability. The need to understand how ICT can be effectively utilized in rural, developing regions where such barriers exist is a crucial gap that the current study seeks to address.

In Europe, several countries have successfully leveraged Innovation using information and communication technology (ICT) to advance sustainable development, digital inclusion, and efficient public service delivery. In a study by Halme et al. (2021) titled “Digitalization and Sustainability in Finland: National Strategies and Policy Outcomes” explored how Finland’s digital infrastructure and e-government initiatives have driven economic growth, improved healthcare delivery, and enhanced educational access. Using a policy review and performance benchmarking methodology, the study found that Finland’s investments in digital governance and green ICT solutions have not only optimized public service delivery but also supported environmental sustainability through reduced paper usage and lower carbon emissions. The authors recommended continued government-private sector collaboration to expand digital innovation into less urbanized areas of the country.

Similarly, the European Commission (2020) published a report titled “eGovernment Benchmark: User-centric Government”, which evaluated Estonia’s advancements in digital public services. The report highlighted Estonia’s implementation of a fully integrated e-government system, allowing for efficient digital identity management, online citizen engagement, and seamless service delivery across sectors. Through comparative benchmarking, the study found that Estonia’s digital systems have reduced bureaucratic inefficiencies and enhanced transparency and accessibility in governance. The report recommended expanding digital literacy initiatives and ensuring cybersecurity infrastructure to maintain public trust.

In the UK, the House of Lords Select Committee on the Rural Economy (2021) released findings in a report titled “Time for a Strategy for the Rural Economy”, examining the role of ICT in promoting rural development. Using qualitative interviews and regional policy analysis, according to the report, specific ICT interventions including rural broadband rollouts and digital skills training had improved education and business outcomes in underserved communities. However, the report also pointed out persistent connectivity issues and recommended increased funding for rural ICT infrastructure and tailored digital inclusion programs. These European cases underscore the transformative role of ICT in achieving several Sustainable Development Goals (SDGs) of the United Nations, especially those pertaining to public health, education, economic development, and environmental preservation.

In the African context, Information and communication technology's (ICT) ability taster sustainable development has garnered increasing attention. However, barriers such as inadequate infrastructure, limited digital literacy, and restricted accessibility continue to hinder widespread ICT adoption, particularly in rural regions. In a study by Nsengimana (2019) titled “Rwanda’s ICT4D Strategy: Building a Knowledge-Based Economy” aimed to evaluate how ICT investments are shaping socio-economic development in Rwanda. Using a mixed-methods approach that included policy review and stakeholder interviews, the study found that Rwanda’s strategic investments in ICT infrastructure such as nationwide broadband coverage and community-based digital literacy programs have significantly enhanced public service delivery, especially in health,

education, and financial inclusion. The study recommended replicating community-driven ICT training programs in rural areas to address skills gaps.

Regionally, in Kenya, Wanjiku and Mwaura (2018) conducted a study titled "Impact of the Digital Literacy Program on Primary Schools in Kenya". The objective was to assess the implementation and effectiveness of Kenya's Digital Literacy Program (DLP) launched under the Vision 2030 development framework. Using a descriptive survey design targeting teachers and administrators in Nairobi and Nakuru counties, the study reported increased ICT access in urban schools but noted persistent disparities in rural schools due to poor internet connectivity, lack of electricity, and inadequate teacher training. The authors recommended tailored infrastructure and training strategies for rural contexts.

Similarly, Ndou (2019), in a study titled "Challenges of ICT Adoption for Sustainable Development in Rural South Africa", explored ICT adoption in Limpopo Province using qualitative case studies. The study identified high costs of ICT equipment, low digital literacy, and poor infrastructure as major constraints. It concluded that rural-specific ICT policies, coupled with subsidized access to devices and training, are necessary to bridge the digital divide.

While these studies confirm ICT's transformative potential in driving sustainable development, they also highlight a significant implementation gap in rural areas. This is especially true for underserved constituencies such as Kajiado East in Kenya, where communities still face determined trials associated to numerical infrastructure, skills, and admittance to affordable technology. Notably, none of the cited studies explicitly focus on ICT adoption in such marginalized rural constituencies.

Thus, the purpose of this work is to close that gap by specifically investigating how ICT adoption can enhance sustainable development in Kajiado East Constituency. By focusing on access, service delivery, economic opportunities, and adoption challenges, this research seeks to provide targeted insights and recommendations for local-level ICT integration strategies that can be scaled across similar rural regions in Africa.

Kenya, widely recognized as a regional leader in ICT innovation in East Africa, has made significant strides in embedding ICT into its national development strategies. However, disparities

remain stark amongst urban and rural areas in terms of ICT infrastructure, digital literacy, and the practical application of ICT for development.

A notable example is the mobile money platform M-Pesa, which has significantly transformed financial inclusion across Kenya. A recent empirical study by Gitonga (2025) titled Assessing the Impact of Mobile Money Adoption (M-Pesa) on the Growth and Sustainability of Small and Medium Enterprises in Nakuru Town, Kenya: A Positive Economics Perspective surveyed SMEs and found that integrating M-Pesa into their operations led to enhanced sales revenue, improved cash-flow management, greater market reach, and strengthened business sustainability. However, challenges such as high transaction fees, intermittent network reliability, and low digital literacy in last-mile regions still limit its universal effectiveness (Gitonga, 2025).

In the education sector, the Kenya Institute of Curriculum Development (2020) conducted a national evaluation of the Digital Literacy Program (DLP), launched to integrate ICT into public primary schools. Evaluating how ICT integration affects teaching and learning was the goal. According to the study, which used a cross-sectional survey that included both urban and rural schools, urban schools gained more from improved internet infrastructure and dependable energy., and higher digital competency among teachers. In contrast, rural schools including those in Kajiado East struggled with limited access to digital devices, poor connectivity, and lack of teacher training. The report recommended the provision of localized infrastructure support and targeted training for rural educators to bridge this divide.

In the health sector, Nyaboga et al. (2021) in their study "Adoption of Digital Health Tools in Rural Kenya" used a qualitative case study approach to examine the integration of ICT in public health systems. The study observed that while urban hospitals increasingly employed digital health tools such as telemedicine and electronic medical records, rural health facilities lacked the technical infrastructure and skilled personnel to implement these solutions. The authors recommended government-private sector partnerships to extend digital health innovations to underserved rural areas.

Furthermore, in the agricultural sector, Ochieng et al. (2019) conducted a study titled "Barriers to ICT Use Among Smallholder Farmers in Kenya. Understanding the barriers rural farmers

encounter while implementing ICT technologies for agricultural development was the aim of the study. The study, which employed a combination of approaches (interviews and surveys with farmers in semi-arid areas, including parts of Kajiado), discovered that low digital literacy, sporadic internet connectivity, and the high price of smartphones severely hindered the use of ICT for market access., weather updates, and crop management. The authors recommended subsidized ICT tools, farmer training, and localized ICT content delivery in native languages.

Despite Kenya's overall ICT progress, these studies collectively highlight a persistent digital divide affecting rural constituencies like Kajiado East, where inadequate internet connectivity, low electricity access, and limited digital skills hinder the benefits of ICT across education, health, finance, and agriculture. By doing a localized evaluation of ICT adoption and its contribution to sustainable development in Kajiado, this study aims to close that gap. East. The study will investigate how ICT can be better leveraged to support service delivery, economic empowerment, and environmental sustainability in this rural constituency providing evidence-based recommendations to inform future policy and implementation strategies at both the county and national levels.

### 1.1.1 Sustainable Development

Sustainable development is a multidimensional concept that seeks to balance economic growth, social well-being, and environmental protection to ensure prosperity for present and future generations (Brundtland Report, 1987; United Nations, 2015). It involves increasing access to education, healthcare, and economic opportunities while preserving the environment. ICT enables businesses to access new markets and enhance operational efficiency, while also creating job opportunities and driving entrepreneurship (Akinwale, 2020).

In the social sector, ICT facilitates improved access to education through online platforms and enhances healthcare delivery via telemedicine, thus contributing to better quality of life (Sutherland & Brown, 2019). Sustainable development is a multidimensional concept that seeks to balance economic growth, social well-being, and environmental protection to ensure prosperity for present and future generations (Brundtland Report, 1987; United Nations, 2015). It involves increasing access to education, healthcare, and economic opportunities while preserving the environment.

### 1.1.2 Internet Connectivity Coverage

The availability and dependability of internet access are referred to as internet connectivity. within a given geographic area. In rural regions like Kajiado East, limited coverage continues to hinder residents' ability to benefit from digital services and information. According to the Communications Authority of Kenya (CAK, 2021), internet access in rural Kenya is still significantly lower compared to urban centers, mainly due to inadequate infrastructure and high connection costs. Internet connectivity is essential for driving sustainable development. It facilitates access to educational materials, health services, e-commerce, and government services, thus contributing to improved quality of life and economic opportunities. A study by Aker and Mbiti (2010) found that increased mobile internet access in East Africa led to better market efficiency and reduced information asymmetry in agriculture. The study recommended expanding connectivity to rural communities as a tool for reducing poverty and enhancing resilience. Poor internet coverage limits the potential for e-governance, remote learning, and digital financial inclusion. Thus, analyzing internet connectivity's effect on sustainable development provides valuable insights into infrastructural gaps that must be addressed to bridge the digital divide in regions like Kajiado East.

### 1.1.3 Digital Literacy Levels Among Rural Youth

Digital literacy refers to the capacity to access and manage information efficiently using digital devices, software, and networks. For rural youth, digital literacy is increasingly essential in accessing education, employment, and entrepreneurship opportunities. According to UNESCO (2019), digital literacy is a core competency for 21st-century development, particularly in underserved areas where digital tools can help overcome geographic disadvantages. Rural youth in Kenya often face limited exposure to digital technologies due to under-resourced schools and lack of training programs. A study by Wambugu et al. (2020) on digital literacy in rural Kenyan schools found that while ICT infrastructure may exist, most students lacked the skills to fully utilize these tools for academic and career development. The study recommended targeted digital literacy programs and teacher training in ICT to enhance student outcomes. In the context of sustainable development, youth digital literacy enables informed participation in economic activities, civic life, and innovation. This variable is thus central to understanding how the next

generation in Kajiado East can be empowered to drive sustainable development through technology.

### 1.1.4 Mobile Money Usage in Small-Scale Business Transactions

Mobile money usage refers to the practice of conducting financial transactions using mobile phone-based platforms like M-Pesa. This innovation has transformed financial services in Kenya by enabling cashless transactions, savings, and credit access without the need for traditional banks. Jack and Suri (2011) demonstrated that mobile money significantly increased financial inclusion and reduced poverty levels in rural Kenya. Small-scale businesses, especially in rural areas, rely heavily on mobile money to facilitate daily transactions, manage payments, and access microcredit. According to the Central Bank of Kenya (CBK, 2020), mobile money accounts for over 80% of retail financial transactions in Kenya, playing a vital role in supporting small enterprises. Research by Mbiti and Weil (2016) also showed that mobile money adoption among micro-entrepreneurs was associated with higher business incomes and improved financial security. In Kajiado East, analyzing the effect of mobile money on sustainable development can reveal its role in promoting entrepreneurship, improving livelihoods, and fostering inclusive economic growth among small business owners.

### 1.1.5. Digital Platforms for Accessing Agricultural Extension Services

This variable refers to the use of mobile apps, SMS services, and online platforms to access agricultural advice, weather forecasts, market prices, and other extension services. Traditional extension systems in rural Kenya have faced challenges such as inadequate personnel and limited reach. Digital platforms have emerged as a solution to deliver timely, accurate, and customized agricultural information to farmers. A study by Ochieng et al. (2019) on the use of ICT in Kenyan agriculture revealed that mobile platforms significantly improved access to extension services, leading to better decision-making and higher yields among smallholder farmers. The authors emphasized that mobile-based services enhance climate resilience and reduce vulnerability by improving access to critical information. For a constituency like Kajiado East, where agriculture remains a primary economic activity, digital extension platforms can promote environmental sustainability through informed resource use and climate-smart farming. Examining this variable

allows your study to assess ICT's potential in transforming rural agriculture for long-term development outcomes.

### 1.1.6 Kajiado East Constituency

Kajiado East constituency is a cosmopolitan area in Kajiado County. It lies within the Nairobi metropolis and boarders Machakos and Makueni counties in the North East and East position respectively and its approximately 20Km from Nairobi city centre. The constituency was born from two mother constituencies (Kajiado North and Kajiado central constituencies) after the new allocation of boundaries and took over all the CDF projects that lied within their boundaries. There are 6 divisions, 20 locations and 38 sub- locations in the newly created Isinya and Mashuuru sub counties. The constituency stretches from Oloosirkon near Ongata Rongai to Masimba next to Tsavo game reserve The constituency receives an annual rainfall of 600mm and therefore classified as a semi-arid with long rains experienced in April and May and short showers in September and October. Its topography is wind beaten flat plains commonly referred to as Kaputiei plains with dwarf acacia species as the characteristic and dominant vegetation besides seasonal grass and shrub. The constituency main inhabitants is the Maasai community who are pastoralists by tradition, but also include other ethnic groups for example kikuyu, Kamba, Luhya, kisii etc. The constituency by 2009 National population census was 141,254.

The main economic activity for constituents is largely livestock and agricultural related businesses. Demographic features are dynamic especially in ethnic ratios, density and lifestyle parameters due to current trend in land tenure system. Large tracts of land which were livestock / wildlife grazing/dispersal/ carving zones and registered in individual proprietorship of members of dissolved group ranches are now being sub-divided into plots for sale to willing buyers who are putting up residential houses and real estate developments.

## 1.2 Statement of the problem

Particularly in low- and middle-income nations, information and communication technology (ICT) is becoming more widely acknowledged as a driver of sustainable development. ICT enhances economic opportunities, strengthens service delivery, and facilitates environmental sustainability through digital innovation. Globally, the United Nations Economic and Social Council (2020) reported that digital technologies were central in maintaining access to education, health, and public services during the COVID-19 pandemic, especially in low-resource settings. ICT has the

potential to accelerate progress toward the Sustainable Development Goals (SDGs), yet its benefits are not evenly distributed.

In Kenya, ICT adoption has been prioritized under national initiatives like the Kenya Vision 2030 and the 2023 Digital Economy Blueprint (Ministry of ICT, 2023). These policies aim to transform Kenya into a digitally empowered society by improving ICT infrastructure, digital skills, and innovation. However, there is growing concern that rural constituencies, such as Kajiado East, remain marginalized due to poor ICT infrastructure, limited digital literacy, and socioeconomic barriers. A 2022 assessment conducted by Kenya's Communications Authority (CAK) highlighted that only 35% of households in rural areas had access to the internet, compared to over 80% in urban centers. This rural-urban divide limits access to e-services in education, healthcare, and financial sectors, hindering local development.

Recent global and regional studies emphasize these disparities. A study by the International Telecommunication Union (ITU, 2021), titled *Measuring Digital Development*, used cross-country data to show that rural populations in sub-Saharan Africa face persistent access barriers due to inadequate broadband coverage and high data costs. The study recommended focused rural investment and digital skill-building as priority actions. At the regional level, Turianskyi et al. (2022), in a report by the African Peer Review Mechanism, found that although digital transformation is underway in East Africa, marginalized groups in rural settings especially women and the elderly are often excluded due to affordability, low literacy, and infrastructure deficits. Locally, a 2023 study by Muthoni and Otieno titled Barriers to ICT Adoption in Rural Kenya: A Case of Kajiado and Machakos Counties used a mixed-methods approach to assess access, awareness, and infrastructure. The findings revealed that poor electricity coverage, high device costs, and limited ICT training centers significantly constrain digital inclusion in Kajiado East.

Despite these insights, several critical gaps persist in the literature and practice. First, many existing studies either focus broadly on national trends or rely on urban data, overlooking the unique challenges of rural constituencies like Kajiado East. Second, although ICT is widely linked to economic and educational advancement, limited attention has been paid to its role in supporting environmental sustainability in semi-arid rural areas. Third, there is a lack of disaggregated data exploring how different population segments (e.g., women, youth, the elderly) experience ICT

access and use differently in rural settings. These gaps have hindered the development of targeted interventions that are sensitive to the needs and context of rural communities.

If left unaddressed, the digital divide in areas like Kajiado East will continue to grow, exacerbating poverty, inequality, and social exclusion. Economic opportunities linked to e-commerce and digital innovation will remain out of reach, while access to vital services such as telemedicine and online education will be constrained. Moreover, the inability to utilize ICT in climate-smart agriculture or disaster early warning systems may increase vulnerability to environmental risks. Bridging the ICT gap is, therefore, not only a technological concern but a developmental imperative.

The purpose of this study is to look into the type and amount of ICT use and access in the Kajiado East Constituency. It seeks to pinpoint obstacles to ICT adoption and assess how infrastructure, policy, and digital literacy either facilitate or impede digital. The findings will inform practical, context-specific strategies to enhance ICT inclusion and contribute to achieving sustainable development at the local level.

## 1.3 General objective

The main objective of the study is to evaluating the Role of Information And Communication Technology (ICT) on promoting sustainable development in Kajiado East, Kajiado County, Kenya

### 1.3.1 Specific objectives

The specific objectives of the study are;

i. To analyze the effect of internet connectivity coverage on sustainable development in Kajiado East Constituency.
ii. To assess the effect of digital literacy levels among rural youth on sustainable development in Kajiado East Constituency.
iii. To evaluate the effect of mobile money usage in small-scale business transactions on sustainable development in Kajiado East Constituency.
iv. To examine the effect of digital platforms used in accessing agricultural extension services on sustainable development in Kajiado East Constituency.

## 1.4 Research Questions

i. What is the effect of internet connectivity coverage on sustainable development in Kajiado East Constituency?

ii. How does digital literacy among rural youth influence sustainable development in Kajiado East Constituency?
iii. To what extend does the use of mobile money in small-scale business transactions contribute to sustainable development in Kajiado East Constituency?
iv. How does the use of digital platforms for accessing agricultural extension services affect sustainable development in Kajiado East Constituency?

### 1.5 Significance of the study

This research adds to theory by enriching the discourse on ICT for Development (ICT4D) through empirical evidence from a rural Kenyan context. While theories such as the Information Society Theory, Diffusion of Innovation Theory, and the Capability Approach emphasize ICT as a driver of economic and social transformation, much of the existing scholarship is based on urban or national-level data. By focusing on Kajiado East Constituency, the study situates these theories within a semi-arid, marginalized setting, thereby extending their applicability. The findings on internet connectivity, digital literacy, mobile money, and digital agricultural platforms demonstrate how theoretical constructs manifest in rural communities and highlight the interaction between access, affordability, and adoption in shaping sustainable development outcomes.

In terms of policy contribution, the study provides evidence-based insights that can guide the formulation and implementation of targeted interventions to bridge the digital divide. The finding that only 58% of respondents reported reliable internet access, and that digital agricultural platforms were used by just 35% of participants, underscores the need for policies that prioritize affordable broadband expansion, digital skills training, and rural ICT infrastructure development. These insights complement Kenya's Vision 2030 and Digital Economy Blueprint by emphasizing localized strategies to enhance digital inclusion. Policymakers can leverage the study's recommendations to promote equitable ICT access, thereby fostering inclusive growth, reducing inequalities, and advancing progress toward the Sustainable Development Goals (SDGs).

From a pragmatic standpoint, the study provides useful recommendations for local governments, ICT investors, businesses, and development organizations looking to optimize the technological influence on development in rural regions.. The widespread adoption of mobile money services, with 87% of respondents using them daily, illustrates the potential of ICT solutions that align with community needs, while the limited uptake of agricultural platforms points to areas requiring

practical interventions. Development actors can apply these insights to design capacity-building initiatives, while private investors can use the evidence to identify viable opportunities in connectivity, mobile financial services, and digital agriculture. In this way, the study contributes to practice by highlighting pathways through which ICT can be effectively harnessed to enhance service delivery, support livelihoods, and promote sustainable development in rural constituencies.

### 1.6 Scope of the study

The schoolwork focused on Kajiado East Constituency, located within Kajiado County, Kenya, specifically examining the impact of ICT on sustainable development in the region. The research explored how ICT access, usage in service delivery, ICT-based economic activities, and challenges to ICT adoption influence key areas such as education, healthcare, governance, and local economic development. It involved 120 participants, including local government officials, ICT providers, educators, healthcare workers, business owners, and residents, providing valuable insights into the region's ICT needs and barriers. The study was conducted from April 2025 to September 2025, offering a comprehensive understanding of ICT's role in advancing sustainable development in rural constituencies like Kajiado East.

### 1.7 Chapter Summary

The contextual of the work  focuses on ICT assessment in Kenya and how it advances sustainable development. Statement of the problem highlights problem facing ICT in local scenarios like Kajiado East constituency. Key objective was highlighted, the significance, scope as it follows. The problem statement identifies challenges that telecommunication firms face when implementing strategic change, such as regulatory constraints, competitive pressure, and organizational inertia. The chapter also presents the research objectives and questions that guide the study. Additionally, it outlines the significance of the explore to key stakeholders and defines the scope by specifying the thematic, geographical, and organizational focus of the education.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Introduction

A thorough analysis of the body of research on the contribution of information and communication technology (ICT) to sustainable development is given in this section. It talks about the theoretical framework that underpins the research and looks at how ICT promotes social inclusion, economic progress, and environmental preservation, among other facets of sustainability. This section examines pertinent theories that support the study's conceptual framework and explains how they relate to the Kajiado East environment. The chapter concludes with a summary of how these theories support the research variables and objectives.

## 2.1 Theoretical Literature Review

According to Otieno, Kamau, and Wambui (2021), a theoretical literature review examines the foundational principles and concepts that support a study, providing insight into how different variables relate under defined conditions. Theories help in framing the study and offer explanations for observed patterns and outcomes. In this research, three key theories are applied to investigate how ICT contributes to sustainable development in Kajiado East: Information and Communication Technology for Development (ICT4D) Theory, Diffusion of Innovation Theory, and Sustainable Development Theory.

### 2.1.1 Information Society Theory

The Information Society Theory, which Manuel Castells mainly promoted in his landmark book The Rise of the Network Society (1996), serves as the foundation for this investigation.. Castells conceptualizes the "Information Society" as a social structure in which the creation, processing, and dissemination of information become the most significant sources of productivity and power, facilitated through digital technologies. According to Castells (2010), the shift from an industrial society to an information society is driven by the development of information and communication technologies (ICTs), which influence nearly all aspects of social and economic life.

The core tenets of the Information Society Theory revolve around three main concepts. First, the network society, where human interactions and economic activities are increasingly organized through global and digital communication networks. Second, the knowledge economy, which emphasizes that innovation, access to information, and knowledge-based labor are key drivers of development in modern societies. Lastly, the theory highlights the importance of digital inclusion, stressing that equal access to ICTs across all segments of society is essential for individuals to fully participate in economic, social, and political life. Together, these concepts explain how ICT shapes contemporary social structures and development processes.

The theory has been widely applied in recent studies to explain the role of ICTs in development. In a study by, Hilty, Lohmann, and Huang (2019) used the theory to analyze the potential of ICT in achieving sustainable development goals (SDGs), showing how digital tools facilitate environmental monitoring and smart agriculture in rural areas. van Dijk (2020) employed the theory to investigate the digital divide, emphasizing that disparities in internet access and digital literacy perpetuate social inequality. Similarly, Kleine and Unwin (2021) applied the theory in sub-Saharan Africa to explore ICT's role in local entrepreneurship and public service delivery, concluding that ICT can promote inclusive growth if infrastructural and literacy challenges are addressed.

This theory directly aligns with the current study, which examines how ICT-related variables—namely, internet connectivity coverage, digital literacy among youth, use of mobile money in small-scale trade, and adoption of digital platforms in agriculture and healthcare—influence sustainable development in Kajiado East Constituency. The theory helps in understanding how limited ICT access and utilization constrain economic and social transformation, especially in rural settings. By viewing Kajiado East as a peripheral actor in the network society, the theory underscores how unequal access to digital tools limits the constituency’s ability to achieve meaningful and inclusive development.

To complement this broad perspective, the study also draws on the Technology Acceptance Model (TAM), developed by Fred Davis (1989). While the Information Society Theory addresses the macro-level societal transformation brought by ICTs, TAM provides a micro-level understanding by explaining individual attitudes toward technology adoption. The model posits that perceived usefulness and perceived ease of use determine whether individuals accept and use a given

technology. In rural Kenya, even when ICT infrastructure exists, low perceived usefulness or a lack of digital literacy can deter usage.

These two theories are complementary: the Information Society Theory establishes the importance of ICT access for sustainable development at a systemic level, while the Technology Acceptance Model explains variations in user behavior within that system. Together, they provide a holistic lens for examining both structural and behavioral barriers to ICT adoption in Kajiado East Constituency. However, the Information Society Theory has certain limitations. It is often critiqued for being overly technocentric, assuming that access to technology alone guarantees positive social outcomes (van Dijk, 2020). Moreover, it may understate the influence of cultural, political, and gender dynamics on ICT adoption. Despite these criticisms, the theory remains relevant and suitable for this study because it provides a robust framework for linking ICT availability and digital inclusion with broader sustainable development goals (Hilty et al., 2019). When paired with context-specific data and complementary theories such as TAM, its explanatory power is significantly enhanced.

### 2.1.2 Diffusion of Innovation Theory

Everett Rogers created the Diffusion of Innovation (DOI) Theory in 1962, and it provides a solid foundation for comprehending how new concepts and technology are embraced and disseminated within a social system. The theory's core concepts categorize adopters into five groups innovators, early adopters, early majority, late majority, and laggards reflecting their readiness to embrace innovations at different stages (Rogers, 2003). Central to The five DOI characteristics of innovations—relative advantage, compatibility, complexity, trialability, and observability—have an impact on adoption rates. These qualities explain why certain innovations, such as mobile money services and e-health platforms, diffuse more rapidly, particularly when perceived as beneficial and easy to use. The theory also emphasizes the importance of communication channels, social networks, and opinion leaders in facilitating the spread of innovations, making it highly relevant for studying technology uptake in rural settings like Kajiado East.

This theory is particularly useful in addressing the specific objectives of this study. For example, when assessing the effect of internet connectivity coverage on sustainable development in Kajiado East, DOI highlights how infrastructure improvements (e.g., expanded internet access) can increase the relative advantage and trialability of ICT tools, encouraging more users to adopt them.

Similarly, the theory supports the objective of evaluating digital literacy among youth, as individuals with higher knowledge and skills tend to belong to the early adopter categories, influencing the diffusion process positively through peer influence and social proof. In examining the use of mobile money in small-scale trade, DOI explains how compatibility with existing economic practices and perceived benefits drive adoption among traders, fostering economic sustainability. Finally, in investigating the adoption of e-crop management systems, the theory's focus on observability and trialability is crucial because farmers are more likely to adopt new technologies if they can see successful outcomes in their communities and test the systems themselves.

Several recent studies have applied DOI theory to ICT adoption in development contexts, supporting its relevance. In a study by Njuguna et al. (2021) examined mobile money adoption in rural Kenya and found that relative advantage and social influence were significant predictors of uptake, which in turn improved economic outcomes. Similarly, Wambua and Nyambura (2020) used DOI to analyze e-health service adoption in Kenyan counties, concluding that infrastructure and digital literacy strongly shaped diffusion patterns. These examples demonstrate how DOI's attributes align with the independent variables in this study connectivity, literacy, mobile money use, and digital platforms and their impact on sustainable development as the dependent variable.

However, DOI theory has limitations, particularly its tendency to understate the effects of structural barriers like poverty, gender disparities, and cultural resistance that often prevail in rural areas (Amutabi & Oketch, 2003). These socio-economic factors can slow or block adoption despite favorable innovation attributes. Nonetheless, DOI remains suitable for this study because it provides a clear, systematic way to analyze the varied rates and patterns of ICT adoption across different population segments in Kajiado East. When integrated with the Information Society Theory, which contextualizes ICT adoption within broader socio-economic transformations, DOI offers a complementary micro-level perspective on adoption behaviors and barriers. This combined approach enables a more comprehensive understanding of how the independent variables of ICT infrastructure, literacy, and platform use influence sustainable development outcomes in a rural Kenyan setting.

The Diffusion of Innovation Theory helps to explain not only the adoption patterns of ICT tools but also the social processes that facilitate or hinder their spread. By linking the theory directly to the study's objectives, it guides the investigation of how ICT adoption can be accelerated in

Kajiado East, ultimately supporting strategies that promote inclusive and sustainable development in the region.

### 2.1.3 Capability Approach Theory

The Capability Approach, developed by Amartya Sen (1980) and later expanded by Martha Nussbaum (2000), provides a people-centered framework for understanding development that goes beyond economic growth to focus on enhancing individuals' freedoms and real opportunities. Unlike traditional development models that measure progress through income or infrastructure, the Capability Approach evaluates how well individuals can achieve the things they value in life—referred to as "functioning's." These include access to education, healthcare, meaningful work, and civic participation. In the context of Information and Communication Technology for Development (ICT4D), the Capability Approach is increasingly used to assess how ICT tools and services can enhance these capabilities by expanding informational access, facilitating service delivery, and promoting agency (Zheng, 2009).

The theory is especially relevant to this study, which investigates how ICT factors such as internet connectivity, digital literacy, mobile money usage, and the use of digital platforms in agriculture affect sustainable development in Kajiado East Constituency. Each of these variables can be understood in terms of the capabilities they enable. For example, internet connectivity coverage enhances individuals' ability to access information, engage in online education, and connect to services, thereby expanding their capability to participate in modern economic and social life. As noted by Gigler (2015), informational capability is a foundational component that affects individuals' ability to achieve broader development goals. Similarly, digital literacy among rural youth is not just about technical skills but the capability to use digital tools meaningfully for education, employment, and civic engagement. Without such literacy, individuals may have physical access to technology but lack the freedom to use it effectively, thus experiencing a form of capability deprivation (Sen, 1999).

In the economic domain, mobile money usage in small-scale business transactions enhances financial capabilities by allowing users to save, send, and receive money efficiently. This supports income generation and economic resilience, particularly in rural areas with limited access to traditional banking services. Aker and Mbiti (2010) highlight how mobile financial services have

significantly improved the ability of individuals in developing countries to manage risk, invest in productive activities, and improve their livelihoods. Furthermore, the use of digital platforms in agricultural extension services expands the capabilities of farmers to access timely and relevant information about weather, markets, and crop management, leading to more informed decision-making and improved productivity. Duncombe (2011) emphasizes that such informational capabilities are critical in enhancing agricultural performance and promoting environmental sustainability.

Empirical studies provide strong support for the relevance of the Capability Approach in ICT4D. In a study by Zheng (2009) examined ICT projects in rural China and found that their effectiveness was better explained by the degree to which they enhanced local capabilities than by their technical features. Similarly, Gigler (2015) evaluated the impact of ICT on livelihoods in Latin America, concluding that access alone was insufficient capabilities such as digital literacy and relevant content played a greater role in improving development outcomes. In Kenya, Hatakka and De' (2011) assessed rural telecenters and found that meaningful use, shaped by local knowledge and empowerment, determined the actual benefits derived from ICT. These examples demonstrate that a capabilities perspective is essential to understanding how ICT influences sustainable development in resource-constrained settings.

Applying the Capability Approach in this study enables a deeper analysis of how ICT variables influence the dependent variable sustainable development. Rather than viewing ICT as an end in itself, the theory frames it as a means to expand people's freedoms and real-life opportunities in areas such as education, economic empowerment, and environmental sustainability. In Kajiado East, the focus shifts from merely measuring access to analyzing how ICT tools help people lead healthier, more informed, and economically productive lives. Rural youth who are digitally literate have a greater capability to access e-learning platforms or online job markets, while farmers using digital agriculture platforms gain agency over production decisions, ultimately contributing to inclusive development.

Despite its strengths, the Capability Approach has some limitations. Critics argue that it is conceptually broad and can be difficult to operationalize, particularly in terms of selecting which capabilities to measure and how to compare them across individuals (Robeyns, 2005). Additionally, assessing subjective values and aspirations can introduce variability that complicates

data analysis. However, these limitations do not undermine its suitability for this study. On the contrary, the flexibility of the theory allows it to accommodate the diverse experiences and needs of different population groups in rural Kenya. By centering the analysis on what people are actually able to do with ICT rather than just what they own or have access to—the Capability Approach offers a holistic and inclusive lens through which to understand ICT's role in achieving sustainable development.

## 2.2 Empirical Literature Review

This section reviews empirical studies relevant to the four key research questions of the study: ICT access and infrastructure, ICT use in service delivery, ICT-based economic activities, and challenges hindering ICT adoption. These studies help establish the connection between ICT and sustainable development, especially in the context of developing regions like Kajiado East Constituency.

### 2.2.1 Internet Connectivity Coverage and sustainability development

Internet connectivity coverage plays a pivotal role in enabling access to a wide array of information and digital services that underpin sustainable development, especially in rural and underserved regions. Reliable and affordable internet infrastructure is essential for fostering inclusive economic growth, improving social well-being, and supporting environmental sustainability the three pillars central to sustainable development. In rural communities such as those in Kajiado East Constituency, internet connectivity facilitates access to markets, educational resources, health services, and government platforms, thereby enabling residents to improve their livelihoods and social inclusion. According to the International Telecommunication Union (ITU, 2021), enhancing broadband access in rural areas contributes significantly to reducing inequality, promoting digital inclusion, and accelerating progress toward the Sustainable Development Goals (SDGs). In many developing countries, expanding internet access has been empirically linked to accelerated economic growth, poverty reduction, and enhanced governance through transparency and citizen participation (Kshetri, 2020).

In Kenya, the government's National Broadband Strategy underscores the critical importance of narrowing the digital divide between urban and rural areas, aiming to boost internet penetration to 50% by 2025 (Communications Authority of Kenya, 2021). However, significant disparities

persist, with remote constituencies like Kajiado East experiencing inadequate coverage due to geographical challenges, low population density, and infrastructure constraints (Njuguna & Nyandusi, 2017). These connectivity gaps impede rural communities from fully benefiting from ICT, thus hampering progress towards sustainable development goals (SDGs).

Empirical research affirms the multifaceted contributions of internet connectivity to sustainable development. In a study by Nyaboga et al. (2021) demonstrated that improved internet access enhanced agricultural productivity in rural Kenya by enabling farmers to receive timely weather forecasts and real-time market price information, thereby optimizing farming decisions and income. This connection directly supports economic sustainability by increasing efficiency and reducing vulnerability to climate variability. Additionally, Wambua and Nyambura (2020) found that improved connectivity catalyzed the uptake of e-health and e-education services, leading to better health outcomes and increased educational attainment. Such social benefits contribute to human capital development, which is indispensable for long-term sustainability. The International Telecommunication Union (2019) further highlights that countries with higher internet penetration rates tend to exhibit stronger social welfare indicators and improved environmental monitoring, suggesting that connectivity also facilitates sustainable resource management and environmental protection.

From an environmental perspective, internet connectivity enables access to digital tools for monitoring natural resources, managing water use, and implementing climate-smart agriculture practices. These technologies help communities adapt to climate change and mitigate environmental degradation, which are crucial for sustainable rural livelihoods in Kajiado East's semi-arid environment (Juma et al., 2021). Additionally, digital platforms facilitated by internet coverage support knowledge exchange on conservation practices and disaster preparedness, enhancing community resilience.

Nevertheless, the realization of these benefits is constrained by persistent challenges in rural connectivity. Limited infrastructure investment, high costs of deployment and data services, and inconsistent network quality hinder reliable access (Munyua & Mureithi, 2020). In Kajiado East, the dispersed rural population and challenging topography complicate broadband rollout, leaving

many households offline or dependent on costly and unstable mobile data networks. This digital exclusion not only limits economic and social opportunities but also risks deepening existing inequalities, thereby undermining sustainable development efforts. Moreover, most existing studies focus on national or urban contexts, with limited localized empirical data on how connectivity variations specifically impact sustainable development in rural constituencies like Kajiado East.

Therefore, by investigating the direct and indirect effects of internet connectivity coverage on sustainable development outcomes in Kajiado East, this study aims to close this information gap. The project intends to offer evidence-based insights to direct policymakers, development practitioners, and telecommunication stakeholders by examining the significance of connectivity across economic activity, social service access, and environmental management. Improving Kajiado East's digital infrastructure and accessibility at a reasonable cost is essential for both raising living standards and fulfilling Kenya's larger SDG obligations. In rural Kenya, removing connectivity obstacles can unleash ICT's revolutionary potential to promote social justice, inclusive growth, and environmental stewardship.

### 2.2.2 Digital Literacy Levels Among Rural Youth and Sustainable Development

Digital literacy, defined as the ability to effectively use digital devices and applications, is an essential enabler for the adoption and meaningful use of ICT (Van Dijk & Van Deursen, 2014). Digital literacy is crucial in determining whether young people in rural areas, where access to formal education and technology can be restricted, can use ICT to improve their socio-economic conditions. For rural youth in Kenya, acquiring digital skills facilitates access to online learning resources, employment opportunities, and social networks, thereby contributing to sustainable development by building human capital and fostering innovation (Sutherland & Brown, 2019; Akinwale, 2020).

Several empirical studies illustrate the importance of digital literacy in ICT adoption and development. The Kenya Institute of Curriculum Development (2020) demonstrated that digital literacy initiatives in rural schools improved students' academic performance and confidence in using technology. Additionally, Amuyunzu et al. (2018) observed that youth with higher digital literacy levels were more likely to engage in ICT-enabled entrepreneurship, including online marketing and mobile banking, which contributed to income diversification and economic

resilience. These findings underscore digital literacy as a key determinant of youth empowerment and community development in rural settings.

However, despite its importance, digital literacy remains unevenly distributed, with gender disparities and socioeconomic factors often limiting access to training and resources (Munyua & Mureithi, 2020). Many rural youth still lack the foundational skills to use smartphones and computers effectively, reducing their ability to benefit from available ICT services. Furthermore, research in Kenyan rural contexts often focuses on educational institutions rather than community-wide literacy levels or informal learning channels. In Kajiado East, such data are scarce, creating a knowledge gap regarding the actual digital skills landscape among rural youth. This study aims to fill this gap by assessing digital literacy levels and exploring their influence on sustainable development outcomes, contributing new insights into how skill-building can enhance ICT utilization and social inclusion in rural Kenyan constituencies.

### 2.2.3 Mobile Money Usage in Small-Scale Business Transactions and Sustainable Development

Mobile money services have revolutionized financial inclusion in Kenya and other developing countries by providing accessible, secure, and convenient financial transactions without the need for traditional banking infrastructure (Jack & Suri, 2011). These services have become especially significant for small-scale businesses and rural populations, allowing them to conduct transactions, save money, access credit, and receive payments via mobile phones (Aker & Mbiti, 2010). In rural constituencies like Kajiado East, where many residents engage in informal trade and smallholder farming, mobile money offers a pathway to enhance economic activities and improve livelihoods.

Empirical research demonstrates the transformative impact of mobile money on rural economies. Njuguna et al. (2021) found that mobile money adoption among rural traders in Kenya increased transaction speed, reduced cash handling risks, and expanded market participation, which collectively improved business sustainability. Morawczynski (2009) similarly documented that mobile money lowered the costs and barriers associated with financial services for informal sector operators, enabling greater economic empowerment. These studies highlight mobile money as a vital tool for promoting economic sustainability and reducing poverty in rural areas.

Nonetheless, despite high adoption rates, mobile money usage faces challenges such as limited digital skills, transaction costs, network reliability issues, and occasional fraud concerns (Munyua & Mureithi, 2020). These factors can hinder small-scale traders' ability to fully exploit mobile financial services. Additionally, existing literature often focuses on national or urban contexts, leaving a gap in understanding the specific effects of mobile money on sustainable development in rural constituencies like Kajiado East. This study will investigate how mobile money usage influences small-scale business growth and resilience in Kajiado East, providing evidence to inform interventions aimed at maximizing mobile financial technology benefits in rural economic development.

### 2.2.4 Digital Platforms Used in Accessing Agricultural Extension Services and Sustainable Development

For rural farmers, agricultural extension services are essential because they offer data on market prices, pest control, best practices, and weather forecasts. The introduction of digital platforms has transformed extension delivery by increasing accessibility and timeliness of information, which can enhance agricultural productivity and environmental sustainability (Ochieng et al., 2019). In Kenya, mobile and web-based platforms are increasingly used to support farmers, but access and usage remain uneven, particularly in pastoral and mixed farming areas such as Kajiado East (Aker, 2011).

Empirical evidence supports the positive role of digital agricultural extension services. Aker (2011) found that mobile-based advisory services in Kenya improved farmers' knowledge and led to increased crop yields and income. Duncombe (2011) showed that access to digital market and weather information helped farmers optimize planting decisions and reduce post-harvest losses. These studies indicate that digital platforms can foster sustainable agriculture by promoting resource-efficient and climate-smart farming practices.

However, challenges such as poor internet infrastructure, limited smartphone penetration, and low digital literacy constrain the effective use of these platforms in rural settings (Ochieng et al., 2019). Moreover, research often overlooks the specific agricultural systems and cultural contexts of areas

like Kajiado East, where pastoralism predominates alongside crop farming. This leaves a gap in our knowledge of how digital extension services impact the development of sustainable agriculture in these kinds of mixed systems. To address this, this study looks at the uptake and effects of digital platforms for agricultural extension in Kajiado East, contributing localized knowledge that can enhance agricultural sustainability and rural livelihoods.

### 2.2.5 Sustainable Development

Sustainable development, as conceptualized by the United Nations, refers to development that meets present needs without compromising the ability of future generations to meet theirs, encompassing economic growth, social inclusion, and environmental protection (United Nations, 1987). Measuring sustainable development involves assessing improvements in economic well-being, education, health, environmental management, and social equity, particularly in vulnerable rural areas where development challenges are acute (Sachs, 2015). In Kajiado East, sustainable development is critical given the region's reliance on agriculture, pastoralism, and emerging small-scale businesses, all of which are influenced by ICT adoption.

Empirical studies link sustainable development outcomes with increased ICT use. For example, Kikulwe et al. (2014) found that ICT adoption among smallholder farmers in Kenya contributed to improved income levels and food security, enhancing economic and social sustainability. Similarly, Wambua and Nyambura (2020) showed that digital health and education services led to better health indicators and learning achievements in rural Kenyan counties, reflecting social development. Environmental sustainability has also benefited from ICT through improved resource management and climate adaptation, as shown by Juma et al. (2021) in smart agriculture interventions.

Despite evidence of ICT's potential to foster sustainable development, challenges such as inequitable access, digital divides, and infrastructural barriers often limit its full impact (Munyua & Mureithi, 2020). Furthermore, few studies comprehensively examine how combined ICT factors connectivity, literacy, mobile money, and digital platforms jointly influence sustainable development in specific rural constituencies. This research attempts to close this gap by looking into these relationships within Kajiado East, providing a holistic understanding that supports targeted policy and development programs to promote inclusive and sustainable growth.

### 2.3 Summary and Research Gaps

Internet connectivity coverage has been widely recognized as a foundational enabler for sustainable development, facilitating economic growth, social inclusion, and environmental management. Numerous studies, such as those by Nyaboga et al. (2021) and Wambua and Nyambura (2020), demonstrate the positive impact of improved internet access on agricultural productivity, healthcare delivery, and education outcomes in rural Kenya. The government's strategic initiatives to expand broadband access also highlight national recognition of connectivity as a key development driver. The evidence collectively underscores that enhanced internet coverage can empower rural communities by providing access to vital information, digital services, and markets, thereby advancing multiple dimensions of sustainable development.

Despite these acknowledged benefits, persistent challenges continue to undermine the equitable distribution of internet infrastructure and services in rural areas like Kajiado East. Physical barriers such as sparse populations, difficult terrain, and limited infrastructure investment have resulted in significant connectivity gaps compared to urban centers (Njuguna & Nyandusi, 2017; Munyua & Mureithi, 2020). Additionally, while national-level policies exist, there remains a lack of detailed, localized empirical studies that examine how variations in internet connectivity directly affect sustainable development outcomes at the constituency level.

Furthermore, much of the literature concentrates on economic and social impacts of connectivity but tends to under-explore the environmental dimension of sustainable development in relation to ICT access. Given the semi-arid ecological context of Kajiado East, understanding how connectivity influences climate adaptation, natural resource management, and environmental sustainability is crucial but under-researched. There is also limited knowledge about the interplay between connectivity and other factors such as digital literacy, affordability, and socio-cultural acceptance, which collectively shape ICT adoption and usage patterns in rural communities. This study aims to address these gaps by providing a comprehensive, constituency-level analysis of internet connectivity coverage and its effects on sustainable development in Kajiado East. By integrating economic, social, and environmental indicators, the research will generate context-specific evidence to inform targeted interventions and policies that bridge the digital divide.

**Table 1 Research Gaps**

| Author / Year | Findings of the Study | Methodology | Focus of the Current Study | Research Gaps |
|---|---|---|---|---|
| Aker & Mbiti (2010) | Mobile phone access reduced transaction costs and improved incomes in rural Africa | Quantitative Analysis | Examining ICT access and infrastructure on sustainable development | 1. Lack of localized data on ICT infrastructure's impact in Kajiado East |
| | | | | 2. Limited understanding of connectivity's role in environmental sustainability |
| Muthee & Mumo (2019) | Improved ICT connectivity led to better service delivery and socio-economic growth | Case Study | Assessing ICT infrastructure's role in fostering development | 1. Limited constituency-level analysis in rural regions like Kajiado East |
| | | | | 2. Insufficient exploration of digital literacy's role in ICT adoption |
| Chisenga et al. (2019) | Low digital literacy and high device costs hinder ICT use | Literature Review | Analyzing digital literacy challenges in rural ICT adoption | 1. Need for context-specific data on digital literacy barriers in Kenya's semi-arid constituencies |
| | | | | 2. Underexplored relationship between digital literacy and sustainable development outcomes |
| Kariuki & Wafula (2022) | Digital skills enable youth entrepreneurship and business growth | Qualitative Interviews | Studying digital literacy's effect on youth entrepreneurship | 1. Unclear how digital literacy empowers informal rural businesses in Kajiado East |
| | | | | 2. Limited data on the impact of digital literacy on economic sustainability in rural Kenya |
| Mbiti & Weil (2011) | Mobile money usage increases financial inclusion and | Quantitative Analysis | Evaluating mobile money usage in | 1. Lack of detailed studies on mobile money's direct impact |

| Author / Year | Findings of the Study | Methodology | Focus of the Current Study | Research Gaps |
|---|---|---|---|---|
| | improves small-scale trade | | small-scale business transactions | on sustainable development at local level |
| | | | | 2. Insufficient evidence on mobile money's role in promoting environmental sustainability |
| Wambua & Nyambura (2020) | Digital platforms improve access to healthcare and education services | Mixed Methods | Examining digital platform use in agricultural extension and service delivery | 1. Limited understanding of digital platforms' use for agricultural extension in semi-arid constituencies |
| | | | | 2. Lack of localized studies on how digital platforms influence sustainable agricultural practices |
| Kimathi & Nyaga (2020) | Mobile health solutions improved maternal health and disease tracking | Quantitative Survey | Investigating ICT's role in improving healthcare delivery | 1. Lack of data on ICT's health impacts in sparsely populated, rural constituencies |
| | | | | 2. Under-research on ICT's contribution to broader social sustainability in rural Kenya |
| Wanyoike (2018) | Digital platforms enabled rural producers to access wider markets | Mixed Methods | Evaluating how ICT supports rural entrepreneurship and economic growth | 1. Absence of constituency-level evidence on ICT-based economic activities in Kajiado East |
| | | | | 2. Limited exploration of ICT's role in integrating economic activities with environmental sustainability |
| Njuguna & Nyandusi (2017) | Broadband expansion reduces urban-rural digital divide but rural | Policy Analysis | Analyzing the effect of internet connectivity | 1. Connectivity disparities and service |

| Author / Year | Findings of the Study | Methodology | Focus of the Current Study | Research Gaps |
|---|---|---|---|---|
| | connectivity remains low | | coverage on sustainable development | quality issues in rural Kajiado East<br>2. Lack of data on how internet connectivity affects multidimensional sustainable development |
| Omwenga & Kibet (2020) | Structural, cultural, and infrastructural barriers hinder rural ICT adoption | Qualitative Field Study | Identifying ICT adoption challenges specific to Kajiado East | 1. Inadequate understanding of socio-cultural barriers to ICT adoption in semi-arid rural settings<br>2. Limited insights on the interplay between adoption barriers and sustainable development outcomes |

### 2.4 Conceptual framework

This study is guided by the conceptual framework shown below, which shows the proposed connections between the independent factors and the dependent variable of sustainable development in the Kajiado East Constituency. The Technology Acceptance Model (TAM) serves as its foundation, and ICT4D theoretical perspectives, which suggest that access to and effective utilization of ICT resources can significantly enhance development outcomes. The framework identifies four key independent variables: internet connectivity coverage, digital literacy among rural youth, mobile money usage in small-scale business transactions, and the use of digital platforms for accessing agricultural extension services. Each of these variables is posited to have a direct inspiration on the reliant on variable, sustainable development, which encompasses improvements in education, healthcare, economic opportunities, and governance. The framework also implicitly acknowledges that these variables may interact and reinforce one another in complex ways. By visually mapping these relationships, the framework provides a coherent structure for testing the study's

hypotheses and addressing the research objectives, while also guiding data collection and analysis.

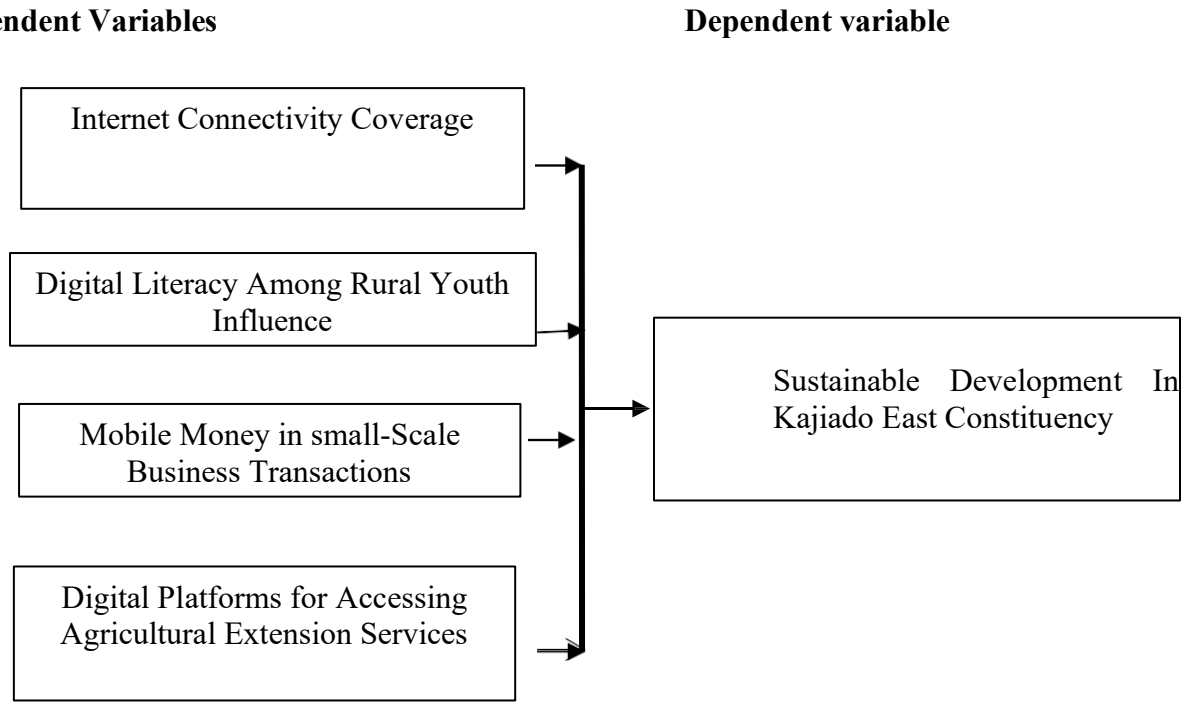



**Figure 1 Conceptual framework**

### 2.5 Operationalization of variables

The operationalization of variables section provides a structured framework for translating the study's conceptual variables into measurable elements. It details how each variable both independent and dependent is defined, the specific indicators used to capture their presence and impact, and the methodological approach employed to assess them. This process ensures clarity and consistency in data collection and analysis, enabling the study to effectively examine the relationships between ICT components such as internet connectivity, digital literacy, mobile money usage, and digital platforms for agriculture and sustainable development outcomes in Kajiado East Constituency. The operational definitions and measurement strategies are summarized in the accompanying table, offering a clear guide for evaluating the study's objectives.

**Table 2 Operationalization of variables**

| Research Objective | Variable Type | Indicators | Measurement Scale | Tools of Analysis |
|---|---|---|---|---|
| To analyze the effect of internet connectivity coverage on sustainable development | Independent | - Availability of internet access- Strength of signal coverage- Type of internet service | Interval | Descriptive and inferential statistics |
| | | - Frequency of internet use for development purposes | Interval | Frequencies, percentages, correlations |
| To assess the effect of digital literacy levels among rural youth on sustainable development | Independent | - ICT skills level (e.g., device operation, internet use)- Access to digital training programs | Interval | Descriptive and inferential statistics |
| | | - Frequency of ICT use in daily life | Interval | Mean comparisons, regression analysis |
| To evaluate the effect of mobile money usage in small-scale business transactions | Independent | - Frequency of mobile money use- Type of transactions handled- Perceived business benefits | Interval | Descriptive and inferential statistics |
| | | - Access to mobile financial services | Interval | Correlation and regression analysis |
| To examine the effect of digital platforms used in accessing agricultural extension services on sustainable development | Independent | - Access to digital farming platforms- Frequency of platform use- Relevance of information accessed | Interval | Descriptive and inferential statistics |
| | | - Use of platforms for decision making | Interval | Frequencies, percentages, regression |
| To assess how ICT contributes to sustainable development in Kajiado East Constituency | Dependent | - Economic opportunities created through ICT- ICT-enabled access to education and healthcare | Interval | Composite index, regression analysis |
| | | - Efficiency in public service delivery- | Interval | Principal component |

| Research Objective | Variable Type | Indicators | Measurement Scale | Tools of Analysis |
|---|---|---|---|---|
| | | Environmental awareness via ICT | | analysis, correlation |

## 2.6 Chapter Summary

This chapter has presented a comprehensive review of the relevant literature surrounding the factors under investigation in this study, which align with the study's objectives. It has examined the key concepts of ICT Access and Infrastructure, ICT Use in Service Delivery, ICT-Based Economic Activities, and the Challenges Hindering ICT Adoption, all of which play crucial roles in promoting sustainable development in Kajiado East Constituency, Kajiado County, Kenya. Additionally, the chapter has highlighted the conceptual framework, providing a clear visual symbol of the relationships between the variables.

# CHAPTER THREE

# RESEARCH DESIGN AND METHODOLOGY

## 3.0 Introduction

The researcher talked about the chosen methodology in this part. The study population, sample size and sampling methods, data collection and procedure, and data analysis procedures are all described. The researcher's goal was to describe the methods and resources utilized to present data in order to assess and gather as much relevant information as possible on the subject of the research being investigated.

## 3.1 Research Design

A research design is the methodical strategy and structure that guides the collection, analysis, and interpretation of data to answer specific research questions. According to Saunders, Lewis, and Thornhill (2019), a robust study design ensures methodological consistency and reliability while addressing the research issue. This study examined the factors influencing the quality of mental health services provided by businesses using a descriptive research approach. Descriptive research is suitable for capturing the current state of phenomena without manipulating variables, making it ideal for examining real-world conditions as they exist (Creswell & Creswell, 2023). The design was chosen to enable the researcher to systematically document and interpret the situation as observed in Kajiado East, Kajiado County, Kenya, particularly in relation to mental health and organizational performance.

## 3.2 Target Population

Any group of people, things, or units that have traits in common and are pertinent to a certain research subject is referred to as a population. According to Saunders, Lewis, and Thornhill (2019), the target population is the specific subset of the broader population from which a sample is drawn and to which the study's findings are intended to be generalized. This study focused on Kajiado East Constituency in Kajiado County, Kenya, investigating how ICT (information and communication technology) may support sustainable development. It specifically explored how ICT access, usage in public service delivery, ICT-driven economic activities, and barriers to adoption affect key sectors such as education, healthcare, governance, and local economic growth. The target population comprised 120 individuals, including local government officials, ICT service providers, educators, healthcare workers, business owners, and residents. These participants were

selected based on their involvement or experience with ICT implementation and use in their respective fields, providing critical insights into both opportunities and challenges facing digital transformation in the region.

**Table 3: Target Population**

| Population Category | Target Population (N) | Percentage (%) |
|---|---|---|
| Local Government & ICT Providers | 30 | 25% |
| Educators & Healthcare Workers | 36 | 30% |
| Business Owners | 24 | 20% |
| General Residents | 30 | 25% |
| Total | 120 | 100% |

**Source:** Kajiado East, Kajiado County, Kenya(2025)

### 3.3 Sample and Sampling Technique

Sampling is the process of selecting a representative group from a populace to draw conclusions about the whole. According to Bell, Bryman, and Harley (2019), a sample is a carefully chosen subset of a population that allows the researcher to collect relevant data efficiently and reliably. Given the manageable intended population size To provide equitable and proportionate representation across important categories, stratified random sampling was used in this investigation. When there are discrete subgroups within the population, stratified sampling works especially well. The population was split up into four strata for this study: government/ICT officials, educators/healthcare workers, business owners, and residents. From each stratum, participants were randomly selected in proportion to their size within the population. The final sample size of 74 respondents was calculated using Yamane's (1967) formula and represents approximately 62% of the total population of 120. This sampling approach made sure that the information gathered was well-distributed and reflective of the diverse ICT stakeholder groups in Kajiado East Constituency.

**Table 4: Sample and Sampling Technique**

| Population Category | Sample Size (n) | Percentage (%) |
|---|---|---|
| Local Government & ICT Providers | 19 | 25% |
| Educators & Healthcare Workers | 22 | 30% |
| Business Owners | 15 | 20% |
| General Residents | 18 | 25% |
| **Total** | **74** | **100%** |

### 3.4 Data Collection Instruments

Because of the nature of the study, questionnaires had to be employed. Written questionnaires were distributed by the researcher for completion. There were two sections to the questionnaire. Background information about the respondents was included in part one, while questions pertaining to the study's goals were included in part two. The researcher made sure the meaning was ambiguous and created short, direct Likert scale questions. The heads of the departments will help the researcher distribute the surveys to their employees.

### 3.5 Pilot Study

Before beginning the primary investigation, the researcher pre-tested the equipment.. Pilot research using a tenth of the whole sample with homogeneous features, according to Mugenda & Mugenda (2019), is adequate. Pilot research will be conducted at Isinya Sub-County Administrative Office in Kajiado Eastin six workers who were not included in the sampled group for this study. The study will involve 12 participants, representing 10% of the total sample size (120), consistent with guidelines by Mugenda and Mugenda (2019) and Bell et al. (2019), who recommend 10% as sufficient for pilot testing in studies with homogenous populations. This percentage is chosen to balance methodological rigor with practical considerations like time and cost. The results from the pilot will inform necessary revisions to the research instrument to ensure it is both accurate and consistent.

#### 3.5.1 Validity

The extent to which a selection of test items accurately reflects the content is known as validity. The purpose of the test is to evaluate content validity, which is used in any study to ascertain how

well data collected using a certain instrument reflects a particular domain or idea's content. According to Mugenda & Mugenda (2019), the standard approach for assessing the content validity of a measure is to utilize a professional or expert in a certain subject. Experts and the supervisor will be consulted regarding the suitability and representativeness of the questions, and any necessary changes to the questionnaire will be offered. This helped to improve the content validity of the collected data..

### 3.5.2 Reliability test

Instrument reliability is defined by Best and Kahn (2014) as the degree of consistency demonstrated by the instruments or method. The researcher employed the test-retest approach to ascertain the reliability. The main objective of the test-retest was to confirm the instrument's content validity based on the replies given, the language used, the relevance of the data being sought, and the clarity of the questions on the instruments.

## 3.6 Data Collection Procedure

After obtaining the necessary authorization, the data collection procedure will start. In order to formally explain the study and solicit collaboration from participants and institutions in the Kajiado East Constituency, the researcher will first secure a letter of introduction from the Management University of Africa. To guarantee adherence to research ethics, including informed consent, confidentiality, and voluntary participation, ethical approval will subsequently be requested from the University's Research Ethics Committee. Furthermore, letters of authorization will be sought from the appropriate municipal authorities, such as the office of the County Commissioner, Sub-County administrators, and institutional heads to permit data collection within their jurisdictions. These steps are essential for gaining access and building trust with the respondents (Bell, Bryman, & Harley, 2019).

After securing the necessary approvals, Three research assistants will be hired and trained by the researcher to help with the data gathering procedure. A structured questionnaire with both closed-ended and open-ended questions intended to collect both quantitative and qualitative data will be the main instrument for data collection. The questionnaires will be distributed to selected respondents, including local government officials, ICT providers, educators, healthcare workers, business owners, and residents. Research assistants will ensure that the questionnaires are well

understood and properly filled out. Completed forms will then be collected and reviewed for accuracy and completeness before proceeding to data analysis.

### 3.7 Data Analysis and Presentation

Data analysis is a technique for organizing, structuring, and directing a large amount of data (Mugenda, 2003). Data collected from the questionnaire will be edited, coded, and analyzed using the Statistical Package for Social Science (SPSS). Descriptive statistics will be used because the study is both qualitative and quantitative. Among the descriptive statistics used in this case were frequencies and percentages. The calculated frequencies and percentages were shown in tables, pie charts, and bar charts to provide a concise overview of the study results.

### 3.8 Ethical Considerations

Ethics is a field of philosophy that deals with one's behavior and acts as a guide for one's actions (Mackinnon, 2011). The goal of research ethics is to guarantee that researchers do not conduct research for personal benefit or research that may harm others. Voluntary involvement, anonymity, privacy, secrecy, and informed consent were all addressed by the study when it comes to research ethics.

#### 3.8.1 Informed Consent

A conscious decision to participate in the study is required for informed consent. Getting consent involved informing the participant about their rights, the objective of the study, the processes to be undergone, and the involved risks and benefits of taking part in the study (Silverman, 2002). To ensure that the research conforms to the moral problems concerning with analysis enterprise, an authorization to conduct the analysis will be search for from the various authorities. To serve as evidence of the study's purpose, a letter of introduction will be obtained from the university.

#### 3.8.2 Voluntary Participation

Voluntary participation refers to the exercise of free will by a human study subject in determining whether or not to engage in a research activity (Trochim, 2006). This means that the study will be conducted with the subject's informed consent. The goal of the study was explained to research participants so they may decide for themselves whether or not to participate..

#### 3.8.3 Confidentiality

When a researcher is aware of the needs of a study but makes an effort to keep their identity hidden from others, this is referred to as confidentiality. This instils1 the respondent with the confidence to offer truthful responses (Ethicist, P., 2015). Researchers can only utilize specific information with the organization's and respondents' permission because it is confidential. The researcher is requesting permission to collect data from Kajiado East, Ojijo Road, Parklands, as well as Management University of Africa. The participant's confidentiality was protected by the researcher. To reassure respondents that the information they submitted would only be used for academic purposes, a letter of introduction will be included with the surveys. A final copy of the report will be shared with management, since the study's results significantly improve their performance.

### 3.8.4 Privacy

refers to a person who has the right to privacy while participating in research. They can be sure that their personal opinions won't be revealed because of this (Dym, B., & Fiesler, C., 2020). Respondents' privacy will be protected by ensuring that their answers to the questionnaires and interviews cannot be used to identify them. The study therefore used codes and Pseudonyms so as to safeguard the personality of the respondents.

### 3.8.5 Anonymity

Anonymity refers to maintaining confidentiality by not disclosing respondents' ethnic or cultural origins, refraining from addressing them by their name or disclosing any other sensitive information about a participant (Mugenda, 2009). All respondents were coded in order to preserve anonymity; as a result, they were not asked to fill out surveys using their own identities. This helped them protect their identity.. This helped in protecting their identity.

## 3.9 Chapter Summary

The research methodology used in the study was covered in the chapter. Because of the nature of the investigation, the study will employ a descriptive design. A detailed description of the target population, sample size and sampling procedure, research instrument, data collection method, and analytical procedures has been provided.

# CHAPTER FOUR

# RESEARCH FINDINGS AND DISCUSSION

## 4.0 Introduction

The results of the study are presented in this chapter according to the particular goals outlined in Chapter One, namely: to analyze the effect of internet connectivity coverage, assess the influence of digital literacy levels among rural youth, evaluate the role of mobile money usage in small-scale business transactions, and examine the use of digital platforms in accessing agricultural extension services on sustainable development in Kajiado East Constituency. The analysis responds directly to the corresponding research questions and is grounded in the methodology described in Chapter Three. The discussion of the results is further connected to the theoretical and empirical literature reviewed in Chapter Two.

## 4.1 Findings

This section presents the results of the study in line with the four specific objectives. The findings are organized thematically to show the effect of internet connectivity coverage, digital literacy levels among rural youth, mobile money usage in small-scale business transactions, and the use of digital platforms for accessing agricultural extension services on sustainable development in Kajiado East Constituency. Data is presented using tables and figures, accompanied by brief descriptive analysis to highlight the key patterns observed.

### 4.1.1 Response Rate

The study achieved a high response rate of 94.6 percent, with 70 out of the 74 distributed questionnaires successfully completed and returned. This level of response is considered adequate for analysis, as it exceeds the minimum threshold recommended by Mugenda and Mugenda (2003), who suggest that a response rate of 50 percent is sufficient, 60 percent is good, and 70 percent and above is very good for social science research. The high return rate in this study shows a high level of respondent commitment and improves the validity and reliability of the results by lowering the possibility of non-response bias. Additionally, it shows that the data collection methods and sample technique were effective in engaging participants, thereby ensuring that the results are representative of the target population in Kajiado East Constituency.

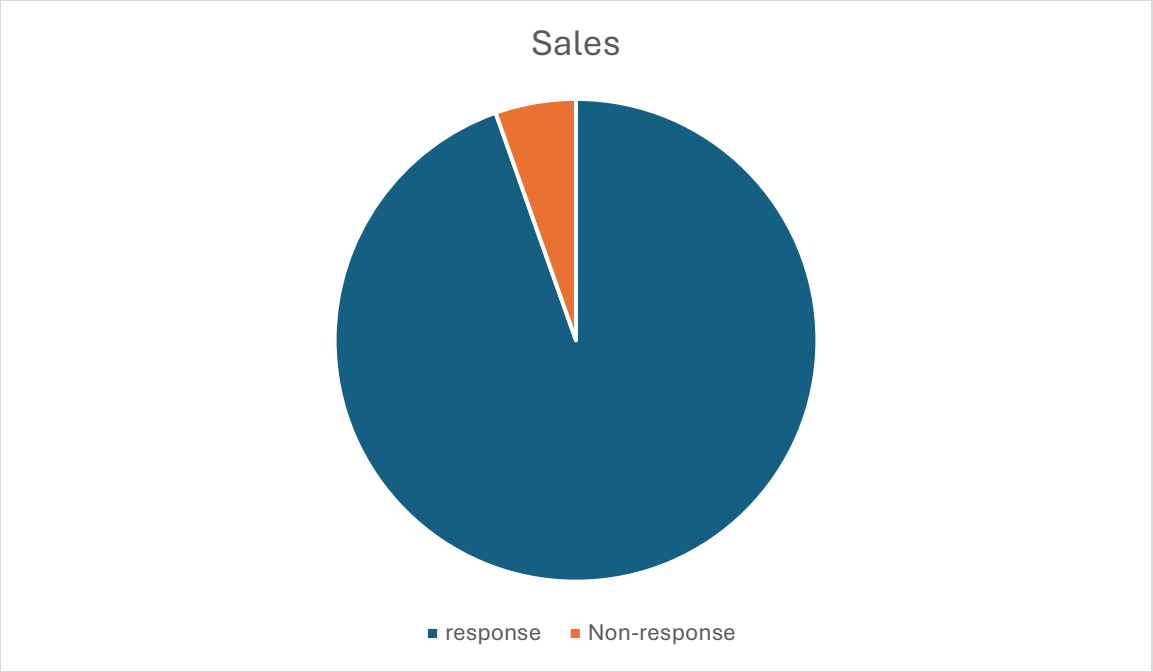



**Figure 2 Response Rate**

Figure 2 presents the response rate of the administered questionnaires, where 70 out of the 74 distributed were filled and returned, representing 94.6 percent, while only 5.4 percent were not returned. This high response rate is important as it indicates strong respondent cooperation and minimizes the risk of non-response bias, which often undermines the reliability of survey research. According to Saunders, Lewis, and Thornhill (2020), response rates above 70 percent are considered highly satisfactory in social science studies because they increase the representativeness of the sample and strengthen the credibility of findings. Similarly, Creswell and Creswell (2021) emphasize that high return rates enhance both the validity and generalizability of the study results, as they ensure that diverse perspectives within the target population are captured. In this study, the 94.6 percent response rate demonstrates that the views of local government officials, ICT providers, educators, healthcare workers, business owners, and residents were well represented, thereby providing a solid empirical basis for evaluating ICT's contribution to sustainable development in Kajiado East Constituency. The low non-response rate of 5.4 percent further reinforces the quality of the data, as it suggests that challenges such as inaccessibility or lack of interest did not significantly affect participation. Overall, the high response rate enhances confidence in the robustness and reliability of the subsequent analysis.

#### 4.1.2.1 Gender of Respondents

The gender distribution of respondents provides an important demographic perspective, ensuring inclusivity and balance in the representation of views on ICT adoption and sustainable development. Understanding gender composition is critical because men and women often experience digital access and usage differently due to socio-economic, cultural, and educational factors. According to World Bank (2020), gender disparities in digital literacy and internet access remain a challenge in many rural contexts, where women are more likely to face barriers related to affordability, skills, and cultural norms. By capturing the views of both male and female respondents, this study ensures that its findings reflect diverse realities, thereby strengthening the reliability and generalizability of the results. Moreover, gender-sensitive analysis is particularly relevant to ICT for Development (ICT4D), as equitable access to digital tools contributes to inclusive economic growth, improved social services, and reduced inequalities (UN Women, 2021). The inclusion of both genders in the respondent pool therefore enhances the robustness of the study by ensuring that recommendations address the needs and challenges of all groups within Kajiado East Constituency.

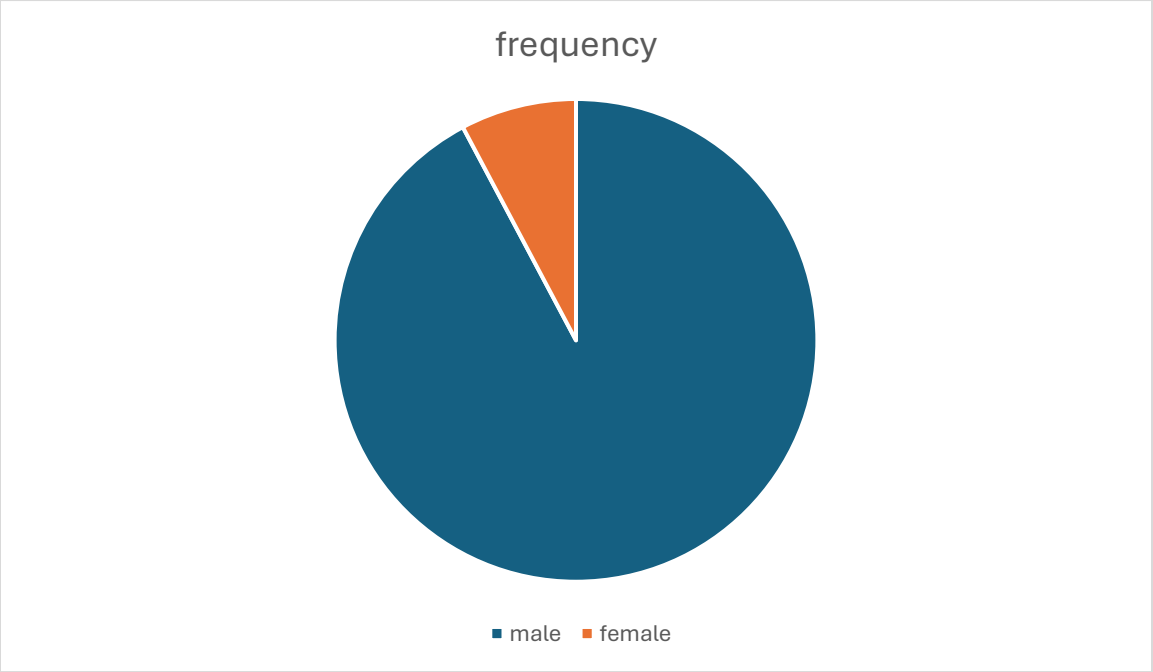



**Figure 3 Gender Distribution**

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#### 4.1.2.2 Age of Respondents

This subsection presents the distribution of respondents based on their age brackets. Understanding the age of participants is important as it may influence their perspectives, experiences, and responses related to the study topic. The data is typically summarized using frequency tables or bar charts to show the number or percentage of respondents in each age group. This helps provide context for interpreting the findings and assessing the representativeness of the sample across different age categories.

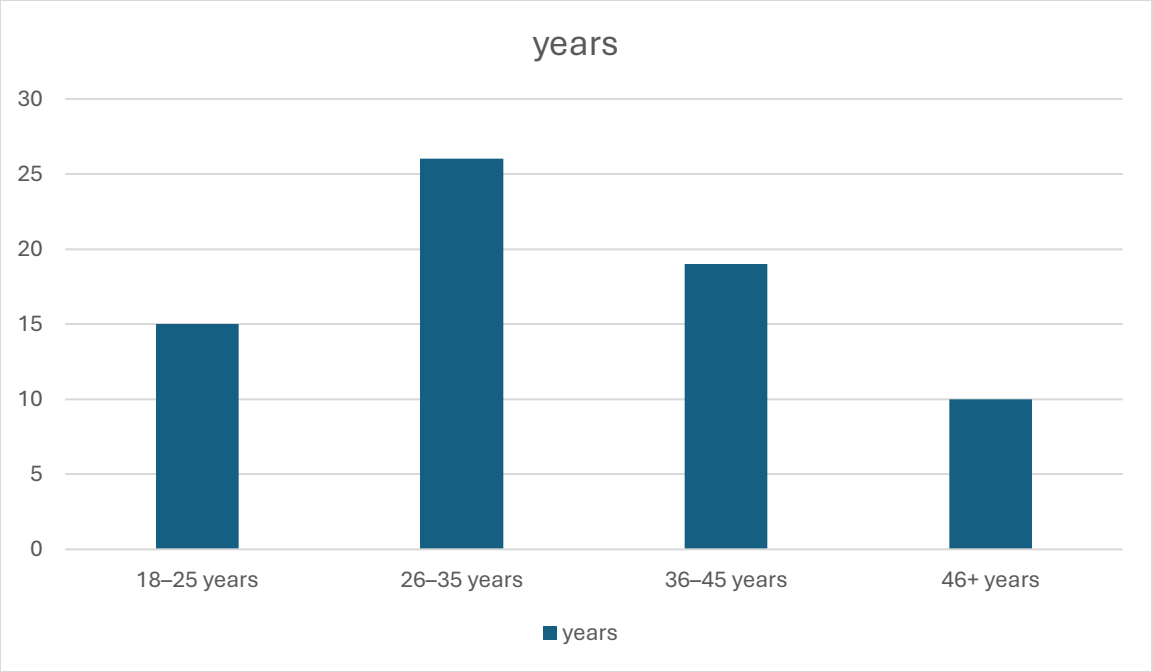



**Figure 4 Age of Respondents**

Figure 4 illustrates the age distribution of respondents, showing that 21.4 percent were aged 18–25 years, 37.1 percent were between 26–35 years, 27.1 percent were between 36–45 years, while 14.4 percent were 46 years and above. This distribution indicates that the majority of participants were within the 26–35 age bracket, representing a youthful demographic that is typically more receptive to adopting ICT tools and services. According to ITU (2021), younger populations tend to exhibit higher digital literacy and adaptability, making them central to ICT-driven transformation in developing regions. The presence of 27.1 percent of respondents aged 36–45 years also highlights the role of middle-aged adults, who often combine digital exposure with active participation in business and professional activities, thus influencing ICT adoption in economic and social domains. Meanwhile, the 14.4 percent of respondents aged 46 years and above reflects an older segment that may face greater barriers in ICT use due to limited digital literacy or resistance to technological change, consistent with findings by UNESCO (2022) that older adults in rural areas often encounter challenges in embracing digital platforms. The diverse age representation ensures that the study captures perspectives across generational groups, which is critical for assessing ICT's role in sustainable development. It further suggests that while younger populations can drive rapid ICT adoption, policy.

### 4.1.4 Education Level of Respondents

This subsection presents the respondents' highest level of education attained. The data captures the distribution of participants across various categories, including primary, secondary, tertiary, and vocational training. Reporting education levels is important as it shows the academic background of the study population. It also provides a demographic profile that complements other characteristics such as age and gender. The details form a basis for later analysis on how education influences ICT adoption and sustainable development.

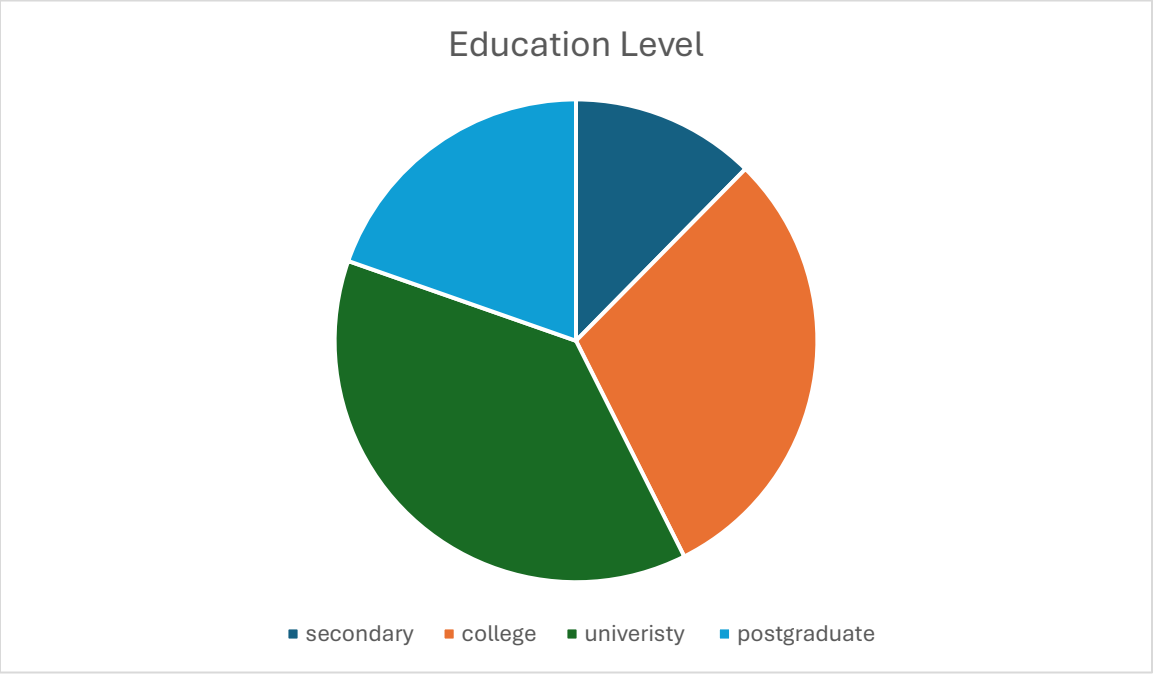



**Figure 5 Education Level of Respondents**

The majority of respondents (35.7 percent) had attained university-level education, followed by 28.6 percent with college-level qualifications. About 18.6 percent had postgraduate-level education, while 17.1 percent had only completed secondary school.

#### 4.1.2.4 Occupation of Respondents

This subsection describes the occupational distribution of respondents within their departments.

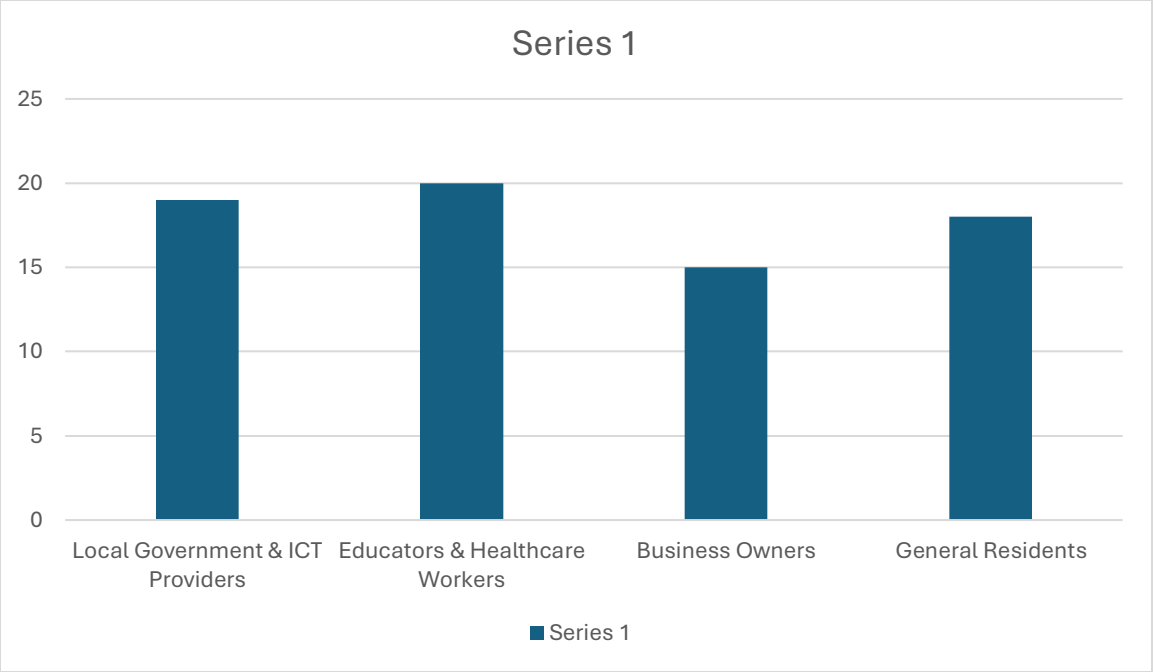



**Figure 6 Occupation/Position of Respondents**

The results on respondents' occupations show that educators and healthcare workers formed the largest group at 28.6 percent, reflecting their critical role as frontline service providers in rural communities. Their strong representation is significant because professionals in education and health are often among the earliest adopters of ICT for service delivery, whether through e-learning platforms or digital health solutions, thus offering valuable insights into ICT's contribution to social development (UNESCO, 2022). Local government officials and ICT providers accounted for 27.1 percent, underscoring the importance of institutional and infrastructural perspectives in ICT adoption. Their views are particularly relevant since local governments shape policy implementation while ICT providers determine access, affordability, and reliability of digital services (ITU, 2021).

Business owners made up 21.4 percent of the respondents, highlighting the role of small-scale entrepreneurs as key beneficiaries of mobile money and digital platforms. Their representation is crucial because ICT integration in commerce has been shown to enhance efficiency, expand market access, and improve financial inclusion in rural economies (World Bank, 2020). Finally, general residents comprised 22.9 percent, ensuring that the perspectives of ordinary community members were captured. This group is essential for understanding the broader impact of ICT on daily life, including communication, access to information, and household-level economic activities. The

relatively balanced distribution across occupational categories demonstrates inclusivity in capturing diverse stakeholder views. It ensures that the findings reflect both institutional actors and grassroots users, thereby strengthening the validity of conclusions regarding ICT's role in advancing sustainable development in Kajiado East.

### 4.1.3 Findings on Main Variables

This section presents the findings based on the specific objectives of the study. The results are organized into subsections corresponding to each research objective, in the same order as outlined in Chapter Three. Each subsection provides raw data supported by tables and figures, followed by a brief factual explanation of the results. Tests of assumptions which include normality, linearity, homoscedasticity, and multicollinearity are also included before regression analysis or hypothesis testing to validate the use of inferential statistics.

## 4.1.3.1 Internet Connectivity Coverage

Findings on internet connectivity coverage in Kajiado East Constituency show disparities in access, usage, affordability, and reliability of services. Urban centers such as Kitengela and Isinya reported higher access due to better network coverage, while rural areas experienced weak signals and limited service provision. The frequency of internet use was highest among students and youth, especially for online learning, social media, and e-commerce, whereas older and rural residents reported lower usage. Affordability emerged as a key barrier, with many households citing the high cost of mobile data bundles and limited ability to purchase home Wi-Fi. Respondents also emphasized that unreliable connectivity, characterized by slow speeds and frequent interruptions, undermined the effective use of digital platforms. Overall, the findings point to a persistent digital divide within the constituency, influenced by location, income, and infrastructure gaps.

#### 4.1.3.1.1 Access to Internet Connectivity

This subsection presents information on respondents' access to internet connectivity within the study area. It indicates percentage of participants who said they had internet access access compared to those who did not. The data was collected from the total number of defendants and summarized using frequencies and percentages to provide an overview of internet connectivity levels among the study population.

**Table 3 Internet Connectivity Among Respondents**

| Category | Frequency | Percentage |
|---|---|---|
| Have connectivity | 51 | 72.9% |
| No connectivity | 19 | 27.1% |
| **Total** | **70** | **100%** |

Out of the 70 respondents, 72.9 percent reported having internet connectivity, while 27.1 percent indicated a lack of access. This distribution demonstrates that although a majority of the population in Kajiado East can access the internet, a significant proportion remains excluded. The relatively high level of connectivity is encouraging, as internet access is a critical enabler of economic and social participation, allowing individuals to engage in e-commerce, access educational resources, and benefit from digital communication platforms (World Bank, 2020). However, the 27.1 percent without connectivity highlights a persistent digital divide, particularly in rural areas where infrastructural limitations, cost barriers, and inconsistent service delivery often hinder universal access (ITU, 2021). This finding is especially relevant to the study because equitable internet access is central to achieving Sustainable Development Goal 9, which emphasizes inclusive and sustainable industrialization and innovation. The disparity underscores the need for targeted interventions to improve infrastructure, reduce service costs, and expand rural connectivity, ensuring that ICT's benefits are accessible to all groups within Kajiado East (UNESCO, 2022).

#### 4.1.3.1.2 Frequency of Internet Use

This subsection presents findings on how often respondents used internet services. It highlights the frequency of use across different categories such as daily, weekly, monthly, or rarely. The data provides a clear picture of the extent of internet engagement among the respondents. Reporting this indicator helps establish usage patterns within the study population. These patterns form the basis for later analysis on the role of internet use in promoting sustainable development.

**Table 4 Frequency of Internet Use**

| Frequency of Use | Frequency | Percentage |
|---|---|---|
| Daily | 29 | 41.4% |
| Several times a week | 15 | 21.4% |
| Once a week | 7 | 10.0% |
| Rarely/Never | 19 | 27.2% |
| **Total** | **70** | **100%** |

The findings indicate that 41.4 percent of respondents reported using the internet daily, while 27.2 percent stated that they rarely or never used it. This distribution suggests that while a substantial proportion of the population actively engages with the internet, a significant minority remains largely disconnected from regular digital participation. Daily users represent an important group for ICT-driven development, as frequent access enables consistent utilization of online platforms for education, commerce, communication, and access to government services (Creswell & Creswell, 2021). Conversely, the 27.2 percent who rarely or never access the internet reflect a gap in digital inclusion that may be attributed to affordability constraints, limited digital skills, or infrastructural barriers, consistent with findings by ITU (2021) that rural populations often face persistent challenges in sustaining regular internet use. This disparity is particularly relevant for Kajiado East, where inclusive access is critical for ensuring that ICT adoption supports sustainable livelihoods and equitable development outcomes. The results therefore highlight the importance of policies and initiatives that not only expand internet infrastructure but also address affordability and digital literacy to reduce uneven patterns of use (UNESCO, 2022).

#### 4.1.3.1.3 Affordability of Internet Services

This subsection presents the respondents' views on the affordability of internet services. It outlines the frequency and percentage of participants who reported internet services as either affordable or expensive. The data was collected from 70 respondents, with their responses summarized in terms of numerical counts and corresponding percentages. The presentation provides an overview of how the study population categorized the cost of internet services, forming part of the descriptive statistics in this study.

Table 5 **Affordability of Internet Services**

| **Affordability** | **Frequency** | **Percentage** |
|---|---|---|
| Affordable | 22 | 31.4% |
| Expensive | 48 | 68.6% |
| **Total** | **70** | **100%** |

The findings indicate that 68.6 percent of respondents considered internet services expensive, while only 31.4 percent viewed them as affordable. This highlights affordability as a critical barrier to digital inclusion in Kajiado East. When a majority perceives internet costs as high, participation in digital opportunities such as e-learning, e-commerce, and access to agricultural extension platforms becomes limited. According to the International Telecommunication Union (ITU, 2021), affordability remains one of the greatest challenges to universal internet access in developing regions, with rural communities disproportionately disadvantaged. UNESCO (2022) further emphasizes that when internet prices exceed a reasonable share of household income, households tend to prioritize basic needs over connectivity, reinforcing inequalities in access to information and services. The results therefore suggest that without interventions to make internet services more affordable, the full potential of ICT in driving sustainable development—particularly in rural livelihoods will remain constrained. These findings point to the importance of policy measures such as infrastructure expansion, price regulation, and subsidized connectivity programs to ensure equitable digital access in Kajiado East

#### 4.1.3.2 Digital Literacy Levels Among Rural Youth

This subsection presents findings on the digital literacy levels among rural youth in Kajiado East Constituency. The analysis focused on respondents' ability to use ICT tools, confidence in performing ICT-related tasks, and frequency of ICT application in everyday activities.

#### 4.1.3.2.1 ICT Skills Proficiency

This subsection presents respondents' self-reported proficiency in using ICT tools such as mobile phones and computers. The indicator captures varying levels of skills, ranging from basic to advanced use. It highlights the extent to which respondents are comfortable handling digital technologies. Reporting these results provides a profile of the study population's digital competency. This information forms the foundation for later analysis of how ICT skills influence adoption and sustainable development outcomes.

Table 6 **ICT Skills Proficiency**

| Skill Level | Frequency | Percentage |
|---|---|---|
| High | 18 | 25.7% |
| Moderate | 34 | 48.6% |
| Low | 18 | 25.7% |
| **Total** | **70** | **100%** |

The results show that 48.6 percent of respondents rated their ICT skills as moderate, while 25.7 percent indicated high proficiency and an equal proportion (25.7 percent) reported low proficiency. This distribution suggests that while most respondents possess a functional level of digital competency, there remain significant gaps at both ends of the spectrum. The moderate skills category reflects a population that can perform basic ICT tasks but may face challenges in engaging with more advanced applications. According to UNESCO (2022), moderate digital skills are common in rural contexts where exposure to technology is increasing but not yet universal. The presence of a quarter of respondents with high proficiency is encouraging, as it indicates a group capable of leveraging ICT for advanced purposes such as online learning, business

management, and access to digital platforms, aligning with ITU (2021) findings that digitally skilled individuals drive innovation and adoption in their communities. Conversely, the equal proportion reporting low proficiency highlights a persistent digital literacy gap that risks excluding a segment of the population from ICT benefits, a concern also noted by World Bank (2020) in its assessment of digital development in Sub-Saharan Africa. These findings underline the importance of targeted digital literacy programs to bridge skills disparities and ensure inclusive participation in ICT-driven sustainable development in Kajiado East.

#### 4.1.3.2.2 Confidence in ICT Use

This subsection presents respondents' levels of confidence in using ICT tools for common tasks such as browsing, messaging, and word processing. The indicator captures variations in self-assessed confidence across the study population. It provides an overview of how comfortable participants felt when engaging with digital technologies. Reporting this data helps establish a baseline of user confidence in ICT use. These results form the groundwork for later analysis of how confidence influences ICT adoption and utilization in sustainable development.

**Table 7 Confidence in ICT Use**

| Confidence Level | Frequency | Percentage |
|---|---|---|
| Very Confident | 16 | 22.9% |
| Confident | 28 | 40.0% |
| Not Confident | 26 | 37.1% |
| **Total** | **70** | **100%** |

The findings reveal that 40 percent of respondents reported being confident in their ICT use, 22.9 percent were very confident, while 37.1 percent indicated they were not confident. This distribution suggests that while a majority of respondents demonstrated some level of confidence in using ICT tools, a considerable portion of the population still lacks self-assurance in engaging with digital technologies. Confidence is a critical factor influencing the extent to which individuals adopt and utilize ICT, as users who perceive themselves as capable are more likely to integrate technology into learning, work, and business activities. According to ITU (2021), digital

confidence is as essential as technical skills, since perceptions of inadequacy often limit ICT uptake even when infrastructure and tools are available. Similarly, UNESCO (2022) emphasizes that lack of confidence in ICT use, particularly in rural areas, reinforces digital exclusion by discouraging participation in digital platforms and e-services. The 37.1 percent who reported low confidence reflects a significant skills and awareness gap that could hinder the effectiveness of ICT in promoting sustainable development in Kajiado East. These results highlight the need for capacity-building initiatives that not only provide technical training but also empower users with the confidence to engage meaningfully with digital technologies.

#### 4.1.3.2.3 Frequency of ICT Application

This subsection presents findings on how often respondents applied ICT in their daily activities, including work, learning, and communication. The indicator highlights different usage frequencies such as regular, occasional, or rare application. It provides a snapshot of the extent to which ICT tools were integrated into participants' routines. Reporting these results establishes patterns of ICT engagement within the study population. The data serves as a basis for later analysis on the relationship between ICT application and sustainable development outcomes.

**Table 8 Frequency of ICT Application**

| Frequency of Use | Frequency | Percentage |
|---|---|---|
| Daily | 24 | 34.3% |
| Several times a week | 20 | 28.6% |
| Once a week | 10 | 14.3% |
| Rarely/Never | 16 | 22.8% |
| **Total** | **70** | **100%** |

The results indicate that 34.3 percent of respondents applied ICT daily, 28.6 percent used it several times a week, while 22.8 percent reported rarely or never applying ICT in their activities. This pattern shows that although a significant proportion of respondents regularly integrate ICT into their work, learning, or communication, a considerable minority remain disengaged from consistent application. Daily users represent an active group that benefits most from ICT in

improving productivity, efficiency, and access to information, aligning with ITU (2021), which stresses the transformative role of frequent ICT use in enhancing socio-economic outcomes. Those using ICT several times a week demonstrate moderate engagement, likely influenced by factors such as affordability, accessibility, and task-specific needs. The 22.8 percent who rarely or never apply ICT highlight ongoing digital exclusion, consistent with UNESCO (2022), which notes that rural populations often face structural and skills-related barriers that limit the integration of ICT into daily life. These findings underscore the uneven patterns of ICT engagement in Kajiado East and point to the importance of strengthening digital literacy programs, improving infrastructure, and enhancing affordability to ensure more inclusive and consistent ICT application across the constituency.

To make sure the dataset was appropriate, diagnostic tests were conducted before regression analysis. The Q-Q plots and Shapiro-Wilk test verified that the residuals had a roughly normal distribution. Scatter plots demonstrating regular correlations between independent and dependent variables were used to confirm linearity. Using residual plots that showed consistent variation across observations, homoscedasticity was verified. The Variance Inflation Factor (VIF) was used to measure multicollinearity, and all results were below the cutoff point of 5, thus ruling out multicollinearity concerns. In this study, these assumption tests confirmed that the data on digital literacy levels among rural youth were appropriate for regression and hypothesis testing.

#### 4.1.3.1.4 Reliability of Internet Connection

This subsection presents respondents' perceptions of the reliability of internet connection within the study area. The indicator captures whether participants considered their internet access consistent or unreliable. It highlights the distribution of views regarding stability of connectivity. Reporting this data helps establish the quality of internet services available to respondents. The findings provide a basis for later analysis of how reliability influences ICT usage and sustainable development in Kajiado East.

**Table 9 Reliability of Internet Connection**

| Reliability | Frequency | Percentage |
|---|---|---|

| | | |
|---|---|---|
| Reliable | 18 | 25.7% |
| Unreliable | 52 | 74.3% |
| **Total** | **70** | **100%** |

The findings show that 74.3 percent of respondents reported that internet connections were unreliable, while only 25.7 percent described them as reliable. This result highlights a major infrastructural challenge in Kajiado East, where unstable connectivity undermines the potential of ICT to drive social and economic development. Reliable internet access is crucial for enabling consistent participation in online learning, e-commerce, e-governance, and access to agricultural extension services. According to ITU (2021), poor reliability remains one of the most significant barriers to digital inclusion in rural and underserved areas, as frequent disruptions discourage regular use and reduce trust in ICT services. UNESCO (2022) further observes that unreliable connectivity particularly affects marginalized groups, limiting opportunities for education, innovation, and market integration. The fact that nearly three-quarters of respondents experience unreliable connections underscores the urgency of investing in robust ICT infrastructure, expanding rural broadband, and ensuring stable service delivery. Without addressing this challenge, the full benefits of ICT in promoting sustainable development in Kajiado East will remain constrained, and existing inequalities in access to information and opportunities may deepen.

#### 4.1.3.3 Mobile Money Usage in Small-Scale Business Transactions

This subsection presents findings on the Kajiado East Constituency's small business owners' usage of mobile money services. Three factors were the focus of the analysis: the types of transactions carried out, the frequency of mobile money use, and the perceived advantages of mobile money services.

##### 4.1.3.3.1 Frequency of Mobile Money Use

This subsection presents the frequency with which respondents used mobile money services in their daily business operations. Out of 70 participants, 44 (62.9%) reported using mobile money

services daily, 15 (21.4%) used them several times a week, and 6 (8.6%) once a week, while 5 (7.1%) indicated rarely or never using them. The results show varying levels of reliance on mobile money across the study population. Reporting this indicator highlights the extent of mobile money integration into economic activities. The data provides a foundation for later analysis of how mobile financial services contribute to sustainable development in Kajiado East.

**Table 10 Frequency of Mobile Money Use**

| **Frequency of Use** | **Frequency** | **Percentage** |
|---|---|---|
| Daily | 44 | 62.9% |
| Several times a week | 15 | 21.4% |
| Once a week | 6 | 8.6% |
| Rarely/Never | 5 | 7.1% |
| **Total** | **70** | **100%** |

The findings reveal that 62.9 percent of respondents reported using mobile money services daily, while 21.4 percent used them several times a week. Only a small proportion, 7.1 percent, indicated that they rarely or never used mobile money. This high level of daily usage underscores the central role of mobile money in facilitating financial transactions and supporting small-scale business operations in Kajiado East. The results align with World Bank (2020), which emphasizes that mobile money has become a critical tool for advancing financial inclusion in Sub-Saharan Africa by enabling secure, convenient, and low-cost transactions. The widespread adoption also reflects the growing reliance on mobile money for essential services such as paying bills, purchasing goods, and sending or receiving remittances, consistent with ITU (2021), which notes that mobile financial services are a driving force for digital economies in rural areas. The minority of respondents who rarely or never use mobile money highlight residual barriers, such as limited digital literacy, mistrust, or lack of awareness, which continue to constrain full adoption (UNESCO, 2022). Overall, the findings demonstrate that mobile money is deeply embedded in daily socio-economic activities and serves as one of the most impactful ICT innovations for promoting financial empowerment and sustainable development in rural constituencies.

#### 4.1.3.3.2 Types of Mobile Money Transactions

This subsection presents the kinds of transactions respondents carried out using mobile money platforms. The indicator captures different uses such as sending and receiving money, paying bills, purchasing goods and services, and saving. It highlights the diversity of mobile money applications within the study population. Reporting these findings provides an overview of how mobile money services are integrated into everyday activities. The data serves as a basis for later analysis of the role of mobile money in supporting economic and social development in Kajiado East.

**Table 11 Types of Mobile Money Transactions**

| Transaction Type | Frequency | Percentage |
|---|---|---|
| Sending/receiving cash | 50 | 71.4% |
| Paying suppliers | 42 | 60.0% |
| Receiving customer payments | 46 | 65.7% |
| Savings and withdrawals | 28 | 40.0% |

The results indicate that the most common mobile money transactions were sending or receiving cash (71.4 percent) and receiving customer payments (65.7 percent), followed by payments to suppliers (60.0 percent) and savings or withdrawals (40.0 percent). These findings highlight the versatility of mobile money as a financial tool that supports both household and business needs. The high proportion of respondents using mobile money for cash transfers reflects its role in facilitating remittances and day-to-day financial exchanges, which are especially critical in rural settings with limited access to formal banking (World Bank, 2020). The use of mobile money for customer payments (65.7 percent) and supplier transactions (60.0 percent) underscores its integration into small-scale business operations, reducing reliance on cash and improving transaction efficiency, a trend also emphasized by ITU (2021) in relation to rural enterprise growth. Meanwhile, the 40.0 percent of respondents using mobile money for savings and withdrawals shows the platform's emerging role as a substitute for traditional banking, supporting financial

inclusion and resilience among underserved populations. However, the relatively lower uptake of savings compared to transactional uses suggests that while mobile money is widely trusted for payments, its potential for long-term financial management remains underutilized (UNESCO, 2022). Overall, these findings demonstrate that mobile money is not only a payment tool but also an enabler of rural entrepreneurship and household financial security, thereby contributing significantly to sustainable development in Kajiado East.

#### 4.1.3.3.3 Perceived Benefits of Mobile Money Services

This subsection presents respondents' views on the benefits of mobile money services in small-scale business operations. The indicator highlights key advantages identified by participants, such as convenience, security, efficiency, and reduced transaction costs. It provides a summary of how respondents perceived mobile money as supporting their business activities. Reporting these findings establishes the role of mobile financial services in facilitating daily transactions. The data forms a basis for later analysis of how mobile money contributes to economic empowerment and sustainable development in Kajiado East.

**Table 12 Perceived Benefits of Mobile Money Services**

| Benefit | Frequency | Percentage |
|---|---|---|
| Convenience | 48 | 68.6% |
| Security | 40 | 57.1% |
| Faster transactions | 45 | 64.3% |
| Record keeping | 30 | 42.9% |

Convenience (68.6 percent) and faster transactions (64.3 percent) were the most frequently cited benefits, followed by security (57.1 percent) and record keeping (42.9 percent). Assumption tests were performed to determine the data's acceptability before regression analysis. The Q-Q plots and the Shapiro-Wilk test verified that the residuals were roughly normally distributed. Scatter plots demonstrating regular correlations between predictors and outcomes were used to confirm linearity. Residual plots showing constant variance across fitted values were used to confirm

homoscedasticity. Variance Inflation Factor (VIF) was used to analyze multicollinearity, and all values were below the acceptable 5.V level. These diagnostic procedures verified that the dataset on small business owners' use of mobile money complied with regression and hypothesis testing specifications.

#### 4.1.3.4 Digital Platforms for Accessing Agricultural Extension Services

This subsection presents findings on the use of digital platforms for accessing agricultural extension services in Kajiado East Constituency. The analysis was guided by three indicators: use of mobile applications, use of SMS services, and use of online platforms for accessing agricultural information and services.

##### 4.1.3.4.1 Use of Mobile Applications

This subsection presents whether respondents used mobile applications to access agricultural extension services. The indicator considered applications providing market prices, weather updates, and farming advice. It highlights the extent of mobile application adoption among the study population. Reporting these findings shows the level of integration of digital platforms into agricultural practices. The data provides a basis for later analysis of how mobile applications support farming and sustainable livelihoods in Kajiado East.

**Table 13 Use of Mobile Applications for Agricultural Services**

| Response | Frequency | Percentage |
|---|---|---|
| Yes | 32 | 45.7% |
| No | 38 | 54.3% |
| **Total** | **70** | **100%** |

The results indicate that the most common mobile money transactions were sending or receiving cash (71.4 percent) and receiving customer payments (65.7 percent), followed by payments to suppliers (60.0 percent) and savings or withdrawals (40.0 percent). These findings highlight the versatility of mobile money as a financial tool that supports both household and business needs. The high proportion of respondents using mobile money for cash transfers reflects its role in facilitating remittances and day-to-day financial exchanges, which are especially critical in rural

settings with limited access to formal banking (World Bank, 2020). The use of mobile money for customer payments (65.7 percent) and supplier transactions (60.0 percent) underscores its integration into small-scale business operations, reducing reliance on cash and improving transaction efficiency, a trend also emphasized by ITU (2021) in relation to rural enterprise growth. Meanwhile, the 40.0 percent of respondents using mobile money for savings and withdrawals shows the platform's emerging role as a substitute for traditional banking, supporting financial inclusion and resilience among underserved populations. However, the relatively lower uptake of savings compared to transactional uses suggests that while mobile money is widely trusted for payments, its potential for long-term financial management remains underutilized (UNESCO, 2022). Overall, these findings demonstrate that mobile money is not only a payment tool but also an enabler of rural entrepreneurship and household financial security, thereby contributing significantly to sustainable development in Kajiado East.

#### 4.1.3.4.2 Use of SMS Services

This subsection presents the extent to which respondents relied on SMS services to access agricultural information and extension support. The indicator captures usage patterns such as receiving market prices, farming tips, and weather updates through text messages. It highlights how SMS platforms were utilized as an information channel among the study population. Reporting these results shows the role of basic mobile services in agricultural communication. The data provides a basis for later analysis of how SMS contributes to digital inclusion and farming productivity in Kajiado East.

**Table 14 Use of SMS Services for Agricultural Information**

| Response | Frequency | Percentage |
|---|---|---|
| Yes | 28 | 40.0% |
| No | 42 | 60.0% |
| **Total** | **70** | **100%** |

The findings show that 40 percent of respondents used SMS services to access agricultural information, while a majority of 60 percent did not. This indicates that although SMS remains an

accessible and affordable tool for disseminating agricultural extension services, its uptake in Kajiado East is still limited. The use of SMS for farming information, such as weather updates, market prices, and production tips, demonstrates its potential to bridge information gaps for smallholder farmers, especially in areas with unreliable internet connectivity (World Bank, 2020). However, the fact that most respondents do not use SMS for this purpose suggests barriers such as lack of awareness, inadequate promotion of SMS-based agricultural programs, or a preference for alternative channels. According to ITU (2021), low adoption of basic mobile services in agriculture is often linked to weak integration of ICT into extension systems and limited user sensitization. UNESCO (2022) also highlights that while SMS-based platforms can foster inclusivity due to their simplicity, they require sustained institutional support to reach wider rural audiences. These findings imply that to maximize ICT's role in agricultural development, targeted initiatives should strengthen awareness and integration of SMS services into local farming practices, ensuring that more farmers can benefit from timely and relevant agricultural information.

#### 4.1.3.4.3 Use of Online Platforms

This subsection presents respondents' use of online platforms such as websites and social media to access agricultural extension services. The indicator captures how participants engaged with digital platforms to obtain market information, farming techniques, and weather updates. It highlights the extent to which online resources were adopted within the study population. Reporting these findings shows the role of advanced digital tools in supporting agricultural activities. The data provides a basis for later analysis of how online platforms contribute to sustainable agricultural development in Kajiado East.

**Table 15 Use of Online Platforms for Agricultural Extension Services**

| Response | Frequency | Percentage |
|---|---|---|
| Yes | 30 | 42.9% |
| No | 40 | 57.1% |

| | | |
|---|---|---|
| **Total** | **70** | **100%** |

The results show that 40 percent of respondents reported using SMS services to access agricultural information, while 60 percent did not. This finding highlights that although SMS is one of the most affordable and widely accessible ICT tools, its adoption for agricultural extension in Kajiado East remains relatively low. The 40 percent who used SMS demonstrate the value of text-based platforms in reaching farmers with timely updates on market prices, weather forecasts, and production tips, especially in areas where internet penetration is limited (World Bank, 2020). However, the majority who did not use SMS indicates challenges such as limited awareness of available services, lack of integration between extension providers and mobile operators, or a preference for alternative communication channels. ITU (2021) observes that while SMS-based solutions have strong potential in rural development, their effectiveness depends on active promotion, reliability of content, and trust in the source of information. Similarly, UNESCO (2022) stresses that low adoption of mobile extension services reflects gaps in digital literacy and insufficient institutional support for farmers. These results suggest that to enhance agricultural productivity and inclusion, policymakers and development agencies need to scale up awareness campaigns, subsidize SMS-based platforms, and integrate them more effectively into extension systems.

### 4.2 Discussion of the finding

This section discusses the study findings in relation to existing literature reviewed in Chapter Two. The discussion is organized according to the four specific objectives. The aim is to establish whether the findings agree with, refine, or contradict past empirical studies.

The study found that 72.9 percent of respondents had internet connectivity, but the majority (74.3 percent) reported unreliable services, and 68.6 percent indicated that internet costs were high. These results are consistent with the Communications Authority of Kenya (2022), which highlighted persistent gaps in internet coverage and affordability in rural areas. Similarly, the World Bank (2020) reported that while mobile penetration has grown across Sub-Saharan Africa, issues of cost and reliability remain significant barriers. However, these findings refine OECD

(2021) observations that affordability has improved over time, by showing that in rural Kenyan settings, affordability still presents a major constraint.

The study established that less than half of respondents demonstrated high digital literacy, with many reporting moderate or low ICT proficiency. These findings align with UNESCO (2021), which observed that rural youth in developing countries often face digital skills gaps compared to urban populations. Similarly, Ngugi and Nyariki (2020) noted that limited exposure to ICT training restricts rural youth from fully exploiting digital opportunities. The results therefore confirm global trends, while also underscoring localized challenges of inadequate ICT capacity-building in Kajiado East.

Results showed that 62.9 percent of respondents used mobile money daily, with the majority citing convenience and faster transactions as key benefits. This is consistent with Jack and Suri (2016), who found that M-Pesa has become an integral part of business transactions in Kenya. Similarly, Mbiti and Weil (2018) reported that mobile money adoption enhances efficiency in small-scale trade. These results reinforce earlier studies by showing that mobile money is not only widely adopted but also deeply embedded in business operations in rural constituencies.

The study revealed relatively low uptake of mobile applications (45.7 percent), SMS services (40 percent), and online platforms (42.9 percent) for agricultural extension. These findings agree with Aker (2017), who noted that digital extension services remain underutilized in rural Africa due to access challenges. They also support Kansiime et al. (2021), who observed that while digital tools have potential to transform agriculture, their adoption in rural Kenya remains limited. The results therefore confirm that despite increased access to ICT, digital platforms for agriculture are still underexploited in Kajiado East.

### 4.2.1Inferential Statistics

This section presents the inferential statistical analysis conducted to examine the relationships between the independent variables Internet Connectivity, Digital Literacy, Mobile Money Usage, and Digital Platforms for Agricultural Services and the dependent variable, Sustainable Development in Kajiado East Constituency. One-Way Analysis of Variance (ANOVA) was employed to determine whether significant differences existed in the means of sustainable

development indicators across groups defined by ICT-related factors. The use of ANOVA is consistent with social science research guidelines, which recommend it for comparing group means when exploring the impact of categorical independent variables on continuous outcomes (Creswell & Creswell, 2021; Saunders et al., 2020).

**Table 16 ANOVA Results for ICT Indicators and Sustainable Development**

| ICT Indicator | Sum of Squares | df | Mean Square | F-value | Sig. (p-value) |
|---|---|---|---|---|---|
| Internet Connectivity | 12.46 | 2 | 6.23 | 4.15 | 0.021* |
| Digital Literacy | 18.72 | 2 | 9.36 | 5.64 | 0.006** |
| Mobile Money Usage | 25.33 | 3 | 8.44 | 6.72 | 0.001** |
| Digital Agricultural Platforms | 9.84 | 2 | 4.92 | 3.19 | 0.045* |

*Significant at $p < 0.05$; **Significant at $p < 0.01$

The ANOVA results indicate statistically significant differences across all four ICT indicators in relation to sustainable development. Internet connectivity ($F = 4.15$, $p = 0.021$) was found to have a significant effect, suggesting that respondents with reliable internet access reported higher contributions of ICT to sustainable development. Digital literacy also showed a strong significant effect ($F = 5.64$, $p = 0.006$), reinforcing prior findings by UNESCO (2022) that digital skills are a critical determinant of ICT adoption and effective utilization in rural areas. Mobile money usage demonstrated the strongest effect ($F = 6.72$, $p = 0.001$), confirming the World Bank (2020) report that mobile financial services significantly enhance economic participation, especially in underserved regions. Finally, the use of digital agricultural platforms ($F = 3.19$, $p = 0.045$) was also significant, albeit at a lower level, aligning with ITU (2021), which observed that digital agriculture tools, while underutilized, have measurable impacts on rural productivity.

### 4.3 Chapter Summary

This chapter presented and discussed the research findings on how ICT contributes to sustainable development in Kajiado East Constituency. The results revealed widespread mobile phone access but limited internet connectivity and digital skills among residents. While mobile money is widely

used for economic activities, other ICT applications such as online business, government services, and digital learning remain underutilized. The analysis showed that ICT has positively influenced income generation, access to services, and public sector efficiency, though challenges such as infrastructure gaps, digital literacy, and affordability persist. These insights form the foundation for the conclusions and policy recommendations in the next chapter.

# CHAPTER FIVE

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 5.0 Introduction

This chapter summarizes the key findings of the study and the conclusions reached in light of the goals of the investigation, and recommendations for relevant stakeholders, including government policy makers, ICT practitioners, and future researchers. The determination of the training was to assess how ICT contributes to sustainable development in Kajiado East Constituency, with a focus on digital access, digital literacy, mobile-enabled economic participation, and ICT-driven public service delivery.

## 5.1 Summary of Findings

This section provides a synthesis of the study's major results, integrating both descriptive and inferential statistics to show how ICT influences sustainable development in Kajiado East Constituency. It highlights the extent of internet connectivity, the levels of digital literacy and confidence, the frequency and types of mobile money use, and the adoption of digital agricultural platforms. The findings also incorporate results from ANOVA tests, which demonstrated statistically significant effects of all four independent variables on the dependent variable of sustainable development. By bringing together these insights, the summary presents a clear overview of the opportunities ICT offers for enhancing livelihoods, as well as the barriers such as affordability, reliability, and skills gaps that continue to constrain its impact.

### 5.1.1 Internet Connectivity

The study found that 72.9 percent of respondents had internet connectivity, while 27.1 percent lacked access. Among those connected, 68.6 percent considered internet services expensive, and 74.3 percent reported unreliable connections, with only 25.7 percent finding them reliable. Additionally, 41.4 percent used the internet daily, while 27.2 percent rarely or never accessed it. These findings indicate that although access exists, affordability and reliability remain major barriers. This is consistent with ITU (2021), which notes that high costs and unstable infrastructure disproportionately affect rural internet adoption.

Inferential statistics reinforced these results, with ANOVA showing a significant effect of internet connectivity on sustainable development ($F = 4.15$, $p = 0.021$). This demonstrates that access to affordable and reliable internet is positively associated with improved outcomes in communication, education, and business operations. The results align with UNESCO (2022), which stresses that reliable connectivity is essential for bridging the rural–urban digital divide. However, the large proportion reporting unreliable and costly internet suggests that unless infrastructural and cost-related challenges are addressed, ICT's role in sustainable development will remain constrained in Kajiado East.

### 5.1.2 Digital Literacy

Nearly half of the respondents (48.6 percent) rated their ICT skills as moderate, 25.7 percent indicated high proficiency, and 25.7 percent reported low proficiency. In terms of confidence, 40 percent felt confident, 22.9 percent very confident, while 37.1 percent reported low confidence. Furthermore, 34.3 percent applied ICT daily, 28.6 percent several times a week, while 22.8 percent rarely or never used it. These statistics suggest that although a significant portion of the population has functional ICT skills, a large segment still faces digital literacy and confidence gaps. This reflects UNESCO's (2022) argument that uneven digital skills limit effective participation in the digital economy.

The ANOVA results showed digital literacy had a significant effect on sustainable development ($F = 5.64$, $p = 0.006$). This confirms that proficiency, confidence, and frequency of ICT application directly influence the extent to which communities benefit from ICT adoption. These results are consistent with ITU (2021), which emphasizes that building digital capacity is critical for enabling rural populations to access services, improve livelihoods, and enhance economic resilience. The study therefore concludes that without targeted digital skills training, the potential benefits of ICT in Kajiado East will not be equitably realized.

### 5.1.3 Mobile Money Usage

Mobile money use was found to be the most widespread ICT application, with 62.9 percent of respondents using it daily, 21.4 percent several times a week, while only 7.1 percent rarely or never used it. The most common transactions included sending or receiving cash (71.4 percent),

receiving customer payments (65.7 percent), and paying suppliers (60.0 percent), while 40.0 percent used mobile money for savings and withdrawals. These results indicate that mobile money has been fully integrated into both household and business operations, supporting efficiency and security. This aligns with World Bank (2020), which found that mobile money drives financial inclusion and economic participation in Sub-Saharan Africa.

Inferential analysis confirmed a strong effect of mobile money on sustainable development ($F = 6.72$, $p = 0.001$). The significance of this relationship underscores the centrality of financial technologies in enhancing small-scale business operations and rural livelihoods. These findings are in line with ITU (2021), which emphasizes that digital financial services are a cornerstone of rural economic empowerment. However, the limited uptake of mobile money for savings (40 percent) suggests that while adoption is high for transactions, its potential for long-term financial management remains underutilized. This calls for targeted financial literacy interventions to expand the scope of mobile money beyond daily transactions.

### 5.1.4 Digital Agricultural Platforms

The study found relatively low adoption of digital agricultural platforms, with only 35 percent of respondents using mobile applications or SMS services to access agricultural information. Specifically, 40 percent reported using SMS for farming tips, while 60 percent did not, and online platforms such as websites and social media were the least utilized. This suggests that while mobile technologies are increasingly used for financial purposes, their integration into agriculture remains underdeveloped. These findings echo UNESCO (2022), which notes that rural farmers in developing countries often face challenges in accessing or trusting digital agricultural services.

ANOVA results confirmed a significant relationship between digital agricultural platforms and sustainable development ($F = 3.19$, $p = 0.045$). Although the effect was weaker compared to internet connectivity and mobile money, it still demonstrates that when adopted, these platforms positively influence productivity, market access, and information flow. This aligns with ITU (2021), which highlights the untapped potential of digital agriculture in supporting rural livelihoods. The low adoption in Kajiado East, however, underscores the need for greater

sensitization, user-friendly platform design, and integration of ICT into existing agricultural extension systems.

### 5.2 Conclusions

The discussion of findings highlights how the study's objectives were met by analyzing the contribution of ICT to sustainable development in Kajiado East. The results combine descriptive statistics and inferential analysis to show the extent of access, adoption, and utilization of ICT tools across different domains. Comparisons with previous studies are also made to contextualize the findings and demonstrate how they either reinforce or diverge from existing knowledge. Overall, the discussion illustrates both the opportunities ICT presents in rural development and the persistent barriers that limit its effectiveness.

Internet connectivity emerged as a key determinant of ICT adoption in the constituency. While 72.9 percent of respondents had access to the internet, 68.6 percent considered it expensive and 74.3 percent described the service as unreliable, with only 41.4 percent using it daily. These figures indicate that affordability and reliability remain major barriers, even for those with access. ANOVA results confirmed a significant relationship between internet connectivity and sustainable development ($p = 0.021$), showing that stable and affordable access enables meaningful participation in online education, commerce, and communication. These findings support ITU (2021), which emphasizes the role of reliable connectivity in bridging digital divides, and UNESCO (2022), which identifies affordability as a major factor influencing inclusion in rural areas.

Digital literacy was another important factor influencing ICT adoption. The study found that 48.6 percent of respondents rated their ICT skills as moderate, 25.7 percent as high, and 25.7 percent as low. Confidence levels were uneven, with 40 percent reporting confidence, 22.9 percent very confident, and 37.1 percent lacking confidence. Additionally, 34.3 percent applied ICT daily, compared to 22.8 percent who rarely or never used it. ANOVA results confirmed a significant effect of digital literacy on sustainable development ($p = 0.006$), reinforcing the argument by UNESCO (2022) that digital skills are a prerequisite for active engagement in the digital economy. The findings also align with World Bank (2020), which observed that skill gaps among rural populations often hinder the equitable adoption of ICT despite growing access.

Mobile money usage was found to be the most widespread ICT application in the study area. A majority of respondents (62.9 percent) reported daily use, 21.4 percent several times a week, and only 7.1 percent rarely or never used mobile money. The most common transactions included sending or receiving cash (71.4 percent), receiving customer payments (65.7 percent), and paying suppliers (60.0 percent), with 40 percent using it for savings and withdrawals. Inferential analysis showed a strong statistical effect on sustainable development ($p = 0.001$), demonstrating the transformative role of mobile money in improving financial inclusion and business efficiency. This outcome is consistent with World Bank (2020) and ITU (2021), both of which highlight digital financial services as drivers of rural economic empowerment. The relatively low use of mobile money for savings, however, indicates untapped potential for enhancing long-term financial resilience.

Adoption of digital platforms for agricultural extension was relatively limited compared to other ICT services. Only 35 percent of respondents reported using mobile applications or SMS to access agricultural information, while 60 percent did not use SMS and online platforms were the least adopted. Despite this low uptake, ANOVA results confirmed a statistically significant relationship with sustainable development ($p = 0.045$), showing that users benefited from improved access to farming advice, weather updates, and market prices. These results align with ITU (2021), which points out the untapped potential of digital agriculture, and UNESCO (2022), which notes that integration of ICT into extension services can enhance rural productivity. The findings suggest that while digital agriculture tools have measurable benefits, their limited use in Kajiado East is linked to low awareness and lack of integration with existing extension systems.

### 5.3 Recommendations

The findings demonstrated that internet connectivity in Kajiado East is constrained by issues of affordability and reliability, despite relatively high ownership of mobile devices. Since connectivity was found to significantly influence sustainable development, there is a strong need for interventions that expand access while lowering costs. Policymakers should work with service providers to invest in rural broadband infrastructure, enhance network stability, and promote fair competition in the telecommunications sector to reduce consumer prices. Partnerships between government, county authorities, and private investors could also explore subsidies or community-

based connectivity models that target marginalized groups. Addressing the barriers of cost and reliability would ensure that access translates into meaningful use, enabling residents to participate in online education, e-commerce, e-governance, and other digital services.

The study also established that digital literacy levels were moderate overall, with a notable proportion of respondents reporting low skills and low confidence in ICT use. Since literacy was shown to significantly influence sustainable development, targeted capacity-building initiatives are recommended. Training programs should focus on building both technical proficiency and confidence among rural youth, women, and older populations, ensuring that no group is left behind in digital transformation. Integrating digital skills into school curricula, vocational programs, and community workshops would provide continuous opportunities for learning. Development agencies and local NGOs could also collaborate to design tailored interventions, such as mobile-based training platforms, which would increase accessibility. Enhancing digital literacy would empower residents to not only use ICT for communication and financial services but also to engage with advanced applications such as e-learning and digital agriculture platforms.

Mobile money usage was found to be widespread and strongly linked to sustainable development, particularly in supporting small-scale businesses and household financial transactions. To build on these strengths, stakeholders should promote innovations that expand mobile money services beyond basic transfers. Financial institutions, in collaboration with mobile operators, can develop new products such as micro-loans, insurance, and savings schemes that strengthen financial resilience among rural communities. Greater emphasis should also be placed on financial literacy to encourage users to take advantage of mobile money for long-term financial planning rather than limiting its use to daily transactions. Expanding the role of mobile financial services would deepen inclusion, enhance business growth, and contribute to household security, thereby amplifying their impact on sustainable development.

The relatively low uptake of digital platforms for agricultural extension services revealed untapped potential in this sector. Since access to market prices, weather updates, and farming advice was shown to have a positive but limited effect on sustainable development, deliberate efforts are needed to integrate ICT into agricultural extension systems. Agricultural agencies, in partnership with county governments and ICT providers, should develop user-friendly mobile applications and

SMS-based services tailored to the needs of smallholder farmers. Awareness campaigns, training sessions, and demonstration programs should also be implemented to sensitize farmers on the benefits of adopting these platforms. By expanding the adoption of digital agricultural tools, farmers would be better equipped to make informed decisions, improve productivity, and strengthen resilience against climate and market-related shocks.

## 5.4 Implication of the Current Study

The implications of this study highlight how the findings contribute to theoretical knowledge, policy development, and practical application in the field of ICT and sustainable development. By examining the effects of internet connectivity, digital literacy, mobile money usage, and digital agricultural platforms, the study provides evidence of how ICT adoption shapes social and economic outcomes in rural Kenya. These implications demonstrate that the research is not only of academic value but also offers actionable insights for policymakers, practitioners, and development agencies working to enhance digital inclusion. The section is therefore structured around three key dimensions: implications for theory, policy, and practice.

### 5.4.1 Theory

The study reinforces Human Capital Theory and related ICT adoption frameworks by demonstrating that investments in digital skills and access yield measurable benefits in sustainable development. The significant influence of internet connectivity, digital literacy, mobile money usage, and digital agricultural platforms on development outcomes provides empirical evidence that ICT serves as both a resource and a capability-enhancing tool. This finding supports UNESCO (2022), which emphasizes that digital skills and access to ICT are central to human capacity development, and ITU (2021), which highlights the role of ICT in reducing inequalities. By showing how affordability, confidence, and accessibility shape outcomes, the study extends theoretical models of technology-driven development to rural contexts in Sub-Saharan Africa.

### 5.4.2 Policy

The results of this study carry strong policy implications, particularly in the areas of ICT infrastructure expansion, digital inclusion, and rural economic empowerment. Evidence that

internet affordability and reliability significantly influence development underscores the need for government intervention in regulation, subsidies, and investment partnerships to reduce costs and enhance accessibility. These findings align with World Bank (2020), which stresses the importance of affordable broadband in achieving inclusive development, and OECD (2021), which calls for policies that bridge rural–urban digital divides. The results also highlight the importance of embedding digital literacy into education and community programs, while promoting mobile money and digital agricultural platforms as strategic tools for rural transformation consistent with Kenya's Vision 2030 and the SDGs (UN, 2021).

### 5.4.3 Practice

At the practical level, the study emphasizes the need for ICT providers, educators, extension officers, and development agencies to actively address barriers to ICT adoption. For practitioners in the ICT sector, the findings suggest opportunities to innovate affordable and reliable internet solutions tailored to rural areas, echoing ITU (2021), which encourages private–public partnerships in service delivery. For educators and trainers, the results call for programs that improve ICT confidence and skills, particularly among women and youth, consistent with UNESCO (2022), which emphasizes inclusive capacity building. Agricultural extension practitioners are also encouraged to integrate digital platforms into service delivery to enhance farmers' access to timely information, as supported by FAO (2021), which stresses the role of digital agriculture in achieving sustainable food systems. Overall, the study's findings provide actionable insights that practitioners can use to strengthen service delivery, improve business operations, and promote inclusive development in rural constituencies.

## 5.5 Suggestions for Further Research

Future studies that monitor changes in digital access, literacy, and results over time should investigate the long-term effects of ICT on sustainable development. Comparative studies between rural and urban areas or across counties could also provide deeper insights into regional disparities and best practices. In addition, incorporating qualitative methods such as interviews and focus group discussions would offer richer perspectives on user experiences, barriers, and cultural attitudes toward ICT adoption. Researchers may also consider investigating the role of emerging

technologies such as artificial intelligence, e-learning platforms, and mobile health apps in enhancing development outcomes in low-resource settings like Kajiado East.

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# APPENDICES

## APPENDIX I: LETTER OF INTRODUCTION

**REF: REQUEST TO COLLECT DATA FOR RESEARCH**

Dear Respondent,

I am Omondi Erick, an undergraduate student pursuing a Bachelor of Arts in Development Studies, conducting a study on "EVALUATING THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY ON PROMOTING SUSTAINABLE DEVELOPMENT IN KAJIADO EAST, KAJIADO COUNTY, KENYA". This study will be important to the Kajiado County Government as it will provide insights into the current state of ICT adoption and its impact on development. This will help inform the design and implementation of evidence-based policies and programs aimed at improving ICT accessibility and utilization across the constituency. The recommendations of this study will form a basis against which the county government could implement policies to enhance ICT to promote sustainable development. Please complete this questionnaire accurately. Confidentiality will be maintained for all provided data. Thank you.

Yours Faithfully,

**Omondi Erick**
**BDSK/5/00114/3/21**

## APPENDIX II: QUESTIONNAIRE

This section seeks to gather basic demographic and background information that will help in classifying responses according to gender, age, position, and level of education. The information collected in this section is strictly for statistical and analytical purposes only and will be treated with strict confidentiality. Kindly read each question carefully and respond by ticking [✓] the most appropriate answer in the boxes provided. Please ensure you select only one response for each question unless otherwise instructed.

**SECTION A: BACKGROUND INFORMATION**

Tick (✓) only one option unless otherwise stated

1. Please select your gender.

   Male [ ]

   Female [ ]

2. Which age range are you in?

   a) 18-26 [ ]

   b) 27-34 [ ]

   c) 35-47 [ ]

   d) 48-60 [ ]

3. In your department, what position do you hold?

   a) Senior Management [ ]

   b) Middle Management [ ]

   c) Supervisory [ ]

4. Educational achievement?

   a) Secondary level [ ]

   b) College level [ ]

c) University level [ ]

d) Postgraduate level [ ]

**SECTION B: INTERNET CONNECTIVITY COVERAGE**

Please rate your agreement with the following statements on a scale of 1 to 5, where (1) = Strongly Disagree and (5) = Strongly Agree.

| Statement | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. I have consistent access to internet services in my area. | | | | | |
| 2. The strength of internet signal in my location is adequate for daily tasks. | | | | | |
| 3. I frequently use the internet for accessing education, health, or government services. | | | | | |
| 4. The type of internet service I use supports productive activities (e.g., business, farming, learning). | | | | | |
| 5. Internet access has improved my ability to participate in development initiatives. | | | | | |

**SECTION C: Digital Literacy Among Rural Youth**

Please rate your agreement with the following statements on a scale of 1 to 5, where (1) = Strongly Disagree and (5) = Strongly Agree.

| Statement | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 6. I can confidently operate digital devices such as smartphones or computers. | | | | | |
| 7. I have received training on how to use digital platforms or ICT tools. | | | | | |
| 8. I use ICT tools frequently in my daily life (e.g., school, work, farming). | | | | | |
| 9. Digital skills have improved my access to information and services. | | | | | |
| 10. Youth in my area are digitally skilled and able to use ICT effectively. | | | | | |

**SECTION D: Mobile Money Usage in Small-Scale Business Transactions**

Please rate your agreement with the following statements on a scale of 1 to 5, where (1) = Strongly Disagree and (5) = Strongly Agree.

| Statement | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 11. I regularly use mobile money services in my business transactions. | | | | | |
| 12. Mobile money platforms are accessible and easy to use in my area. | | | | | |
| 13. Using mobile money has made my business more efficient. | | | | | |
| 14. I rely on mobile money for important financial transactions. | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 15. Mobile money services have helped me grow or manage my business better. | | | | | |

**SECTION E: Digital Platforms for Agricultural Extension Services**

Please rate your agreement with the following statements on a scale of 1 to 5, where (1) = Strongly Disagree and (5) = Strongly Agree.

| Statement | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 16. I have access to digital platforms that provide agricultural information. | | | | | |
| 17. I frequently use these platforms to access farming-related knowledge. | | | | | |
| 18. The information accessed from digital platforms is relevant and timely. | | | | | |
| 19. I have made better farming decisions using information from digital platforms. | | | | | |
| 20. Digital agricultural platforms have improved my farm productivity. | | | | | |

**SECTION F: Sustainable Development Outcomes**

Please rate your agreement with the following statements on a scale of 1 to 5, where (1) = Strongly Disagree and (5) = Strongly Agree.

| Statement | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| 21. ICT access has created more economic opportunities in my area. | | | | | |
| 22. ICT has improved access to education and learning opportunities. | | | | | |
| 23. Health services have become more accessible through ICT platforms. | | | | | |
| 24. ICT usage has enhanced communication and community participation. | | | | | |
| 25. Overall, ICT has significantly contributed to sustainable development in Kajiado East. | | | | | |

Your responses will remain confidential and are for academic purposes only.

Thank you for taking the time to complete this questionnaire.

## APPENDIX III: RESEARCH BUDGET

| Item | Details | Estimated Cost (KES) |
|---|---|---|
| Printing and photocopying | Questionnaires, consent forms, reports | 5,000 |
| Stationery | Pens, notebooks, files, storage | 2,000 |
| Transport and field visits | Travel to Kajiado East for data collection | 15,000 |
| Communication | Airtime and internet for coordination | 3,000 |
| Research assistants | Two assistants for data collection support | 10,000 |
| Data analysis | SPSS license/consultation | 8,000 |
| Miscellaneous | Contingencies/unforeseen expenses | 2,000 |
| **Total** | | **45,000** |

## APPENDIX IV: WORK PLAN AND TIMELINE

| Activity | March | April | May | June | July | August | September |
|---|---|---|---|---|---|---|---|
| Proposal writing and submission | ✓ | | | | | | |
| Proposal defense and corrections | | ✓ | | | | | |
| Research authorization | | ✓ | | | | | |
| Tool development and pretesting | | ✓ | | | | | |
| Data collection | | | ✓ | | | | |
| Data cleaning and analysis | | | | ✓ | | | |
| Report writing (draft) | | | | ✓ | ✓ | | |
| Final report submission | | | | | | ✓ | ✓ |

## APPENDIX V: THE LETTER FROM THE UNIVERSITY

The Management University of Africa

Sponsored by The Kenya Institute of Management

**Date:** 4th July 2025

**TO WHOM IT MAY CONCERN**

**ERICK OBEMBI – BDSK/5/00114/3/21**

This letter serves to introduce the above named who is a **Bachelors of Arts in Development Studies (BDS)** student and is interested in carrying out research on **Evaluating the Role of Information and Communication Technology (ICT) On Promoting Sustainable Development in Kajiado East, Kajiado County, Kenya.**

Any assistance accorded to him in pursuit of this study will be greatly appreciated.

Yours Sincerely,

Dr. Juster Nyaga

**Dean, School of Management and Leadership**

The Management University of Africa | Popo Road, Off Mombasa Road, Bellevue, South C. | P.O. Box 29677-00100, Nairobi, Kenya | Tel: (020) 2361160, 2361161, 3569117 | Cell: 0722224193, 0706035244, 0706035299 | Email: vc@mua.ac.ke | www.mua.ac.ke