

**EFFECT OF DIGITAL TECHNOLOGY UTILIZATION ON THE
PERFORMANCE OF REFUGEE WOMEN-LED MSMEs IN KAKUMA
REFUGEE CAMP, KENYA**

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**A Thesis Submitted in Partial Fulfillment of the Requirements for the Award of the
Degree of Master of Business Administration (Strategic Management Option) of
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DECLARATION

This Thesis is my original work prepared with no other than the indicated sources and support and has not been presented elsewhere for a degree or any other award.

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CERTIFICATION

The undersigned certifies that he/she has read and hereby recommends this Thesis for acceptance by Masinde Muliro University of Science and Technology entitled, “ **Effect of Digital Technology Utilization on the Performance of Refugee Women-Led MSMEs in Kakuma Refugee Camp, Kenya.**”

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DEDICATION

This Thesis is dedicated to the refugees in Kakuma Refugee Camp in Kenya and in particular the Women who endeavor to make ends meet through micro, small, and medium enterprises, the humanitarian community who seek solutions and formulate strategies to address refugee challenges, and the academia to help elucidate on the little-known information about the entrepreneurial lives of refugees, especially women.

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ABSTRACT

The contribution of Micro, Small, and Medium Enterprises (MSMEs) to economic development as well as the role of digital technology in MSME performance is underscored in many studies globally. Despite the potential of MSMEs in economic growth, many face myriad of challenges both internal and external to the firm that constrain their performance and ultimate survival. This is especially critical for refugee-owned enterprises. In light of the constraints utilization of digital technology has emerged as an important strategy to secure growth, performance, and survival of MSMEs. The overall objective of this study was to examine the effect of digital technology utilization on the performance of MSMEs in Kenya with specific focus on refugee women-led MSMEs in Kakuma Refugee Camp. The specific objectives included; determining the effect of utilizing mobile phone-based digital technologies; computer-based digital technologies; online media-based digital technologies; and the moderating effect of MSMEs the type of MSME on performance in Kakuma Refugee Camp. Underpinned by Theoretical frameworks including Resource Based View theory, Technology Acceptance Model theory, and Technology, Organization, and Environment Framework. The study adopted Analytical Cross-sectional Survey Design for primary data collection using questionnaires. The study targeted 401 women MSMEs in Kakuma Refugee camp in Kenya to conduct research, of which 196 were sampled. Cronbach alpha was adopted for reliability test. For validity a pilot study was taken as 1% of the sample population of each of the 4 sections of Kakuma refugee camp. Stratified simple random sampling was adopted. Descriptive Statistics was generated to give summaries and describe the sample characteristics, while inferential statistics comprised of regression and correlation analysis. The study found that mobile phone-based technology was a significant predictor of performance ($r = 0.501$, $p\text{-value} = 0.000 < 0.05$). On the other hand, there was a positive and significant relationship between desktop computer-based technologies and performance with a Pearson correlation coefficient $r = 0.581$, $p\text{-value} = 0.000 < 0.05$ which was significant at 0.05 level of significance. The results also confirmed that at 0.05 level of significance online based technologies was a significant predictor of performance ($r = 0.426$, $p\text{-value} = 0.000 < 0.05$). Lastly, the results showed that at 0.05 level of significance, MSMEs characteristic was a significant predictor of performance ($r = 0.700$ $p\text{-value} = 0.000 < 0.05$). The study recommends that mobile phone-based technology should be prioritized since it leads to increase in sales and profits of a firm through improved mobile phone transactions. Women businesses should practice computer-based technologies since it improves service delivery based on time management and leads to efficiency that results in better sales and profits. Women should practice online based technologies to ensure use of WhatsApp and other internet-based practices to improve customers' awareness of products and increase customer reach for better sales. Women businesses should employ business characteristic such as appropriate business locations and choice of business to ensure increase in sales. I recommend similar research in other Camps such as Daadab refugee camp. In addition, digital based technologies are diverse, this study was limited to only three. A similar study should be explored basing on other digital based technologies or other moderating variables such as age of the firm, size of the firm can be applied in further studies.

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ABBREVIATIONS AND ACRONYMS

AAH-I	Action Africa Help- International
AGRA	Alliance for Green Revolution in Africa
ICT	Information and Communication Technology
IFC	International Trade Corporation
GDP	Gross Domestic Product
GSMA	Global System for Mobile Communications Association
KES	Kenya Shillings
KNBS	Kenya National Bureau of Statistics
LMIC	Low and Medium-Income Countries
LWF/DWS	Lutheran World Federation/Department for World Service
MSMEs	Micro, Small and Medium Enterprises
NACOSTI	National Commission for Science Technology and Innovation
NGO	Non-Governmental Organization
OECD	Organization of Economic Corporation Development
RBT	Resource Based Theory
SMEs	Small and Medium Enterprises

TAM	Technology Acceptance Model
TOE	Technology, Organization and Environment
UNHCR	United Nations Commissioner for Refugees
UNICEF	United Nations Children Fund
VSLA	Village Savings and Loans Association
WFP	World Food Programme

OPERATIONAL DEFINITION OF TERMS

Digital Technology	Digital technology in this study adopts the meaning of electronic tools, devices, systems, and resources that an entity may utilize as they process or store data, access and share information, manage resources and complete many other functions, with the aim of increasing productivity, efficiency and overall performance of the entity.
Computer based technologies	This refers to the support of business administrative functions, support of inventory management, record of business information support of accounting and produce of business communication documents.
Mobile phone based technologies	This refers to mobile phone based transactions such as mobile money transfer or payments, mobile banking and mobile phone for contacting via SMS and WhatsApp.
Online based technologies	This refers to the internet based activities such as email, website, electronic commerce platforms and social media platforms.
Refugees	This are people who have fled war, violence, conflict or persecution and have crossed an international border to find safety in another country.
Kakuma Refugee Camp	Kakuma refugee camp is located in the North-western region of Kenya. The camp was established in 1992. The camp is located on the outskirts of Kakuma town, which is the headquarters for Turkana West District of Turkana County.

Kakuma Camp is divided into four namely: Kakuma 1, 2, 3 and 4.

Performance This study limits its definition of performance to the business performance of MSMEs and defines it as the ability of a business to implement strategy, which in this case is digital technology utilization, to achieve the objectives of the entity. In this study, the measurement of the performance of the MSMEs are based on the profitability, growth or expansion and customer satisfaction.

MSMEs There are many aspects that could be defined MSMEs and
Characteristics therefore seem as its characteristics. However, in this study focuses on the specific characteristics of MSMEs unique to Kakuma Refugee camp which include, ages of the business, its location within the 4 sections of Kakuma, the type of trade it is engaged in, the qualification of the manager, the source of its commodities and the type of technology it embraces.

Women-Led Whereas MSMEs are well defined, this study narrows its
MSMEs attention to Women-Led MSMEs which in this study is defined as a small or medium level enterprise that is either own by a woman or managed/ run/headed by a woman.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Digital technology has been associated with success of many businesses across the globe. The contribution of Micro, Small and Medium Enterprises (MSMEs) to economic development as well as the role of digital technology in MSME performance is underscored in many studies globally. However, differences in support factors and extent of utilization have resulted in impact variations across contexts. This study seeks to examine the effect of digital technology utilization as a strategy for enhancing performance of refugee women-led MSMEs in Kakuma Refugee Camp. In this chapter, a discussion is made on the background to the study, statement of the problem, research objectives, research hypotheses, justification for the study, scope of the study, and limitations of the study. The study site is also described.

Review of literature indicate lack of consensus on the standard definition of MSME such that the term varies across countries and covers a variety of different types of firms. Across countries definition criteria focused on the number of employees in the enterprise, the level of assets, sales turnover of the said enterprise or a combination of these criteria (Akomea-Bonsu & Sampong, 2012; Muriithi, 2017) while in others focus on the sector (Esselar *et al.*, 2016).

Akomea-Bonsu and Sampong, (2012) cite an economic definition was given by the Bolton Committee (1971) that defined MSME as an enterprise with relatively small market share, managed by its owners predominantly in a personalized way. However, many studies documented the quantitative definition based on the number of employees. According to Esselar *et al.*, (2016) the African Development Bank categorized an MSME as an

enterprise with less than 50 employees. Fjose *et al.*, (2010) argue that an MSME can range from a micro enterprise employing couple of workers generating subsistence level revenues to fast growing medium sized enterprise employing up to 250 employees. Muriithi (2017) observes that many researchers consider MSME generally as enterprise with less than 250 employees but with variant categories as micro if it has between 5 and 10 workers and small businesses if it has less than 50 employees. This view is also consistent with Schulz (2021) reference to the World Bank categorization of micro for enterprises with less than five permanent full-time workers, small for those with less than 20 permanent full-time workers, and medium for those with between 20-99 permanent full-time workers. This current study adopts the Kenya framework that defines MSME as an enterprise with less than 50 employees and with an annual turnover of between Kenya Shillings 500,000 to 5,000,000.

Performance of Micro, Small and Medium Enterprises (MSMEs) is increasingly emerging as an area of critical concern globally given their positive impact on economic development across world economies. Organization of Economic Corporation and Development (OECD, 2017) observes that MSMEs account for approximately 99% of enterprises in OECD countries providing on average 70% of employment and an average of 50% to 60% of value added. In the United Kingdom, MSME are reported to contribute 47% of national revenue and are considered key in increasing productivity (Hart & Roper, 2016). In Pakistan, MSMEs in rural areas are reported to contribute 45% to the national economy and noted with great potential for stimulating sustainable growth (Shah *et al.*, 2011).

In Low-and Middle-Income Countries (LMICs), MSMEs have been found to account for most “economic opportunities such as employment, skill development and upward mobility in diverse geographic areas and economic sectors, and provide a livelihood and income for diverse segments of the labour force, including low-skilled workers as well as disadvantaged and marginalized groups such as young people, women and minorities.” (Disse & Sommer, 2020:1). In the Africa context Cariolle (2020) reports that small African businesses were employing around 80% of the subcontinent’s workforce by the year 2015, an observation consistent with Muriithi (2017) on MSMEs in Africa. The International Trade Corporation (ITC, 2018) notes that MSMEs are the backbone of the Africa’s economy and a key to its most pressing development challenges and account for about 60% of employment opportunities especially for the most vulnerable in the society particularly women and youth.

In a recent report by Alliance for a Green Revolution in Africa (AGRA, 2019), MSMEs in the agriculture value chains have been found to be leading Africa’s agricultural transformation and currently handles about 80% of food consumption. In South Africa, Makwara (2019) reports that MSMEs are reported to be at the forefront of job creation and building the social and political equity in addition to other development outcomes such as sustaining rural economies, distribution of income and poverty alleviation, nurturing entrepreneurship, enhancing social cohesion and reducing social conflict, and addressing economic, social and racial inequalities. In the East Africa, Chowdhury and Wolf (2017) observe that in addition to value addition MSMEs contribute significantly to the economy and manufacturing sector in particular with an average of more than 50% of the employed labour force across Kenya, Uganda, and Tanzania.

In Kenya specifically, MSMEs are recognized as drivers of economic growth particularly through creation of employment opportunities, wealth accumulation, and spurring innovation (Kenya National Bureau of Statistics, 2017; Kamunge *et al.*, 2019; Kiveu and Ofafa, 2019). Studies show that MSMEs account for about 80% of the Kenyan workforce (Ong'olo & Odhiambo, 2019) and contribute between 18-25% to the Kenya's Gross Domestic Product (GDP), and account for over 17% of the total labour force (Omondi & Jagongo, 2018). Citing the KNBS (2016) report on Micro, Small, and Medium Enterprises (MMSME) in Kenya, Osano (2019) notes that about 80% of companies in Kenya are MSMEs and contribute approximately 40% of GDP while Kiveu and Muathe (2019) posit that MSMEs in Kenya comprise 98% of all businesses that contribute about 25% of GDP and 50% of employment. In displacement contexts like Kakuma Refugee Camp, MSMEs have not only created livelihood opportunities and improved incomes for both refugees and host communities but also sustained a vibrant informal market economy worth \$56 million (Manji, 2019; Sanghi *et al.*, 2016; & IFC, 2018).

Despite the potential of MSMEs in economic growth, many face a myriad of challenges both internal and external to the firm that constrain their performance and ultimate survival. OECD (2017) attribute internal constraints to extreme effect of market failures; barriers and inefficiencies in the business environment; and policy issues on MSMEs. Within the Africa continent MSMEs challenges comprise power shortage; lack of capital; poor management skills and competencies; and inadequate information and corruption (Muriithi, 2017), low diffusion and use of digital technologies (Cariolle, 2020); and institutional and market failures that constrain access to finance (Disse & Sommer, 2020). In Kenya, Kiveu and Ofafa (2019) note that MSMEs generally experience 'limited access

to information, poor access to physical markets, stiff competition due to liberalization of markets and globalization, limited market research and analysis, narrow product diversity, weak capacity for e-commerce and high transaction costs.’ Specifically, Mwobobia (2022) observes that small scale women entrepreneurs in Kenya have to grapple with lack of finance, discrimination, problems with the local authorities, multiple duties, poor access to justice, and lack of education among others. The refugee owned-MSMEs in the refugee camps have not been an exception. Major constraints documented comprise of limited access to market, credit, and property ownership; high rates of informality, low levels of educational attainment, low financial literacy, low savings, and high cost of doing business (IFC, 2018; Manji, 2019). In light of the constraints mentioned, growth, performance, and survival of MSMEs spheres can be realized through deliberate business strategies that aim to mitigate limitations associated with the experienced challenges. Among others strategies, innovations such as utilization of digital technology has emerged as a great opportunity for MSMEs.

Digital technologies integration is therefore an important strategic option for MSMEs in facilitating growth, performance, and survival in the wake of dynamic global business environment. Digital technology integration in business organization is generally associated with productivity growth, organization expansion, efficiency, effectiveness, and competitiveness among other outcomes (Tarutė, & Gatautis, 2019; Consoli, 2022; Consoli, 2022; Pergelova *et al.*, 2019). Disse and Sommer (2020) acknowledge the role of digitalization in improving access to finance for MSMEs in the sub-Saharan Africa (SSA). The GSMA (2020) note that the mobile industry in sub-Saharan Africa has kept individuals and businesses connected during the COVID-19 pandemic while Cariole

(2020) reports positive performance in MSMEs resulting from utilization of digital technologies. In Ghana, Akomea-Bonsu and Sampong (2022) report positive performance and other benefits in MSMEs resulting from utilizing ICTs which is consistent with reports on firm performance for MSMEs in Kenya that adopted digital technologies in their operations (Makee *et al.*, 2019; Njau & Karugu, 2019).

In the Sub-Saharan Africa, the digital technologies utilized in most MSMEs takes various forms and as Matambalya and Wolf (2001) observe, they are integrated in different dimensions of business process such as production, information processing, or information communication. According to Cariolle and Carroll (2020) examples comprise Internet based ICT such as Email and website, and Mobile Money for Digital Financial services. Bayo-Moriones *et al.*, (2013) categorizes them into three dimensions; General use ICT such computers and internet, Communication-integrating ICT such as email and intranet, and Market-oriented ICT such as sales and purchase via the internet. Schulz (2021) gives a broad range of new technologies that comprise mobile networks, cloud computing, machine learning, the Internet of Things (IoT), ‘big data’ analytics and Artificial Intelligence (AI) that facilitate the development of smart platforms and applications as well as smart machines.

The benefits of digital technologies utilizing to MSMEs is fairly acknowledged across many studies. According to Van Akkeren and Cavaye (1999) e-commerce improves competitive edge of MSMEs against larger organizations and facilitates MSMEs to operate on an international scale in addition to providing a cost-effective way to market enterprises, launch new products, improve communications, gather information and build business networks. Papazafeifopoulou *et al.*, (2002) view e-commerce as an incredible

new way of transacting business that presents many opportunities for both enterprises and consumers while Jones *et al.*, (2017) argue that internet has created opportunities that facilitated MSMEs engagement in new value-creating activities. Pergelova *et al.*, (2019) acknowledges the potential of digital technologies to provide access to international market knowledge and facilitate interactions with clients and partners for female-led MSMEs. Lastly, Schulz (2021) posit that digital technologies create a pathway for MSMEs out of the shadow of informality, transforms internal business operations, support tracking of business resources, and facilitate supply chain integration and access to market.

Digital technology utilization in refugee-owned enterprises in Kakuma Refugee Camp is acknowledged in growing research studies (Samuel Hall, 2018; Hayatama, 2018). Besides utilization of digital technology in protection programming for refugees and the host community (UNICEF & LWF/DWS, 2018), a report by MasterCard and Western Union shows how refugee economies are sustained using digital technologies (Farese, 2017). Digital tools and technologies have been used to support refugee-owned enterprises in Kakuma including access to international market through digital skills training and market linkages (Hayatama, 2018). The UNHCR together with its partners embarked on a program dubbed Market Access, Design and Empowerment (MADE51), an initiative that integrates digital technology to enhance international market access for refugee artisans, majority of whom are women (UNHCR, 2017). Partner organizations have also set up incubation hubs where entrepreneurs access technology and other services to enhance productivity and market access (Action Africa Help International, 2017). Other studies have also established that enterprises in Kakuma Refugee Camp are utilizing digital technology to enhance market access and tap into opportunities created by the recently

established World Food Programme's (WFP) cash-based intervention model that replaced the in-kind food assistance for refugees (Ndubi & Opile, 2017). In spite of the expanding ICT infrastructure, there exists variation on the extent of digital technology utilization and its impact on MSMEs performance given the unique socio-economic environment that characterize Kakuma Refugee Camp. It is against this background that this study seeks to establish the effect of digital technology utilization on enterprise performance with a specific focus on refugee women-led MSMEs in Kakuma Refugee Camp.

1.2 Statement of the Problem

Recent studies on the state of economy in Kakuma acknowledge the emergence of a vibrant informal economy that continue to support livelihoods of refugee and the host communities (Sanghi *et al.*, 2016; IFC, 2018). This economic expansion has been occasioned partly by among others the support programs and initiatives by Non-Governmental Organizations and the private sector actors and a rapidly expanding information and communications technology infrastructure that are widely viewed to have enhanced socio-economic opportunities and prospects for both the host community and refugee entrepreneurs. Further, deliberate efforts continue to be initiated through livelihoods and economic empowerment program interventions by humanitarian and private sector actors targeting refugee youth and women entrepreneurs in particular, with digital skills training and market linkages (UNHCR, 2017; Hayatama, 2018). However, a recent study by International Finance Corporation (IFC, 2018) established that the male refugee entrepreneurs continue to dominate MSMEs ownership in the camp with women refugees considered less likely to own a shop. The encampment policy by Government of Kenya disadvantages refugee entrepreneurs in relation to external market access for

products, services and business inputs, the relatively lower extent of digital technology utilization in business management processes among women-led enterprises compared to those owned by their male counterparts has exacerbated this challenge for women entrepreneurs and hence limited enterprise growth, performance and survival. This has consequently limited the contribution of and opportunities for women entrepreneurs in the vibrant and expanding Kakuma economy despite them being recognized among the most vibrant refugee artisans in Kakuma Refugee Camp (UNHCR, 2017).

Whereas as study by Samuel Hall (2018) led by Benjamin Hounsell found that Mobile phone access in Kakuma is especially high, with almost 99% of respondents either owning, or sharing a mobile device there is no known information on how this high access to mobile phones impacts on the MSMEs especially those owned by Women. The same report states that in Kenya (Kakuma Camp), over 72% of refugees have access to 3G connectivity. Similarly, there is no record on how these impacts on the MSMEs and specifically the Women-led MSMEs. Even though many organizations report donations of computers to refugees in Kakuma, there is no study that provides accurate statistics of ownership and use of computers and more specifically by refugee women who own MSMEs. Examining this relationship through an empirical study is therefore important to establish evidence of digital technologies options that are crucial for growth, performance, and survival of refugee women-led enterprises within refugee camp contexts.

1.3 Research Objectives

1.3.1 General Objective

The general objective of this study was to determine the effect of digital technology utilization on performance in refugee women-led MSMEs in Kakuma Refugee Camp, Kenya.

1.3.2 Specific Objectives of the Research

The specific objectives of this study is as follows:

- i. To determine the effect of utilizing mobile phone-based digital technologies on Refugee Women-Led MSMEs performance in Kakuma Refugee Camp.
- ii. To assess the effect of utilizing computer-based digital technologies on Refugee Women-Led MSMEs performance in Kakuma Refugee Camp.
- iii. To evaluate the effect of online media-based digital technologies on Refugee Women-Led MSMEs performance in Kakuma Refugee Camp.
- iv. To examine the moderating effect of MSMEs characteristics on the relationship between digital technologies utilization and Refugee Women-Led MSMEs performance in Kakuma Refugee Camp.

1.4 Research Hypotheses

The following four research hypotheses guided the study:

- H₀₁:** There is no significant positive association between utilizing mobile phone-based digital technologies and Refugee Women-Led MSMEs performance in Kakuma Camp
- H₀₂:** There is no significant association between utilizing computer-based digital technologies and Refugee Women-Led MSMEs performance in Kakuma Refugee Camp

H₀₃: There is no significant positive association between utilizing internet/online media based digital technologies and Refugee Women-Led MSMEs performance in Kakuma Refugee Camp

H₀₄: The MSMEs characteristics have no significant moderating effect on the relationship between digital technology utilization and Refugee Women-Led MSMEs performance in Kakuma Refugee Camp

1.5 Significance of the study

The MSMEs in Kakuma Refugee Camp are recognized for not only creating livelihood opportunities and improved incomes for both refugees and host communities but also key in sustaining a vibrant informal market economy in Kakuma. However, this potential has been limited by many challenges internal and external to the firms. To unlock this potential, practitioners have designed various strategies among them expanding digital technology infrastructure and facilitating their utilization in entrepreneurship. This study was intended to therefore be insightful to practitioners on how digital technology utilization has affected performance of the refugee women-led MSMEs in Kakuma Refugee Camp and thus provide rationale to expand digital technology infrastructure and support utilization by MSMEs in a refugee camp context. Secondly, the encampment policy continues to limit the performance of refugee owned MSMEs in Kakuma by limiting access to market, access to products, services, and other business inputs thus impacting profit margins and loss of customers. This study aimed to generate a business case to policymakers on the need to expand ICT infrastructure that demonstrate most potential for enhancing market access for refugee women-led MSMEs and enactment of legislation that support refugee enterprises in general. Finally, this study was to be a valuable reference for researchers interested in exploring the relationship between digital

technologies utilization and firm performance with specific focus on women-led MSMEs in a refugee camp context.

1.6 Scope of the Study

This study was conducted in Kakuma Refugee Camp and targeted a sample of refugee women-led MSMEs to examine those that utilize an aspect of digital technology in their business operations so as to establish whether or not there is a significant effect of the utilization of such digital technologies on the performance of their enterprises. The aspects of digital technology were specifically mobile-based technologies, computer-based technologies, and internet/online media-based technologies while elements of firm performance were specifically profitability, growth, and customer satisfaction dimensions. According to UNHCR there are 2,500 businesses registered in Kakuma and Kalobeyi which make up 30 percent of all known businesses in Turkana.

The study was carried out between July and August of 2023.

1.7 Limitations of the Study

The researcher anticipated that the study respondents for various reasons could withhold or falsify information on financial performance. The researcher assured participants of the confidentiality of the information they shared. Secondly, the sample of this study included Women with limited knowledge of English and therefore not easily conversant with tools and language of the researcher. To address this, the study recruited data collection assistants, able of translating the tools and responses as accurately as possible.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents discussion on the theoretical frameworks underpinning the study and empirical review on the relationship between digital technologies utilization and MSME performance. The chapter also illustrates the conceptual model for the study.

2.2 Theoretical Framework

This study proposed three theories that provide frameworks to understand the effect of digital technologies utilization on MSME performance. These comprise; Resource Based View Theory (RBV), Technology Acceptance Model (TAM) Theory, and Technology, Organization and Environment (TOE) Framework. The three theories of RBV, TAM and TOE complement each other since technology-based resources are acceptable and apply in the MSME business environment for better performance

2.2.1 Resource Based View (RBV) Theory

This study adopts the Resource-Based View (RBV) as its theoretical model. This theory provides the framework for explaining the relationship between digital technologies utilization and enterprise performance. Proposed by Barney (1991) RBV theory argues that firm performance is based on specific internal resources and capabilities of an enterprise that cannot be imitated by another to gain a competitive advantage. It holds the assumptions that resources owned by firms are different from each other, and that the capabilities are immobile and non-transferable. According to Barney, (1991) these resources can be categorized as physical capital resources such as physical technology an enterprise utilizes; human capital resources that comprise experience, intelligence, training, judgment, relationships, and insights from employees; and finally organizational

capital resources that comprise planning, managing, and coordinating systems. On the other the hand capabilities entail tangible or intangible processes and information that help a company to create efficiency and improve its productivity (Kozlenkova *et al.*, 2019). However, critiques on the theory note that it focuses on internal resources of a firm as key to its success and assumes that firms succeed because of unique internal resources (Truijens, 2018). Ideally, MSME tend have own internal resources that are identical across MSME landscape and to an extent do rely of external resources for their performance. Bayo-Moriones *et al.*, (2013) however points at mixed results in firm performance based on the complementarity of multiple internal resources or significant effect of other forms of resources other than technological capital resource, and type of technology. The women-led MSMEs in Kakuma Refugee Camp possess internal resources and capabilities that they utilize to gain competitive edge. This study focused on examining the utilization of the digital technological resources owned by the MSME as a strategy to positively influence business performance.

2.2.2 Technology Acceptance Model (TAM) Theory

The Technology Acceptance Model (TAM) theory proposed by Davis (1986) explains behavior in technology usage. It argues that the technology use intention is directly determined by two key beliefs: perceived usefulness and perceived ease of use. Perceived usefulness examines the user belief that utilizing a specific program will enhance their task performance while perceived ease of use examines the ease of use, learning, flexibility and clarity of the interface. However, a major critique of the theory is that it considered more appropriate for individual use and acceptance of technology rather than in a corporate or institutional application (Ajibade, 2018). MSME acceptance of technology could be driven individual owner and not necessarily as a result of need to gain for a competitive

edge. This study will focus on examining the extent to which the MSMEs utilize each of the digital technologies strategies to improve business performance. The women-led MSMEs in Kakuma Refugee Camp have been facilitated to access various type of technological infrastructure. However, the extent of digital technology utilization by the MSME is envisaged to vary based on the perceived usefulness and ease of use. This study examined the extent of utilization of the selected technologies and the effect on performance.

2.2.3 Technology, Organization and Environment (TOE) Framework

The TOE framework proposed by Tornatzky and Fleischer (1990) anticipates a positive link between external and internal factors and technology usage behaviour within an organizational. The TOE framework explains the effects of environmental factors on the process by which an organization adopts, uses and implements a technological innovation. The internal environment of a MSME plays a crucial role in determining the usage of digital technology. However, critiques point out that the theory is too generic and is already aligned to other theories of innovation adoption (Baker, 2022). The internal factors of women-led MSMEs in Kakuma Refugee Camp are envisaged to determine the extent of utilization of digital technologies and by extension effect on performance. This study focused on examining the effect of MSME characteristics on the association between digital technologies utilization and MSME performance.

2.3 Conceptual Review

This subsection presents a review on the conceptualization of the specific forms of digital technologies selected for examination in this proposed study and Firm performance.

2.3.1 Mobile phone based digital technologies utilization

This entails the various applications of mobile phone-related technology MSMEs use to provide services to its clients and accomplish business objectives and goals. These services are delivered through cellular devices Cariolle and Carroll, (2020) observe that the use of mobile phones as ICT improve business performance by reducing information search and other transaction cost while mobile money as a digital financial service has enabled enterprises to participate in various types of electronic financial transactions such as bills and salaries payment off-line through SMS. Mobile Banking is yet another technology utilized by MSMEs to communicate with their banks. This study focused on the utilization of mobile phone-based digital technology with respect to mobile money transfer/payments, mobile banking and mobile phone for contacting via SMS/WhatsApp.

2.3.2 Computer-based digital technologies utilization

Computer-based digital technologies relate to general desktop use of personal computer technology by MSMEs in off-line business processes. According to Bitler (2001) such services comprised administrative support functions, inventory management, accounts and bookkeeping. Okello-Obura (2011) other usage of computer-based technology include records and information management such as storage and backup of data, recording of business information, and production of business communication documents. This study focused on the utilization of off-line computer-based technologies with respect to support in business administrative functions, inventory management, record business information and support in accounting/bookkeeping and produce business communication documents.

2.3.3 Internet-based digital technologies utilization

Internet-based digital technologies relate to MSME use of online technologies to pursue business objectives. According to Cariolle and Carroll (2020) these comprise internet-based ICT such as Email and website, e-commerce and e-marketing through social media (Njau and Karugu; 2019; Olonde, 2017). Shauri *et al.*, (2023) argue that social media contributes to cost-effectiveness, customer satisfaction and market performances while positively influencing innovation and branding of MSMEs. This study focused on utilization of internet and web-based technologies in business transaction comprising email, website, e-commerce platforms, and social media platforms.

2.3.4 Characteristics of MSMEs

MSME characteristics relate to the salient attributes of a firm that describes its internal environment and that have a direct or indirect influence on its performance. According to Essel *et al.*, 2019, these features comprise the ownership type, firm age, and sector of firm while others like Kogan and Tian (2022) consider aspects such as firm size, leverage, liquidity, sales growth, asset growth and turnover. Harvie *et al.*, (2010) give a much broader perspective that size, age, type of ownership, productivity, financial position, innovation efforts, location and entrepreneurial and managerial attitudes. Based on the understanding of the study context this study selects the age of the MSME and the type of industry it is engaged in as its variable of interest.

2.3.5 Performance

The concept of Firm Performance is yet to have a universally accepted definition despite gaining increased attention in strategic management research (Santos & Brito, 2022; Taouab & Issor, 2019). They observe that towards end of the 20th century firm performance was equated to organizational efficiency, against a backdrop of limited

resources before later shifting to capability and ability of an organization to efficiently utilize the resources to attain its strategic objectives at the start of the 21st century the focus. Nevertheless, attempts have been made towards a working definition. Moullin (2017) considers organization performance as how well the organization is managed and the value it delivers to its customers and stakeholders. Verboncu and Zalman (2005) appreciated that performance is a particular result obtained in management, economics, and marketing that gives characteristics of competitiveness, efficiency, and effectiveness to the organization and its structural and procedural components.

Measurement of MSMEs Performance takes different approaches and dimensions. According to Ittner *et al.*, (2003) performance measures can take a subjective approach which entails self-reporting and subjective value judgments of the owner or manager or objective approach which is based on objective performance measures such as return on assets, return on sales, and return on equity. This is consistent with Zulkiffli and Perera (2011) who note preference for subjective measures in many studies due to difficulties in obtaining objective financial data.

2.4 Empirical Review

This chapter has reviewed the three theoretical frameworks to understand the effect of digital technologies utilization on MSME performance namely; Resource Based View Theory, Technology Acceptance Model (TAM) Theory, and Technology, Organization and Environment (TOE) Framework. The chapter further reviewed the concept of MSMEs including definition parameters, as well as findings from empirical studies globally, in sub-Saharan Africa, and Kenya in particular, which examined the relationship between digital technologies utilization and enterprise performance.

2.4.1 Mobile phone-based digital technologies utilization and MSME performance

In a study of ICT Usage and Its Impact on Profitability of MSMEs in 13 African Countries including Kenya, Esselaar *et al.*, (2018) found that mobile-phone based ICT has significant impact on profitability for informal MSMEs compared to formal MSMEs and large businesses and positive effect on labor productivity for both informal as well as formal MSMEs. However, the study adopted a qualitative approach and used non-random sampling procedure in the selection of the 280 MSMEs based on their profile.

In a study on the effect of mobile phone money transfer applications on performance of MSEs in Kenya, Makee *et al.*, (2019) found that the utilization of mobile phone transfer services were insignificant on enterprise performance aspects such as increase in customers, income, reduced operational costs, and increased profits. The study adopted simple random sampling to select the sample of 110 MSMEs within the study geography in Western Kenya. While both studies demonstrate evidence of association between mobile phone technologies and MSME performance, neither has focused specifically on women-led MSMEs or MSMEs in displacement context such as refugee camps. Further, the methodology adopted across the studies varies. This study seeks to fill these gaps by adopting probability sampling designs to examine the effect of mobile phone technologies on the performance of women-led MSMEs in Kakuma Refugee Camp in Kenya.

Chong (2018) suggests a hybrid approach integrated with time-axis approach that ensures firm performance is measured against an organization's short-term plans and long-term strategies. The hybrid approach combines both the financial measures such profit before tax and turnover and non- financial measures pertaining to customers' satisfaction and customers' referral rates, delivery time, waiting time and employees' turnover. This

multidimensionality approach is consistent with Santos and Brito (2022) who argue that categorize firm performance into two dimensions; Financial Performance that is represented by profitability, growth and market value; and Strategic Performance that includes non-financial competitive aspects, such as customer satisfaction, quality, innovation, employee satisfaction and reputation.

Overall, measures of performance vary from firm to another. Douglas *et al.*, (2017) summarizes the common financial performance and operational performance measure existent in literature. They include turnover, net profit, return on investment, employment levels, market share, customer satisfaction, continued existence, meeting personal goals, and expanding infrastructure. To measure MSME performance this current study adopts the multidimensionality approach proposed by Chong (2018) and Santos & Brito (2022) that measures both financial and non-financial dimensions.

2.4.2 Computer-based digital technologies utilization and MSME performance

In a study on perceived performance effects of ICT in manufacturing MSMEs in Spain, Bayo-Moriones *et al.*, (2013) positive relationship between perceived firm performance and General-use ICT such as Computer-based digital technologies although the impact is not always immediate since the lag effects and length differ according to the type of ICT. The study adopted path analysis on available data for a sample of 267 Spanish manufacturing MSMEs to examine ICT impact on market share, profits and margin.

According to Barnes and Corbitt (2017) Mobile Banking is depicted as a convergence technological advancement of internet and mobile phones. Zhu and Wang (2022) point out that the technology provided through online mode has made banking more accessible.

In a study on the use of ICT and economic performance of MSMEs in East Africa countries of Kenya, Uganda, and Tanzania, Chowdhury and Wolf (2017) found that investment in ICT had negative effect on labour productivity, non significant impact on enterprises' internal rate of return on investment and enterprises exporter (non-exporter) status, but positive impact on internal and foreign market expansion. The study adopted econometric modeling on available data to examine the impact of ICTs but focused specifically on food processing, textile and tourism sectors which are considered major contributors to the specific countries GDP and economic dimension of MSME performance. Both studies used secondary data analysis approach and demonstrated evidence of variation in the impact of computer-based technologies on MSME performance. In addition, the studies are sector based and focused on economic dimensions of MSME performance. This study intends to use primary data to examine the relationship between computer-based technologies and MSMEs performance broadly with a focus on women-led MSMEs in displacement contexts.

2.4.3 Internet/Online media-based digital technologies utilization and MSME performance

In a study on perceived performance effects of ICT in manufacturing MSMEs in Spain, Bayo-Moriones *et al.*, (2013) positive relationship between perceived firm performance and Communication-integrating ICT such as email, intranet and extranet, and Market-oriented ICT comprising web pages and e-commerce. However, the study used secondary data analysis method.

In a study on the impact of ICT in MSMEs in Ghana, Akomea-Bonsu and Sampong (2012) found that internet influenced positive performance such as increased profits and

productivity among other benefits. The study adopted probability sampling methods to examine a sample of 40 MSMEs in Kumasi Metropolis.

In a study on the influence of e-marketing on performance of MSMEs in the manufacturing industry in Kenya, Njau and Karugu (2019) found insignificant positive influence of Search Engine Marketing, email marketing, blog marketing, and online advertising on business performance. The study used survey research design to examine 50 MSMEs from the manufacturing sector selected through simple random sampling. Across the studies, evidence shows that internet-based technologies have a positive influence on MSME performance. The study conducted in Kenya focused on MSMEs in the manufacturing sector and adopted a descriptive approach. This study intends to examine women-led MSMEs across sectors in displacement context of Kakuma Refugee Camp and adopt an analytical approach for methodology.

2.4.4 Moderating effect of Characteristics of MSMEs on the relationship between and digital technologies utilization and MSME performance

In a study on effects of the use of digital technologies on the performance of firms in the creative and manufacturing industries in Peru Seclen-Luna *et al.*, (2022) found that characteristics of MSMEs has a positive effect on net sales and productivity.

In a study on perceived performance effects of ICT in manufacturing MSMEs in Spain, Bayo-Moriones *et al.*, (2013) found that the impact on ICT on communication improvement were larger in firms in which ICT had been in use.

In a study on the effects of entrepreneur, firm, and institutional characteristics on small-scale firm performance in Ghana, Essel *et al.*, (2019) found that industry type a firm is in influences its firm performance. This is inconsistent with Muturi (2015) study of MSME

service sectors in Kenya that found that industry in which an organization operates was insignificant on its innovative activities.

2.5 Research gaps

This study sought to fill several gaps. Although the improved ICT support infrastructure in Kakuma Refugee Camp have resulted in a relative increase in digital technology utilization in business management processes among MSMEs, the impact on the MSMEs performance resulting from the improved utilization is hardly known with hardly any recent empirical study that has examined the effect of digital technology utilization on the performance of refugee women-led MSMEs within refugee camp contexts. Several cited studies have also demonstrated that the impact of ICTs utilization on MSME performance is inconsistent depending on the context and MSME characteristics. Finally, most studies in Kenya that examined the effect of digital technology utilization on enterprise performance adopted descriptive methods with limited efforts to explore the correlation between independent and dependent variable as well as the confounding effect of enterprise characteristics and business environment on the relationship between digital technologies utilization and MSME performance.

Table 2.1 Summary of Research Gaps

Author and Year	Title	Methodology	Findings	Gaps
Chowdhury & Wolf (2017).	Use of ICTs and the economic performance of MSMEs in East Africa (No. 2017/06)	Descriptive research design applied. The entire sample included 300 enterprises. The distribution is 150 enterprises from Kenya and Tanzania Each.	The empirical findings suggest that investment in ICT has a negative impact on labour productivity and a positive impact on general market expansion	The Study focused on a limited number of sectors and leaves out many sectors of MSME's and does not include any refugee camps in its sampling.
Esselaar, Stork, Ndiwalana, & Deen-Swaray, (2016).	ICT usage and its impact on profitability of MSMEs in 13 African countries.	Descriptive survey research design carried out by the Research ICT Africa (RIA) in 14 African countries.	This article demonstrates that informal MSMEs have a higher profitability than formal ones. It further shows that ICTs are productive input factors and that their use increases labor productivity for informal as well as formal MSMEs. The article further argues that there is still demand for fixed-line phones among MSMEs but that mobile phones have become the default communications tool because fixed lines are either too expensive or not available.	The study covers many African countries, but does not include refugee settings in those counties. It also focuses more phone technology and less on other ICT options.

Akomea-Bonsu, & Sampong (2012).	The impact of information and communication technologies (ICT) on small and medium scale enterprises (MSMEs) in the Kumasi Metropolis, Ghana	Cross sectional research design conducted, used 40 MSMEs through a questionnaire instrument.	The results of the study show that only a small number of MSMEs in Kumasi are aware of the benefits of ICT adoption. Majority of the firms that use the internet mainly use it to locate customer and contracts, general business information, and e-mailing rather than sourcing for raw materials. Most of the MSMEs have reported a positive performance and other benefits by utilizing ICT in their businesses.	This study has a wide range of ICT options and covers many MSMEs, but is only limited to Kumasi Metropolis in Ghana and also has not refugee MSMEs sampled.
Bayo-Moriones, Billón, & Lera-López (2019).	Perceived performance effects of ICT in manufacturing MSMEs.	Correlation design employed, a sample of 267 Spanish manufacturing MSMEs was conducted.	The findings show a positive relationship between ICT adoption and all the measures of perceived performance analyzed. Managers' perceptions of ICT impact are related to the adoption of new work practices but the effects also depend positively on the number of years since new work practices were implemented. ICT impact on final performance (market share and profits and margin) takes place mainly indirectly through the improvement of internal and external communication, as well as through operational performance.	The Study is based in Europe and focuses on Manufacturing MSMEs and lack African data and other non-manufacturing MSMEs. Definitely the Refugee information in an African context is lacking.
Kiveu Ofafa, (2019).	Enhancing market access in Kenyan MSMEs using ICT.	Exploratory research design was used based on desk research that involved a review of relevant literature and studies.	Findings indicate that opportunities exist for MSMEs to apply ICT to facilitate communication and access to information, identify markets, for production of innovative quality products, product promotion, to improve	The study compiles research findings from other studies but makes not reference to Women-Led MSMEs, let

			transactions, for market research and analysis, to access international markets, for on-line selling, for networking and to lower transaction costs among others.	alone in a refugee setting.
Makee, Willy Atandi, (2019).	Effect of mobile phone transfer services on performance of micro and small enterprises	Descriptive survey design was used, Simple random sampling was used. a sample of 110 was achieved. A questionnaire was prepared	The study revealed that there is indeed an effect of the mobile phone transfer services innovations on enterprise performance. of the 66.3% of enterprises surveyed, did indicate that when innovations are used, they help bring more customers leading to more business income, 69.4% indicated that the innovations save time and money while 59.2% observed that the innovations contributed to their profits and that the more, they invested in them the more the profits.	This study focuses on Mobile phone transfer and no other digital technologies. It limits its findings Kitale which has no correlation with a refugee setting.
Njau & Karugu, (2019).	Influence Of E-Marketing on The Performance Of Small and Medium Enterprises In Kenya: Survey Of Small And Medium Enterprises in The Manufacturing Industry in Kenya	The study used a survey research design in collecting data from respondents and simple random sampling procedure to select a sample	The findings showed the significant influence of Search Engine Marketing, email marketing, blog marketing, and online advertising on business performance. The study showed that MSMEs in Kenya who are keen in adopting e-marketing have achieved above average business performance.	The study focuses on marketing aspect of MSMEs only and limited itself got manufacturing MSMEs. This leaves out other business aspects of MSMEs, non-manufacturing MSMEs and does not include Refugee setting.

Source: Researcher 2023

2.6 Conceptual Framework

This conceptual framework draws from Santos and Brito (2022) measurement model for firm performance. It shows the relationship between the Independent Variable (Digital Technologies Utilization) and the Dependent Variable (MSME Performance). Independent variables comprise three dimensions; mobile phone-based technologies that include mobile money payment services mobile banking, and mobile phone contact line for the business contacting; computer-based technology that include general desktop use personal computer to support business management processes; and internet/web-based technologies that include email, website, e-commerce platforms, and social media platforms. The digital technologies utilization is envisaged to have a direct positive relationship on MSME performance indicator dimensions that comprise profitability, growth, and customer satisfaction. Profitability dimension of MSME performance comprises perceived turnover and perceived return on sales (Profits). The growth dimension of MSME performance comprises perceived growth in sales, perceived increase in employees, and perceived growth in assets. Finally, the customer satisfaction dimension of MSME performance comprises reduced number of complaints, high repurchasing rate, increased customer referral, and growth incustomer base. The

relationship between digital technologies utilization and MSME performance is envisaged to be moderated by variables related to the MSME characteristics that includes age of the enterprise and type of business (Seclen-Luna *et al.*, 2022; Bayo-Moriones *et al.*, 2013; Essel *et al.*, 2019) as shown in Figure 2.1.

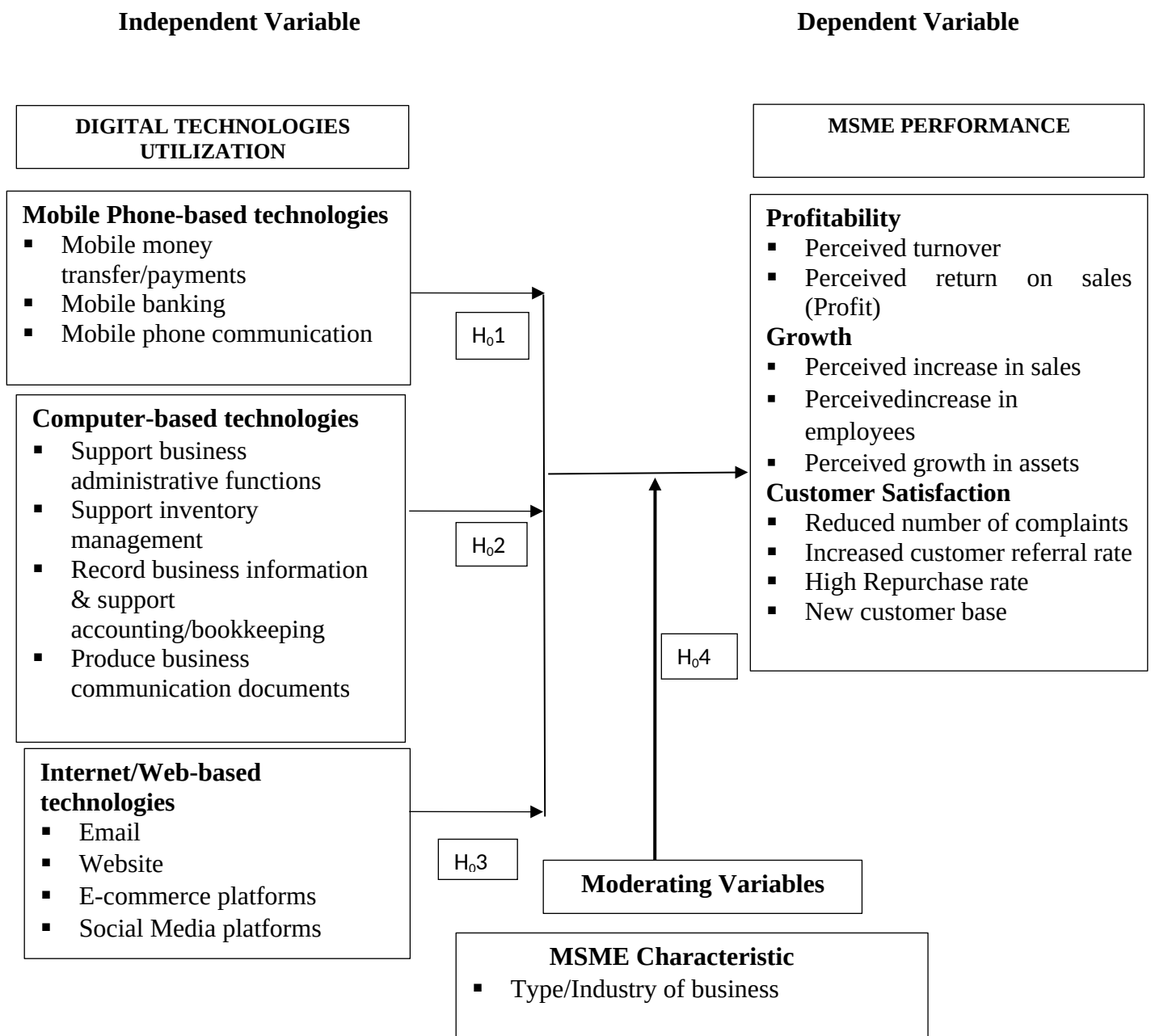


Figure 2.1 Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology for the study. The discussion covers the study design, target population, sample size determination and sampling approach and data collection methods including instrument validity and reliability.

3.2 Area of Study

Kakuma refugee camp is located in the North-Western region of Kenya on the outskirts of Kakuma town, which is the headquarters for Turkana West District of Turkana County. The camp was established in 1992. Kakuma Camp is divided into four namely: Kakuma 1, 2, 3 and 4. Kakuma has Women-Led MSMEs that has based on digital technology based businesses in a number of occasions. According to the UNHCR (2023) as at March, 2023, Kakuma Refugee Camp had a population of 201,579 while Kalobeyei Settlement had a population of 53,383. This population is served by an informal economy which is thriving, with more than 2,000 businesses, including 14 wholesalers. Most business owners run “dukas” (small general stores), which account for 31 percent of businesses in the town and 33 percent in the camp (IFC, 2018). A duka typically provides limited job opportunities – 70 percent of owners do not employ any other people, thus making most of the businesses

to be micro enterprises. Women entrepreneurs in Kakuma camp are less likely to register their business (22 percent) compared to men (49 percent). Their businesses are also generally smaller, with a lower initial investment. This informs the desire to focus on Women-Led MSMEs in this study. According to IFC retail businesses in Kakuma refugee camp were distributed as follows: Kakuma 1=942, Kakuma 2=278, Kakuma 3=762, Kakuma 4=118. Activities for refugee-owned businesses included Duka/boutique (33%), Food stall/fresh food store, (8%), tailors 8%, boda boda (7%), restaurant/café (6%), Grocery store (4%), Mpesa Kiosk (3%), and others (38%).

3.3 Research Philosophy

A research philosophy refers to a set of beliefs regarding the appropriate methods for collecting, analyzing, and utilizing data pertaining to various phenomena. The four philosophical perspectives are positivism, pragmatism, interpretivism, and realism. The study used positivism research philosophy. This philosophy adheres to the view that only factual knowledge gained through observation including measurement, is trustworthy (Levin, 2002). This means the data collected was subjected for results and conclusion hence it was not biased to prelude the outcome. In positivism studies the role of the researcher was limited to data collection and interpretation in an objective way (Mugenda & Mugenda, 2018). In other words, the researcher was an objective analyst and he distances himself from personal values in conducting the study. In these types of studies research findings are usually observable and quantifiable. In this case deductive approach was sought which views that the researcher needs to concentrate on facts (Curwin & Slater, 2008).

3.4 Research Design

Research design is a structured plan and strategy of conducting an investigation to answer research questions (Ahuja, 2010). According to Nachmias and Nachmias (2004) it is the blueprint that facilitates the researcher to generate solutions to problems and guides them in the various stages of the research. The study employed a cross-sectional survey design for this study. According to Schmidt and Brown (2019), cross-sectional utilize surveys or questionnaires to gather data from participants at one point in time primarily to measure association between an exposure and an outcome within a defined population. Lavrakas (2018) notes that cross-sectional survey also aims at making inferences about a specific target population. This study sought to establish the association between digital technology utilization and performance of refugee women-led MSMEs in Kakuma Refugee Camp.

3.5 Target Study Population

According to Sounders *et al.*, (2017), study population refers to a defined set of subject or phenomenon being investigated. According to Mugenda and Mugenda (2017) the population comprises complete set of individuals, cases or objects with some common observable characteristics and to which the study results is generalized while Mugenda (2018) considers a population as a list prepared objectively from which the researcher selects cases for examination. In this study the target population comprised of active refugee women-led MSMEs across sectors in the four sub-camps of the Kakuma Refugee Camp. According to IFC (2018) the camp informal economy had over 2,000 businesses that included those led by refugee women. According to most recent report from the UNHCR, there are 2500 businesses run by refugees, and 50% of them (1250) of which are women owned or managed. Of these, fully licensed women owned businesses are 401 that

forms the target population (Turkana County Government, 2022). The study used licensed women owned businesses owners.

3.6 Sample Size

Sample design entails the plan used to draw a sample of study from a population. (Kothari, 2004). Sampling from the population saves on challenges of surveying the entire population (Saunders *et al.*, 2017). For this study the researcher first created sampling frame by mapping out and listing the refugee women-led MSMEs in Kakuma 1 to Kakuma 4 that utilize any of selected digital technologies in their business operations. This was achieved with the help of personnel from UNHCR partner organizations involved in women empowerment, livelihoods and self-reliance programming.

Based on the total number of MSMEs identified, the researcher adopted the Krejcie and Morgan (1970) formulae to determine the appropriate sample size for Finite Populations as follows:

$$s = X^2NP(1-P)/d^2(N-1) + X^2P(1-P).$$

s = required sample size

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level

(3.841)

N = the population size

P = The population proportion (assumed to be .50 since this provide the maximum sample size)

d = the degree of accuracy expressed as a proportion (.05)

According to the Krejcie and Morgan (1970) Table (See appendix 4) that is generated based on the formulae above, with an estimated finite population of 401 refugee women-led enterprises, the required sample size was at least 196 women business owners.

3.7 Sampling Design

Mugenda and Mugenda (2017) considers sampling as a research plan that describes how cases are to be selected for observation. To select individual MSMEs for this study, the researcher used stratified simple random sampling. According to Singh and Mangat (1996), this technique entails first grouping the sample cases in categories based on a criterion then randomly selecting cases within each stratum. According to IFC (2018) the 2100 retail businesses both owned by male and female refugees in Kakuma refugee camp were distributed as follows: Kakuma 1=942 (45%), Kakuma 2=278 (13%), Kakuma 3=762 (36%), Kakuma 4=118 (6%). In this study the research proposes stratification by sub-camp; Kakuma 1 to Kakuma 4. The sampling distribution sample size of 196 women led businesses is as shown in Table 3.1.

Table 3.1 Sample Size Distribution

Sub Camp	Number of Enterprises	Percentage distribution
Kakuma 1	100	51
Kakuma 2	28	14.3
Kakuma 3	50	25.5
Kakuma 4	18	9.2
Total	196	100

3.8 Data Collection Methods and Tools

The study collected data from the sampled refugee women-led MSMEs. A structured questionnaire was administered through questionnaires with the MSME owner or senior most MSME manager. The Researcher configured the questionnaire in KoBo Collect mobile-based data collection platform. This ensured real time review of data collection for quality checks as well as save on costs and time associated with data entry.

3.9 Pilot Study

A pilot study, also known as a feasibility study, is a small-scale preliminary study conducted before the main research to check the feasibility or improve the research design (Simkus, 2023). In this study the pilot study used 1% of the sample population and was spread to all the 4 sections of Kakuma camp according to the number of MSMEs in each location.

3.9.1 Reliability

According to Bryman and Bell (2011) reliability refers to consistency of a measure of a concept. The researcher reported Cronbach's α as measure of internal consistency against the generally accepted standard (Sounders *et al.*, 2017). The researcher adopted Inter-rater reliability test in which the instruments was shared with supervisors for review before adoption for implementation. The Researcher used 1% pilot test for the sampled population on the instrument. Kothari (2019) and Sekaran (2011) recommend a 1% sample from the population as being fit for statistical test of instruments.

3.9.2 Validity

On the other hand, validity is the extent to which a research tool measures the intended variable (Mugenda & Mugenda, 2017). For this study, the researcher conducted content

validity which measures the extent to which the data collection tool measures the variable of interest. The study adopted already validated scales and items from review of related studies. The researcher shared data collection tool with the study supervisors for review to ensure it accurately measures the variable under investigation. The research later validated the study results through comparison with findings in similar studies already documented in literature. The pilot study was taken as 1% of the sample population of each of the 4 sections of Kakuma refugee camp. The piloted members did not participate in the final study.

3.10 Data Processing and Analysis

The researcher performed data coding and cleaning as appropriate using Microsoft Excel before being imported into SPSS (Statistical Package for the Social Sciences) program for analysis. Where applicable data was transformed and recorded before analysis. Data analysis was conducted in line with the research objectives. The researcher conducted both descriptive and inferential statistics. Descriptive Statistics such as frequencies and measures of central tendencies comprising mean and standard deviation were generated to give summaries and describe the sample characteristics. In addition, inferential statistics was generated to test study hypotheses and estimate the effect of digital technology utilization on MSME performance. These comprised Chi square test to examine independence between variables, T-test and ANOVA to compare means, correlation, and multiple regression analysis to examine existence of relationship between variables. The summaries of analyzed information were presented in tables and narrative discussion.

The multiple regression analysis was used to estimate the relationship between the three independent variables and the dependent variable. The ordinal regression model was stated as follows:

$$Y_i = \beta_0 + \beta_1 \cdot \text{MPBTU} + \beta_2 \cdot \text{DCPTU} + \beta_3 \cdot \text{IWBUTU} + \epsilon$$

$$Y_i = \beta_0 + \beta_1 \cdot \text{MPBTU} + \beta_2 \cdot \text{DCPTU} + \beta_3 \cdot \text{IWBUTU} + \beta_1 \cdot \text{MPBTU} \cdot \text{XT} + \beta_2 \cdot \text{DCPTU} \cdot \text{XT} + \beta_3 \cdot \text{IWBUTU} \cdot \text{XT} + \epsilon$$

Where: Y_i = Performance of MSME

β_0 = Constant Term

MPBTU = Mobile Phone-Based Technology Utilization

DCBTU = Desktop Computer-Based Technology Utilization

IWBUTU = Internet/Web-Based Technology Utilization

XT = MSMEs Characteristics

ϵ = Model's Error Term (Residuals)

3.10.1 Diagnostic Tests

Diagnostic tests and data inspection were performed to ensure all the assumptions of multiple regression are met before performing the multiple regression analysis. The

specific tests included the assumption on normal distribution of residual errors thus Shapiro-Wilk test of normality was conducted. Multicollinearity test was also conducted using Variance Inflation factor (VIF) and tolerance value guide, tolerance value should be less than 1 and VIF value < 10 . Homoscedasticity was also tested.

3.11. Ethical Considerations

The researcher got clearance from the University and research authorization from NACOSTI before conducting the study. The researcher also used respondents' consent to their participation through an informed consent that explains the details of the research, issues of confidentiality, participant's rights, participation risks and potential benefits as applicable. The researcher also adhered to Humanitarian Principles and Standards and Code of Conduct when working with refugee communities and other vulnerable populations.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presented findings conducted on digital technology utilization and performance of MSMEs in Kakuma Refugee Camp. This includes demographic characteristics of the respondents, analysis, interpretation and discussion of findings of the study.

4.2 Response Rate

Out of one hundred and ninety six questionnaires (196) issued, 111 were filled and returned representing 56.6% response rate. A research is considered excellent if the response rate exceeds 70%, as per Mugenda and Mugenda (2013). However, Sataloff and Vontela (2021) indicated that response rates above 50% are desirable in social science research. A high response rate strengthens the validity of your findings, as it suggests that your data is more likely to be representative of the target population you aimed to survey.

Table 4.1 Questionnaire Return Rate

Frequency	Percent
------------------	----------------

Valid	Returned	111	56.6
	Not Returned	85	43.4
	Total	196	100.0

Source: (Field Data, 2023)

4.3 Reliability and Validity Tests

A sample of 2 respondents from Kakuma Camp were given the questionnaires to ascertain whether the questionnaires were valid and reliable. The three independent variables (mobile phone-based technology utilization, desktop computer-based technology utilization and online based technology utilization), moderator MSMEs characteristics and the dependent variable (performance) were subjected to reliability test using SPSS and the results obtained were shown in Table 4.2.

Table 4.2 Reliability Test

Variable	Cronbach alpha
Mobile phone-based technology	.818
Desktop computer-based technology	.712
Online based technology	.808
MSMEs characteristics	.806
Performance	.708
Average	.770

Source: Field Data (2023)

Table 4.2 above shows that the variables under study achieved the recommended Cronbach's Alpha of greater than 0.7. This was important for internal data consistency (Mugenda & Mugenda, 2018).

4.4 Demographic Characteristics of the Respondents

The study established the general information business location, ownership, education, working experience, business type and supply of goods and services. This was sought to establish the representation towards digital technology utilization and performance.

4.4.1 Business Location

This was to establish whether location of business had an effect on performance of MSMEs in Kakuma Refugee Camp in Table 4.3 as follows:

Table 4.3 Business Location

	Frequency	Percent
Kakuma 1	16	14.4
Kakuma 2	39	35.1
Kakuma 3	20	18.1
Kakuma 4	36	32.4
Total	111	100.0

Source: Field Data, (2023)

The study findings in Table 4.3 showed that majority of the respondents, 39(35.1%) were from Kakuma 2 followed by Kakuma 4 thus 36(32.4%), Kakuma 3 being 20(18.1%) lastly Kakuma 1 at 16(14.4%). The Camps were evenly distributed.

4.4.2 Designation of Respondents

The study aimed at establishing the business ownership and ascertaining the performance attributes of ownership as shown in Table 4.4 as follows:-

Table 4.4 Designation of the Respondents

	Frequency	Percent
Business owner	91	81.9
Enterprise manager	20	18.1
Total	111	100.0

Source: Field Data, (2023)

Table 4.4 above, illustrated that 91 (81.9%) of respondents were business owners as 20(18.1%) were business managers. Performance was well explained or noticed where business owners were in charge of the business.

4.4.3 Level of Education

The study sought to establish the academic qualifications of the respondents. The summary of the findings is indicated in Table 4.5.

Table 4.5 Education Level of the Respondents

	Frequency	Percent
Primary	43	38.7
Secondary	48	43.2
Tertiary	14	12.6
Non-formal	6	5.4
Total	111	100.0

Source: Field Data, (2023)

The study findings in table 4.5 revealed that secondary school leavers dominated at 48(43.2%) with primary level at 43(38.7%), tertiary level at 14(12.6%) and non-formal education at 6(5.4%). The education level at the camp was moderate.

4.4.4. Working experience

The study established the period served by the respondents in the university system as shown in Table 4.6 as follows:

Table 4.6 Working Experience

	Frequency	Percent
Less than 1 years	33	29.7
1-2 years	55	49.5
3-4 years	19	17.1
Above 5 years	4	3.7
Total	111	100.0

Source: Field Data, (2023)

In table 4.6, a significant number of respondents 55(49.5%) had 1-2 years of experience, 33(29.7%) had less than 1 year experience, those 3-4 years were 19(17.1%) as above 5 years were 4(3.7%). Kakuma Camp had members of majorly below 5 years of age at the camp hence well informed of the business set up in the area.

4.4.5 Type of Business

The designations of the respondents who participated in the study were summarized as indicated in Table 4.7.

Table 4.7 Type of Business

	Frequency	Percent
Retail shop	48	43.2
Mobile money shop	15	13.5
Grocery	34	30.6
Tailoring	4	3.6

Salon	9	8.1
Whole sale shop	1	0.9
Total	111	100.0

Source: Field Data, (2023)

Results above showed that those with retail shop were 48(43.2%), grocery 34(30.6%), Mobile money shop 15(13.5%) , 4(3.6%) tailoring 4(3.6%), salon 9(8.1%) and whole sale shop 1(0.9%). This posed indication that SMEs existed and it was worth to establish performance amongst them.

4.4. Supply of Goods and Services

The study established the areas business women supplied their goods and services as shown in Table 4.8 as follows:

Table 4.8 Supply of Goods and Services

	Frequency	Percent
Locally within the camp	90	81.0
Locally within the camp and host Community	16	14.4
Locally within the camp in the host community and other parts of the County	5	4.6
Whole country	0	0
Total	111	100.0

Source: Field Data, (2023)

In Table 4.8, a high number of 90 (81%) noted that they supplied services and goods locally within the camp, those who supplied services and goods locally within the camp and host community were 16(14.4%). Furthermore, those locally within the camp in the host community and other parts of the county were 5(4.6%).

4.5. Descriptive Analysis

The views of respondents were sought on coaching, delegation of authority and employee participation as presented below: -

4.5.1 Mobile Phone-Based Technology Utilization and Performance

The researcher sought to establish the effect of mobile phone-based technology utilization and performance. A five (5) Likert Scale was used where one (1) implied the least and five (5) the highest positive response (thus, 1=Strongly Disagree (SD), 2=Disagree (D), 3=Undecided (U), 4=Agree (A), 5 =Strongly Agree (SA) was used in the analysis of data. The results of the Likert Scale are shown in Table 4.9.

Table 4.9 Likert Scale on Mobile Phone-Based Technology Utilization

Description	N	SD (%)	D (%)	U (%)	A (%)	SA (%)
Off-line Mobile money financial transactions via SMS such as payments to suppliers, bills, or salaries?	111	0 (0)	1 (0.9)	14 (12.6)	53 (47.7)	43 (38.7)
Offline/Online Mobile Banking to interact with your business banking partner	111	2 (1.8)	4 (3.6)	25 (22.5)	28 (25.2)	52 (46.8)
Offline interaction with clients and suppliers through mobile	111	0 (0)	11 (9.9)	14 (12.6)	33 (29.7)	53 (47.7)

phone (Calling/SMS) to share
and receive business-related
information

Source: Field Data, (2023)

From Table 4.9, results on Mobile Phone Based Technology Utilization on Performance showed that 53(47.7%) of respondents agreed as 43(38.7%) strongly agreed that that off-line mobile money financial transactions were experienced through SMS such as payments to suppliers, bills, or salaries. Regarding online mobile banking interaction with business banking partners 52(46.8%) strongly agreed as 28(25.2%) agreed. Offline interaction with clients and suppliers through mobile phone was agreed to be in existence by 33(29.7%) as 53(47.7%) strongly agreed. This study agrees with Esselaar *et al.*, (2018) who found that mobile-phone based ICT has significant impact on profitability for informal MSMEs. However, the study disagrees with Makee *et al.*, (2019) who found that the utilization of mobile phone transfer services was insignificant on enterprise performance.

4.5.2 Desktop Computer Based Technology Utilization and Performance

The researcher sought to establish the effect of desktop computer based technology utilization and performance.. A five (5) Likert scale (where 1=Strongly Disagree (SD), 2=Disagree (D), 3=Undecided (U), 4=Agree (A), 5 = Strongly Agree (SA) was used in the analysis of data. The results of the Likert Scale were shown in Table 4.10.

Table 4.10 Likert Scale on Desktop Computer Based Technology Utilization

Description	N	SD (%)	D (%)	U (%)	A (%)	SA (%)
Off-line use of desktop/personal computer to support administrative functions in your business	111	1 (0.9)	3 (2.7)	32 (28.8)	34 (30.6)	41 (36.9)
Off-line use of desktop personal computer to support inventory management	111	0 (0)	33 (29.7)	19 (17.1)	55 (49.5)	4 (3.6)
Off-line use of desktop personal computer to record business information and support accounting/bookkeeping functions	111	0 (0)	2 (1.8)	35 (31.5)	26 (23.4)	48 (43.2)
Off-line use of desktop personal computer to produce business communication documents	111	1 (0.9)	16 (14.4)	36 (32.4)	32 (28.8)	26 (23.4)

Source: Field Data, (2023)

The finding supported administrative functions in business since 41(36.9%) strongly agreed as 34(30.6%) agreed. Off-line use of desktop personal computer supported inventory management as 55 (49.5%) agreed. Off-line use of desktop personal computer

was relevant on bookkeeping functions as 48(43.2%) strongly agreed. Furthermore, the study found that off-line use of desktop personal computer helped in producing business communication documents. The study agrees with Moriones *et al.*, (2019) who found positive relationship between computer based technologies and perceived firm performance. The study disagrees with Chowdhury and Wolf (2017) who found that computer based technologies had a negative effect on labour productivity, non significant impact on enterprises' internal rate of return on investment.

4.5.3 Online Based Technology Utilization and Performance

The researcher sought to establish the effect of online based technology utilization and performance. A five (5) Likert scale (where 1=Strongly Disagree (SD), 2=Disagree (D), 3=Undecided (U), 4=Agree (A), 5 = Strongly Agree (SA) was used in the analysis of data as shown in Table 4.11:-

Table 4.11 Likert Scale on Online Based Technology Utilization

Description			N	SD (%)	D (%)	U (%)	A (%)	SA (%)
Online engagement with clients/suppliers, selling, advertising, or purchasing products through Email/WhatsApp			111	0 (0)	9 (8.1)	33 (29.7)	42 (37.8)	27 (24.3)
Online engagement with clients/suppliers, selling, advertising, or purchasing products through your enterprise's website			111	1 (0.9)	4 (3.6)	31 (27.9)	50 (45)	25 (22.5)
Online engagement with clients/suppliers, selling, advertising, or purchasing products through online market platforms like social media platforms on WhatsApp, Facebook, Twitter, and Instagram			111	0 (0)	6 (5.4)	29 (26.1)	48 (43.2)	28 (25.2)
Online engagement with clients/suppliers selling, advertising, or			111	0 (0)	17 (15.3)	8 (7.2)	63 (56.4)	23 (20.7)

purchasing products through other online market platforms that specifically support refugee entrepreneurs like Jumia, Kilimall-Sparkbay

Source: Field Data, (2023)

The study findings in table 4.11 showed that online engagement with clients or suppliers, selling, advertising, or purchasing products through Email and WhatsApp was effective and agreed on, 50(45%) agreed that online engagement with clients selling, advertising, or purchasing products through the enterprise's website was important for business growth. The study revealed that online engagement with clients selling, advertising, or purchasing products through online market platforms like social media platforms on WhatsApp, Facebook, Twitter, and Instagram led to business growth as agreed by 48(43.2%). The study further indicated that 63(56.4%) agreed that online engagement with suppliers selling, advertising, or purchasing products through other online market platforms that specifically support refugee entrepreneurs like Jumia were adopted in business.

The study agrees with Akomea-Bonsu and Sampong (2012) who found that internet influenced positive performance such as increased profits and productivity among other benefits. The study disagrees with Njau and Karugu (2019) who found insignificant positive influence of Search Engine Marketing, email marketing, blog marketing, and online advertising on business performance.

4.5.4 Performance

The researcher sought to determine performance of women owned businesses in Kakuma refugee camp. A 5 scale Likert (where 1=Strongly Disagree (SD), 2=Disagree (D), 3=Undecided (U), 4=Agree (A), 5 = Strongly Agree (SA)) was used in the analysis of data. The results of the Likert were shown in Table 4.12.

Table 4.12 Likert Scale on Performance

Description	N	SD (%)	D (%)	U (%)	A (%)	SA (%)
My enterprise's average monthly income from sales has increased compared to the past 12 months	111	0 (0)	6 (5.4)	48 (43.2)	42 (37.8)	15 (13.5)
My enterprise's average monthly profit from sale has increased compared to the past 12 months	111	1 (0.9)	16 (14.4)	37 (33.3)	34 (30.6)	23 (20.7)
My enterprise's average monthly sales have increased compared to the past 12 months	111	0 (0)	35 (31.5)	31 (27.9)	37 (33.3)	8 (7.2)
My enterprise's average number of employees has stabilized/increased compared to the past 12 months	111	0 (0)	9 (8.1)	33 (29.7)	42 (37.8)	27 (24.3)
My enterprise's assets have increased compared to the past 12 months	111	1 (0.9)	4 (3.6)	31 (27.9)	50 (45)	25 (22.5)
My enterprise's average number of repurchasing customers per month has stabilized/increased compared to the past 12 months	111	0 (0)	6 (5.4)	29 (26.1)	48 (43.2)	28 (25.2)
My enterprise's average number of new customers per month has stabilized/increased compared to the past 12 months	111	0 (0)	17 (15.3)	8 (7.2)	63 (56.4)	23 (20.7)
My enterprise's average number of referred customers per month has stabilized/increased compared to the past 12 months	111	0 (0)	2 (1.8)	35 (31.5)	26 (23.4)	48 (43.2)
My enterprise's average number of customer/supplier complaints per month has significantly reduced compared to the past 12 months	111	1 (0.9)	16 (14.4)	36 (32.4)	32 (28.8)	26 (23.4)

Source: Field Data, (2023)

Based on the study findings in Table 4.12, enterprise's average monthly income from sales has increased compared to the past 12 months as agreed by 42(37.8%), the enterprise's average monthly profit from sale has increased compared to the past 12 months agreed by 34(30.6%). Furthermore, the enterprise's average monthly sales have increased compared to the past 12 months agreed by 37(33.3%). Women enterprise's average number of

employees had stabilized compared to the past 12 months as agreed by 42(37.8%). The enterprise's average number of new customers per month had increased compared to the past 12 months as agreed by 63 (56.4%). Furthermore, the enterprise's average number of referred customers per month had stabilized 48 (43.2%). Therefore income, sales, number of employees had increased.

4.5.5 MSMEs characteristics on Digital Utilization and Performance

The researcher sought to find out if MSMEs characteristics affected the relationship between digital utilization and Performance of women business at Kakuma refugee camp. A 5 scale Likert (where 1=Strongly Disagree (SD), 2=Disagree (D), 3=Undecided (U), 4=Agree (A), 5 = Strongly Agree (SA) was used in the analysis of data. The results of the Likert were shown in Table 4.13.

Table 4.13 Descriptive Statistics for MSMEs Characteristics

Description	N	SD (%)	D (%)	U (%)	A (%)	SA (%)
The size of my business is accommodative to the business	111	0 (0)	6 (5.4)	48 (43.2)	42 (37.8)	15 (13.5)
The age of the business has been an advantage to the business growth	111	1 (0.9)	16 (14.4)	37 (33.3)	34 (30.6)	23 (20.7)
Sole trader ownership has made me closer to the business	111	1 (0.9)	16 (14.4)	37 (33.3)	34 (30.6)	23 (20.7)
Location of my business has made it easier for the business	111	0 (0)	35 (31.5)	31 (27.9)	37 (33.3)	8 (7.2)

Source: Field Data, (2023)

Table 4.13 showed that 42(37.8%) agreed that the size of my business was accommodative to the business, 34 (30.6%) of the respondents agreed that the age of the business has been an advantage to the business growth. More so, 34 (30.6%) of sole trader made traders closer to the business. Moreover, 37(33.3%) were in agreement that the location of their business had made business easier. The study agrees with Seclen-Luna *et al.* (2022) who found that characteristics of MSMEs has a positive effect on net sales and productivity. Bayo-Moriones *et al.*, (2013) found the impact of firm characteristics as significant. Essel *et al.*, (2019) found that industry type a firm is in influences its firm performance. This is inconsistent with Muturi (2015) study of MSME service sectors in Kenya that found that industry in which an organization operates was insignificant on its innovative activities.

4.6 Diagnostic Tests

Before the inferential statistics were carried out, the researcher conducted diagnostic tests to determine whether the data collected met the assumption of the regression analysis. This test was important as it dictated the direction to use in data analysis for instance, whether to use parametric test or non-parametric test for inferential analysis.

4.6.1. Normality test

The normality test was assessed by both Shapiro-Wilk and Kolmogorov-Sminorv tests at 95% confidence interval. If the p-values in the Sig. column was below 0.05, the null hypothesis was rejected and therefore there was evidence that the data tested was not from a normally distributed population. The researcher sought to carry out normality test on the data of Mobile phone-based technologies, Desktop computer-based technologies, online-based technologies, and performance and SMSE characteristics. The findings were shown in Table 4.14.

Table 4.14 Normality Test

	Shapiro-Wilk	Kolmogrov smirnoff		
	Statistic	Sig.	Statistic	Sig.
Mobile phone based technologies	.162	.178	.952	.406
Desktop computer based technologies	.207	.324	.912	.068
Online based technologies	.171	.128	.951	.382
SMSE characteristics	.118	.210*	.959	.523
Performance	.117	.152	.939	.412

Source: Field Data, (2023)

From Table 4.14, results from Kolmogorov-Smirnov (KS) and Shapiro-Wilk (SW) suggested that the residuals were normally distributed (sig. >.05) meaning that tests of normality were significant and therefore parametric test was used. The KS results in Table 4.14 indicate that data collected on Mobile phone based technologies ($p = 0.178$), Computer based technologies ($p = 0.324$), online based technologies ($p = 0.128$), SMSEs characteristics ($p = 0.210$) and performance ($p = 0.152$) were normally distributed as $p - values \geq 0.05$. Thus, we accept the null hypothesis. On the other hand, the SW results showed that the data collected on Mobile phone based technologies ($p = 0.406$), Computer based technologies ($p = 0.068$), online based technologies ($p = 0.382$), SMSEs characteristics ($p = 0.523$) and performance ($p = 0.412$) were normally distributed at

$p - \text{values} \geq 0.05$ therefore, not statistically significant at 5% level of significance. Thus, we accept the null hypothesis as the data came from normal distribution and was normally distributed. This means that the tests of normality were significant and therefore parametric test should be used for analysis.

4.6.2 Homoscedasticity

The study used the Levene statistics to test the null hypothesis that the variance of the explained variable was equal across all levels of explanatory variables. The results were presented in Table 4.15.

Table 4.15 Test for Homogeneity

Test of Homogeneity of Variances				
	Levene	df1	df2	Sig.
	Statistic			
Mobile phone based technologies	2.207	1	110	.368
Desktop computer based technologies	2.124	1	110	.252
Online based technologies	1.883	1	110	.649
SMSE characteristics	0.351	1	110	.455
Performance	0.843	1	110	.131

Source: Field Data, (2023)

The Levene statistics is significant when $p < 0.05$ which would lead to rejection of the null hypothesis but when $p > 0.05$ we accept the null hypothesis. It's worthy to note from the results in Table 4.15 that the $p > 0.05$ which implies that we reject the null hypothesis and conclude that the variances of the dependent variable are steady across different levels of the explanatory variables which fulfils the assumption of homogeneity of variance.

4.6.3 Multicollinearity Test

The study sought to investigate whether the variables were highly correlated and perfect multi-collinearity relationship among the predictors existed. This was necessary because as the degree of multi-collinearity increased, the regression model estimates of the coefficients became unstable. The standard errors for the coefficients could therefore get wildly inflated. Tolerance and Variance Inflation Factor (VIF) values for each predictor was used as a check. The data was tested for these assumptions and the results presented as shown in table 4.16.

Table 4.16 Tests for Multicollinearity

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)	0.115	8.70
	Mobile phone based technologies	0.9	1.11
	Desktop computer based technologies	0.342	2.92
	Online based technologies	0.372	2.69
	SMSE characteristics	0.168	5.95

a. Dependent variable: Performance

Source: Field Data, (2023)

From the regression model predicting digital technology utilization and performance, the tolerance and VIF values for both Mobile phone based technologies, Desktop computer based technologies, online based technologies and SMSE characteristics were all acceptable; tolerance value less than 1 and VIF value < 10. This therefore implied that the assumption of multi-collinearity was met.

4.6.4 Correlation analysis

Bivariate correlation which measures the association between two variables was computed for the observed variables using the Pearson product-moment correlation coefficient (r).

The values of r ranges between 0 and ± 1 indicating the extremes of no correlation and perfect correlation respectively and shows the extent to which a linear relationship exists between two variables. The results of correlation analysis is presented in Table 4.17.

Table 4.17 Pearson Correlation Matrix of the study variables

		Mobile phone based technologies	Desktop computer based technologies	Online based technologi es	MSMEs characteristic	Performan ce
Mobile phone based technologies	Pearson Correlation	1	.746**	.407**	.189*	.501**
	Sig. (2- tailed)		.000	.000	.047	.000
	N	111	111	111	111	111
Desktop computer based technologies	Pearson Correlation	.746**	1	.320**	.237*	.581**
	Sig. (2- tailed)	.000		.001	.012	.000
	N	111	111	111	111	111
Online based technologies	Pearson Correlation	.407**	.320**	1	.268**	.426**
	Sig. (2- tailed)	.000	.001		.004	.000
	N	111	111	111	111	111
MSMEs characteristic	Pearson Correlation	.189*	.237*	.268**	1	.700**
	Sig. (2- tailed)	.047	.012	.004		.000
	N	111	111	111	111	111
Performance	Pearson Correlation	.501**	.581**	.426**	.700**	1
	Sig. (2- tailed)	.000	.000	.000	.000	
	N	111	111	111	111	111

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

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Field Data, 2023

The results above indicate that at 0.05 level of significance, Mobile phone based technologies was a significant predictor of performance ($r = 0.501$, $p\text{-value} = 0.000 < 0.05$). This means that an increase in mobile phone based technologies leads to an increase in performance. This study agrees with Esselaar *et al.*, (2018) who found that mobile-phone based ICT has significant impact on profitability for informal MSMEs. However, the study disagrees with Makee *et al.*, (2019) who found that the utilization of mobile phone transfer services were insignificant on enterprise performance.

On the other hand there was a positive and significant relationship between desktop computer based technologies and performance with a Pearson correlation coefficient $r = 0.581$, $p\text{-value} = 0.000 < 0.05$ which was significant at 0.05 level of significance. This implies that increased desktop computer based technologies results in an increased performance. The study agrees with Bayo-Moriones *et al.*, (2019) who found positive relationship between computer based technologies and perceived firm performance. The study disagrees with Chowdhury and Wolf (2017) who found that computer based technologies had a negative effect on labour productivity, non significant impact on enterprises' internal rate of return on investment.

The results also confirmed that at 0.05 level of significance online based technologies was a significant predictor of performance ($r = 0.426$, $p\text{-value} = 0.000 < 0.05$). An increase in online based technologies leads to an increase in performance. The study agrees with Akomea-Bonsu and Sampong (2012) who found that internet influenced positive performance such as increased profits and productivity among other benefits. The study disagrees with Njau and Karugu (2019) who found insignificant positive influence of

Search Engine Marketing, email marketing, blog marketing, and online advertising on business performance.

Lastly, the results showed that at 0.05 level of significance, MSMEs characteristic was a significant predictor of performance ($r = 0.700$ $p\text{-value} = 0.000 < 0.05$). The study agrees with Seclen-Luna *et al.* (2022) who found that characteristics of MSMEs has a positive effect on net sales and productivity. Bayo-Moriones *et al.*, (2013) found the impact of firm characteristics as significant. Essel *et al.*, (2019) found that industry type a firm is in influences its firm performance. This is inconsistent with Muturi (2015) study of MSME service sectors in Kenya that found that industry in which an organization operates was insignificant on its innovative activities.

4.7 Regression Analysis

The study sought to establish the effect of digital technology utilization on MSMEs performance in Kakuma Refugee Camp. The researcher computed simple linear regressions, multiple linear regression and hierarchical regressions.

4.7.1 Mobile phone based technologies and MSMEs performance in Kakuma Refugee Camp

The study sought to establish the effect of Mobile phone based technologies on MSMEs performance in Kakuma Refugee Camp. To establish this, simple linear regression test was used. The study utilized the following null hypothesis which was tested at 0.05 level of significance.

H_{01} : *There is no significant positive association between utilizing mobile phone-based digital technologies and Refugee Women-Led MSMEs performance in Kakuma Camp.*

The findings of the hypothesis test are presented in Table 4.18 as follows: -

Table 4.18 Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.501 ^a	.247	.240	.35969

a. Predictors: (Constant), Mobile phone based technologies

ANOVA ^b						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.618	1	4.618	35.696	.000 ^a
	Residual	14.102	109	.129		
	Total	18.720	110			

a. Predictors: (Constant), Mobile phone based technologies

b. Dependent Variable: Performance

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	T	
1	(Constant)	2.738	.190		14.432	.000
	Mobile phone based technologies	.267	.045	.501	5.975	.000

a. Dependent Variable: Performance

Source: Field Data, (2023)

The results in Table 4.18 above shows that the R-square was 0.247 implying variation of performance at 24.7% among MSMEs in Kakuma Refugee Camp was explained by mobile phone based technologies. At 0.05 level of significance the ANOVA test indicated that mobile phone based technologies was important in predicting performance among MSMEs in Kakuma Refugee Camp as indicated by the significance value=0.000 which was less than 0.05 level of significance ($p=0.000<0.05$). Thus, mobile phone based

technologies had a significant association with performance among MSMEs in Kakuma Refugee Camp (t-statistic= 5.975 < 1.96, p-value=0.000< 0.05). The null hypothesis was rejected and alternative hypothesis - mobile phone based digital technologies has a significant effect on MSMEs performance in Kakuma Camp was adopted. There is significant positive association between utilizing mobile phone based technologies and Refugee Women-Led MSMEs performance in Kakuma Camp by 0.267. The regression model equation was:

$$Y=2.738+0.267MPBT$$

This study agrees with Esselaar *et al.*, (2018) who found that mobile-phone based ICT has a significant impact on profitability for informal MSMEs. However, the study disagrees with Makee *et al.*, (2019) who found that the utilization of mobile phone transfer services were insignificant on enterprise performance.

4.7.2 Desktop Computer Based Technologies and MSMEs Performance in Kakuma Refugee Camp

The study sought to establish the effect of desktop computer based technologies on MSMEs performance in Kakuma Refugee Camp. To establish this, simple linear regression test was used. The study utilized the following null hypothesis which was tested at 0.05 level of significance.

H₀₂: There is no significant positive association between utilizing desktop computer - based digital technologies and Refugee Women-Led MSMEs performance in Kakuma Camp.

The findings of the hypothesis test were presented in Table 4.19: -

Table 4.19 Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.581 ^a	.337	.331	.33735

a. Predictors: (Constant), Desktop computer based technologies

ANOVA ^b						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6.315	1	6.315	55.494	.000 ^a
	Residual	12.405	109	.114		
	Total	18.720	110			

a. Predictors: (Constant), Desktop computer based technologies

b. Dependent Variable: Performance

Coefficients^a						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	2.549	.178		14.326	.000
	Desktop computer based technologies	.330	.044	.581	7.449	.000

a. Dependent Variable: Performance

Source: Field Data, (2023)

The results in Table 4.19 above show that the R-square was 0.337 implying variation of performance at 33.7% among MSMEs in Kakuma Refugee Camp was explained desktop computer based technologies. At 0.05 level of significance the ANOVA test indicated that desktop computer based technologies was important in predicting performance among MSMEs in Kakuma Refugee Camp as indicated by the significance value=0.000 which was less than 0.05 level of significance ($p=0.000<0.05$). Thus, desktop computer based

technologies had a significant association on performance among MSMEs in Kakuma Refugee Camp (t-statistic= 7.449, p-value=0.000< 0.05). The null hypothesis was rejected and alternative hypothesis - desktop computer based technologies has a significant effect on MSMEs performance -was accepted. There is significant positive association between utilizing mobile phone based technologies and Refugee Women-Led MSMEs performance in Kakuma Camp by 0.330. The regression model equation was:

$$Y=2.549+0.330 \text{ DCPTU}$$

The study agrees with Moriones *et al.*, (2019) who found positive relationship between computer based technologies and perceived firm performance. The study disagrees with Chowdhury and Wolf (2017) who found that computer based technologies had a negative effect on labour productivity, non significant impact on enterprises' internal rate of return on investment.

4.7.3 Online Based Technologies and MSMEs Performance in Kakuma Refugee Camp

The study sought to establish the effect of online based technologies on MSMEs performance in Kakuma Refugee Camp. To establish this, simple linear regression test was used. The study utilized the following null hypothesis which was tested at 0.05 level of significance.

H₀₂: There is no significant positive association between utilizing online based digital technologies and Refugee Women-Led MSMEs performance in Kakuma Camp.

The findings of the hypothesis test were presented in Table 4.20: -

Table 4.20 Model Summary of Online Based Technologies

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.426 ^a	.182	.174	.37486

a. Predictors: (Constant), online based technologies

ANOVA^b						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.403	1	3.403	24.221	.000 ^a
	Residual	15.317	109	.141		
	Total	18.720	110			

a. Predictors: (Constant), online based technologies

b. Dependent Variable: Performance

Coefficients^a						
Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	2.692	.239		11.281	.000
	Online based technologies	.308	.063	.426	4.921	.000

a. Dependent Variable: Performance

Source: Field Data, (2023)

The results in Table 4.20 above shows that the R-square was 0.182 implying variation of performance at 18.2% among MSMEs in Kakuma Refugee Camp was explained online based technologies. At 0.05 level of significance the ANOVA test indicated that online based technologies was important in predicting performance among MSMEs in Kakuma Refugee Camp as indicated by the significance value=0.000 which was less than 0.05 level of significance ($p=0.000<0.05$). Thus, online based technologies had a significant

association on performance among MSMEs in Kakuma Refugee Camp (t-statistic= 4.921 , p-value=0.000< 0.05). The null hypothesis was rejected and alternative hypothesis – online based technologies have a significant effect on MSMEs performance -was accepted. There is significant positive association between utilizing online based technologies and Refugee Women-Led MSMEs performance in Kakuma Camp by 0.330. The regression model equation was:

$$Y=2.692+0.308 \text{ IWB TU}$$

The study agrees with Akomea-Bonsu and Sampong (2012) who found that internet influenced positive performance such as increased profits and productivity among other benefits. The study disagrees with Njau and Karugu (2019) who found insignificant positive influence of Search Engine Marketing, email marketing, blog marketing, and online advertising on business performance.

4.7.4 Multiple Regressions on Digital Technology Utilization and Performance

The study sought to establish the multiple regressions on digital technology utilization and performance of MSMEs performance in Kakuma Refugee Camp. The finding is as shown in Table 4.21.

Table 4.21 Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.833 ^a	.694	.682	.23259

a. Predictors: (Constant), Mobile phone based technologies, online based technologies, Desktop computer based technologies

ANOVA^b						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	12.986	4	3.246	60.010	.000 ^a
	Residual	5.734	106	.054		
	Total	18.720	110			

a. Predictors: (Constant), Mobile phone based technologies, online based technologies, Desktop computer based technologies

b. Dependent Variable: Performance

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	T	
1	(Constant)	1.395	.179		7.810	.000
	Mobile phone based technologies	.198	.045	.345	4.238	.000
	Desktop computer based technologies	.197	.046	.346	4.239	.000
	Online based technologies	.095	.044	.132	2.187	.031

Source: Field Data, (2023)

The study sought to establish the effect of digital technology utilization on performance of MSMEs performance in Kakuma Refugee Camp. Simple linear regression test was used.

The findings of the hypothesis test were presented, at 0.05 level of significance the ANOVA test indicated that in this model the independent variables namely; Mobile phone based technologies, online based technologies and desktop computer based technologies were predictors of MSMEs performance in Kakuma Refugee Camp ($p=0.000<0.05$). From the findings in Table 4.21 above; at 5% level of significance, mobile phone based technologies was a significant predictor of MSMEs performance in Kakuma Refugee Camp where ($p=0.000<0.05$). Online based technologies was a significant predictor of MSMEs performance in Kakuma Refugee Camp where ($p=0.000<0.05$). Desktop computer based technologies was a significant predictor of MSMEs performance in Kakuma Refugee Camp where ($p=0.000 < 0.05$).

Letting Y be Performance, X_1 be mobile phone based technologies, X_2 be computer based technologies and X_3 online based technologies, using the regression coefficients in Table 4.21, we have;

$$Y_i = \beta_0 + \beta_1 \cdot \text{MPBTU} + \beta_2 \cdot \text{DCPTU} + \beta_3 \cdot \text{IWBTU} + \epsilon$$

$$Y = 1.395 + 0.198 \cdot \text{MPBTU} + 0.197 \cdot \text{DCPTU} + 0.095 \cdot \text{IWBTU}$$

From the equation above when mobile phone based technologies was increased by one unit performance would increase by 0.198, a unit increase in computer based technologies would result to 0.197 increase in performance and a unit increase in online based technologies would result in 0.095 increase in performance among MSMEs performance in Kakuma Refugee Camp. This showed that to realize performance among MSMEs performance in Kakuma Refugee Camp; mobile phone based technologies, computer based technologies and online based technologies should be ensured.

4.7.5 MSMEs Characteristic Moderation

The study sought to establish the moderating effect of MSMEs Characteristic on the relationship between digital technology utilization and MSMEs performance in Kakuma Refugee Camp. The study utilized the following null hypothesis which was tested at 0.05 level of significance.

Ho₄: The MSMEs characteristics have no moderating effect on the relationship between digital technology utilization and Refugee Women-Led MSMEs performance in Kakuma Refugee Camp.

Table 4.22 Hierarchical Model Summary

Change Statistics									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.497 ^a	.247	.240	.35969	.247	35.696	1	109	.000
2	.589 ^b	.346	.334	.33660	.100	16.469	1	108	.000
3	.634 ^c	.403	.386	.32330	.056	10.062	1	107	.002

ANOVA^c

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.618	1	4.618	35.696	.000 ^a
	Residual	14.102	109	.129		
	Total	18.720	110			
2	Regression	6.484	2	3.242	28.616	.000 ^b
	Residual	12.236	108	.113		
	Total	18.720	110			
3	Regression	7.536	3	2.512	24.032	.000 ^c
	Residual	11.184	107	.105		
	Total	18.720	110			

Coefficients^a

Model		Unstandardized Coefficients	Std. Error	Standardized Coefficients	T	Sig.
1	(Constant)	2.738	.190		14.432	.000
	Mobile phone based technologies	.267	.045	.497	5.975	.000
	Desktop computer based technologies	1.327	.453	.398	2.932	.004
	Online based technologies	1.307	.120	.664	10.882	.000
2	(Constant)	2.468	.190		13.016	.000
	Mobile phone based technologies	.077	.063	.143	1.220	.225
	Desktop computer based technologies	.270	.066	.474	4.058	.000
	Online based technologies	.197	.046	.346	4.239	.000
	SMEs characteristic	1.395	.179	.478	7.810	.000
3	(Constant)	2.004	.234		8.575	.000

Source: Field Data 2023

The change in R^2 from 0.247 to 0.346 and lastly 0.403 shows that MSMEs characteristics had a significant effect on the relationship between digital technology utilization and Refugee Women-Led MSMEs performance in Kakuma Refugee Camp . Furthermore, the p -values were <0.05 hence all variables remained significant. Hence we reject the null hypothesis.

Therefore, the hypothesized moderating model was confirmed to be:

$$Y_i = \beta_0 + \beta_1 \cdot \text{MPBTU} + \beta_2 \cdot \text{DCPTU} + \beta_3 \cdot \text{IWBTU} + \beta_1 \cdot \text{MPBTU} \cdot \text{XT} + \beta_2 \cdot \text{DCPTU} \cdot \text{XT} + \beta_3 \cdot \text{IWBTU} \cdot \text{XT} + \epsilon$$

$$Y_i = 2.004 + 0.024 \text{ MPBTU} + 0.264 \text{ DCPTU} + .188 \text{ XT} + 0.042 \text{ IWBTU} + 0.197 \text{ MPBTU} \cdot \text{XT} + 0.095 \text{ DCPTU} \cdot \text{XT} + 0.333 \text{ IWBTU} \cdot \text{XT}$$

The moderator regression un-standardized coefficient was 0.333. This implied that for each unit increase in MSMEs characteristics, the slope relating digital technology utilization and Refugee Women-Led MSMEs performance increased by 0.333. The implication was that a unit increase in MSMEs characteristics (positively) increased the slope relating digital technology utilization and Refugee Women-Led MSMEs performance in Kakuma Refugee Camp.

The study agrees with Seclen-Luna *et al.* (2022) who found that characteristics of MSMEs has a positive effect on net sales and productivity. Bayo-Moriones *et al.*, (2013) found the impact of firm characteristics as significant. Essel *et al.*, (2019) found that industry type a firm is in influences its firm performance. This is inconsistent with Muturi (2015) study of MSME service sectors in Kenya that found that industry in which an organization operates was insignificant on its innovative activities.

Table 4.23 Hypothesis Results

Hypothesis	Findings	Decision and basis
H₀₁: There is no significant positive association between utilizing mobile phone-based digital technologies and Refugee Women-Led MSMEs performance in Kakuma Camp	Mobile phone-based digital technologies has a significant positive effect on Refugee Women-Led MSMEs performance in Kakuma Camp	Reject 0.000<0.05
H₀₂: There is no significant association between utilizing computer-based digital technologies and Refugee Women-Led MSMEs performance in Kakuma Refugee Camp	Computer-based digital technologies has a significant positive effect on Refugee Women-Led MSMEs performance in Kakuma Camp	Reject 0.000<0.05
H₀₃: There is no significant positive association between utilizing internet/online media based digital technologies and Refugee Women-Led MSMEs performance in Kakuma Refugee Camp	Online media based digital technologies has a significant positive effect on Refugee Women-Led MSMEs performance in Kakuma Camp	Reject 0.000<0.05
H₀₄: The MSMEs characteristics have no significant moderating effect on the relationship between digital technology utilization and Refugee Women-Led MSMEs performance in Kakuma Refugee Camp	MSMEs characteristics have a significant positive moderating effect on the relationship between digital technology utilization and Refugee Women-Led MSMEs performance in Kakuma Refugee Camp	Reject 0.000<0.05

Source: Field Data (2023)

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This Chapter presented a summary of the study findings, conclusions, recommendations and suggestions for further research study.

5.2 Summary of the Findings

5.2.1 Mobile phone based technology

Mobile phone based technology was a significant predictor of performance. This means that an increase in mobile phone based technologies leads to an increase in performance. The mobile phone based technologies had a significant association on performance among MSMEs in Kakuma Refugee Camp (t-statistic=14.432, p-value=0.000 < 0.05).

5.2.2 Desktop computer based technologies

On the other hand, there was a positive and significant relationship between desktop computer based technologies and performance. This implies that increased desktop computer based technologies results in an increased performance. The desktop computer based technologies had a significant association on performance among MSMEs in Kakuma Refugee Camp (t-statistic=14.326, p-value=0.000 < 0.05).

5.2.3 Mobile phone based technology

The results also confirmed that at 0.05 level of significance online based technologies was a significant predictor of performance. An increase in online based technologies leads to an increase in performance. The online based technologies had a significant association on performance among MSMEs in Kakuma Refugee Camp (t-statistic=11.281, p-value=0.000 < 0.05).

5.2.4 Mobile phone based technology

Lastly, the results showed that at 0.05 level of significance, MSMEs characteristic was a significant predictor of performance. The change in R^2 was on increasing trajectory showing that MSMEs characteristics had a significant effect on the relationship between digital technology utilization and Refugee Women-Led MSMEs performance in Kakuma Refugee Camp

5.3 Conclusion

Based on the first objective, Mobile phone based technology was a significant predictor of performance. Mobile phone based technology led to increase in sales and profits were realized among women business refugees in Kakuma camp.

With regard to the second objective, desktop computer based technologies had a significant positive effect on performance among women business refugees in Kakuma camp. This made business operations first and effective. It led to increase in sales and profits.

Based on the third objective, online based technologies had a significant effect on performance among women business refugees in Kakuma camp. Use of whatsapp and emails and other internet based services led to increase in number of customers.

Finally, from the findings of the fourth objective, MSMEs characteristic focusing on the type of business had a significant moderating effect on the relationship between digital based technologies and performance of women based businesses in Kakuma refugee camp.

5.4 Recommendations

Arising from the results and conclusions above, the study recommends that: -

Mobile phone-based technology should be prioritized since it leads to increase in sales and profits of a firm through improved mobile phone transactions. The women-led businesses should practice computer based technologies since it improves service delivery based on time management and leads to efficiency that results in better sales and profits. Women should also be encouraged practice online based technologies to ensure use of WhatsApp and other internet based practices to improve customers' awareness of products and increase customer reach for better sales. At the same time women- led businesses should carefully choose business characteristic such as appropriate choice of the type of business to ensure enhanced performance.

5.5 Suggestion for Further Research

This study was carried out in Kakuma refugee camp. Similar research can also be done in other Camps such as Daadab and even off the refugee camps among women. In addition, digital based technologies are diverse, this study was limited to only three (3). A similar study should be explored basing on other digital based technologies such as digital payments and emails. Furthermore, use of other moderating variables such as age of the firm, size of the firm can be applied in further studies.

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APPENDICES

APPENDIX 1: Introduction Letter

REF: INTRODUCTION LETTER FOR RESEARCH

I am Collins Otieno Onyango, a Student of Master's Degree in Business Administration specializing in Strategic Management, of admission MBA/G/25/15. I have been authorized by the Masinde Muliro University of Science and Technology and Permitted by NACCOSTI to carry out research on the "Effect of Digital Technology utilization on the performance of Refugee Women-led MSMEs in Kakuma Refugee Camp in Kenya.

My research will involve administering questionnaires to 196 refugee women who own or manage MSMEs across the 4 camps with the Kakuma Refugee Camp.

The findings and conclusions from this research are purely for academic purposes and intended to inform both the academia and practitioners on the extent to which digital technologies impact the performance of MSMEs with a particular focus on Refugee Women to influence more research and shape practice both in Kakuma refugee camp and other similar contexts.

Your Faithfully,

Collins Otieno Onyango

MBA/G/25/15

MMUST

APPENDIX 2: Study Questionnaire

This questionnaire will use a Likert-type scale to measure the independent and the dependent variables. It is divided into four sections; Section A collects information on the Characteristics of the Enterprise, Section B collects information on the utilization of digital technologies, while Section C collects information on the status of enterprise performance. Section D explores the perceived effects of digital technology utilization on enterprise performance.

Section A: Enterprise/Business Information

1. Location of the Enterprise/Business
 - ☐ Kakuma 1
 - ☐ Kakuma 2
 - ☐ Kakuma 3
 - ☐ Kakuma 4
2. Are you the Enterprise/Business owner or the manager?
 - ☐ Owner
 - ☐ Enterprise Manager
 - ☐ Other (Specify).....
3. What is the highest level of education you have attained?
 - ☐ No formal education
 - ☐ Non-formal education
 - ☐ Primary education
 - ☐ Secondary education
 - ☐ Tertiary education

4. How long has your Enterprise/Business been operational?

- ☐ Less than 1 year
- ☐ 1-2 years
- ☐ 3-4 years
- ☐ 5 years and above

5. What type of business is your enterprise mainly engaged in?

- ☐ Retail Shop
- ☐ Wholesale Shop
- ☐ Grocery Store/Fresh Food Stall
- ☐ Mobile Money Kiosk
- ☐ Tailoring/Clothing Repairs
- ☐ Salon/Boutique
- ☐ Beadworks/Ornaments/Artworks
- ☐ Other (Specify).....

6. How far does your enterprise supply goods/services?

- ☐ Locally within the camp only
- ☐ Locally within the camp and host Community
- ☐ Locally within the camp, in the host community, and other parts of the County
- ☐ Whole country
- ☐ Internationally

Section B: Digital Technology Utilization

7. Do you use mobile phone-based technologies in your business transactions and processes?

- ☐ Yes

☐ No (If No, skip to 8)

8. To what extent do you do the following in your business transactions and processes?

Mobile phone-based technology utilization	Not at all	Little extent	Moderately	Greatly	Very greatly
a) Off-line Mobile money financial transactions via SMS such as payments to suppliers, bills, or salaries?					
b) Offline/Online Mobile Banking to interact with your business banking partner					
c) Offline interaction with clients and suppliers through mobile phone (Calling/SMS) to share and receive business-related information					

9. Do you use offline desktop/personal computer-based technologies in your business transactions and processes?

☐ Yes

☐ No (If No, skip to 10)

10. To what extent do you do the following in your business transactions and processes?

Desktop/personal computer-based technology utilization	Not at all	Little extent	Moderately	Greatly	Very greatly
a) Off-line use of desktop/personal computer to support administrative functions in your business					
b) Off-line use of desktop personal computer to support inventory management					
c) Off-line use of desktop personal computer to record business information and support accounting/bookkeeping functions					
d) Off-line use of desktop personal computer					

to produce business communication documents					
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11. Do you use internet/Online-based technologies in your business transactions and processes?

☐ Yes

☐ No (If No, skip to 12)

12. To what extent do you do the following in your business transactions and processes?

Internet/Online/Web-based technologies utilization	Not at all	Little extent	Moderately	Greatly	Very greatly
a) Online engagement with clients/suppliers, selling, advertising, or purchasing products through Email/WhatsApp					
b) Online engagement with clients/suppliers, selling, advertising, or purchasing products through your enterprise's website					
c) Online engagement with clients/suppliers, selling, advertising, or purchasing products through online market platforms like social media platforms on WhatsApp, Facebook, Twitter, Instagram etc.					
d) Online engagement with clients/suppliers selling, advertising, or purchasing products through other online market platforms that specifically support refugee entrepreneurs like Jumia, Kilimall-Sparkbay, etc.					

Section C: MSMEs characteristics

MSMEs characteristics	Not at all	Little extent	Moderately	Greatly	Very greatly
a) The size of my business is accommodative to the business					
b) The age of the business has been an advantage to the business growth					
c) Sole trader ownership has made me closer to the business					
d) The location of my business has made it easier for the business					

Section D: Performance of Enterprise

13. To what extent do you AGREE with the following statements about the current status of your enterprise/business?

Profitability Domain	Not at all	Little extent	Moderately	Greatly	Very greatly
a) My enterprise's average monthly income from sales has increased compared to the past 12 months					
b) My enterprise's average monthly profit from sales has increased compared to the past 12 months					

14. To what extent do you AGREE with the following statements about the current status of your enterprise/business?

Growth Domain	Not at all	Little extent	Moderately	Greatly	Very greatly
a) My enterprise's average monthly sales (Products/Services) have increased compared to the past 12 months					
b) My enterprise's average					

number of employees has stabilized/increased compared to the past 12 months					
c) My enterprise's assets have increased compared to the past 12 months					

15. To what extent do you AGREE with the following statements about the current status of your enterprise/business?

Customer Satisfaction Domain	Not at all	Little extent	Moderately	Greatly	Very greatly
a) My enterprise's average number of repurchasing customers per month has stabilized/increased compared to the past 12 months					
b) My enterprise's average number of new customers per month has stabilized/increased compared to the past 12 months					
c) My enterprise's average number of referred customers per month has stabilized/increased compared to the past 12 months					
d) My enterprise's average number of customer/supplier complaints per month has significantly reduced compared to the past 12 months					

Section D: Digital Technology Utilization and Performance of Enterprise

16. To what extent does utilizing each of the following digital technologies contribute to the current status of profitability, growth, and customer satisfaction of your business?

Mobile phone-based technology utilization	Not at all	Little extent	Moderately	Greatly	Very greatly
a) Off-line Mobile money financial transactions via SMS such as payments to suppliers, bills, or salaries?					
b) Offline/Online Mobile Banking to interact with your business banking partner					
c) Offline interaction with clients and					

suppliers through mobile phone (Calling/SMS) to share and receive business-related information					
--	--	--	--	--	--

Desktop computer-based technology utilization	Not at all	Little extent	Moderately	Greatly	Very greatly
a) Off-line use of desktop/personal computer to support administrative functions in your business					
b) Off-line use of desktop personal computer to support inventory management					
c) Off-line use of desktop personal computer to record business information and support accounting/bookkeeping functions					
d) Off-line use of desktop personal computer to produce business communication documents					

Internet/Online/Web-based technology utilization	Not at all	Little extent	Moderately	Greatly	Very greatly
a) Online engagement with clients/suppliers, selling, advertising, or purchasing products through Email/WhatsApp					
b) Online engagement with clients/suppliers, selling, advertising, or purchasing products through your enterprise's website					
c) Online engagement with clients/suppliers, selling, advertising, or purchasing products through online market platforms like social media platforms on WhatsApp, Facebook, Twitter, Instagram etc.					
d) Online engagement with clients/suppliers selling, advertising, or purchasing products through other online market platforms that specifically support refugee entrepreneurs like Jumia, Kilimall-Sparkbay, etc.					

Thank you for your time!

APPENDIX 3: Krejcie & Morgan (1970) Table

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

APPENDIX 4: NACOSTI Research Permit

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 172617	Date of Issue: 18/July/2023
RESEARCH LICENSE	
	
This is to Certify that Mr. collins otieno onyango of Masinde Muliro University of Science and Technology, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Turkana on the topic: DIGITAL TECHNOLOGY UTILIZATION AS A STRATEGY FOR ENHANCING PERFORMANCE OF REFUGEE WOMEN-LED MSMEs IN KAKUMA REFUGEE CAMP for the period ending : 18/July/2024.	
License No: NACOSTI/P/23/27732	
Applicant Identification Number	Director General
	NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code
	
NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.	
See overleaf for conditions	

APPENDIX 5: LIST OF RESPONDENTS.

NO :	NAME	NATIONALITY	LOCATION
1	FILDA APARO	UGANDAN	KAKUMA 1
2	KAMARIZA ZAIDATI	BURUNDI	KAKUMA 1
3	NINAHZWE GRACE	BURUNDI	KAKUMA 1
4	AGNES ABALO	S. SUDANESE	KAKUMA 1
5	LOCHO CHANI IBRAHIM	SUDANESE	KAKUMA 1
6	SUNDAY LINO	S. SUDANESE	KAKUMA 1
7	NYANDENG DENG	S. SUDANESE	KAKUMA 1
8	LUCY ANTHONY	S. SUDANESE	KAKUMA 1
9	LINO LOPEYOK	S. SUDANESE	KAKUMA 1
10	SAFI KISASA ESTELLA	CONGOLESE	KAKUMA 1
11	KASHINDI SIWA	CONGOLESE	KAKUMA 1
12	MOHAMED A. MARYAN	SOMALI	KAKUMA 1
13	ABDI MOHAMED FARHIYA	SOMALI	KAKUMA 1
14	RACHEL ACHOL MANYOK	S. SUDANESE	KAKUMA 1
15	NYAMAL CHUOL MAMUTH	S. SUDANESE	KAKUMA 1
16	GORETI MUSABYESU	RWANDESE	KAKUMA 1
17	MARIA ABEA WILONDJA	CONGOLESE	KAKUMA 2
18	ESTHER SIKUZANI	CONGOLESE	KAKUMA 2
19	JANET JOHARI	CONGOLESE	KAKUMA 2
20	RAWUS ANUR KARO	SUDANESE	KAKUMA 2
21	TULULO ESTHERA	CONGOLESE	KAKUMA 2
22	FURAHISHA ZAWADI LEYA	CONGOLESE	KAKUMA 2
23	FAMO MADEY HASSAN	SOMALI	KAKUMA 2
24	SHIMIRIMANA ODA	CONGOLESE	KAKUMA 1
25	NYASUNDAY BOL MAYATH	S. SUDANESE	KAKUMA 2
26	HAWO ELEMBO BARISA	SOMALI	KAKUMA 2
27	OPEIU OMAN	ETHIOPIAN	KAKUMA 2
28	CELINE RIZIKI	CONGOLESE	KAKUMA 2
29	AMINA JACKILINE	BURUNDI	KAKUMA 2
30	MARGERITH CHAKANABO	CONGOLESE	KAKUMA 2
31	SUBEDA SALEH	CONGOLESE	KAKUMA 2
32	MATUMAINI AHADI	CONGOLESE	KAKUMA 2
33	CHARITY NAKUDA	S. SUDANESE	KAKUMA 2
34	BERNADATT ALIBIS BARAME	CONGOLESE	KAKUMA 2
35	FURAHA NYASA	CONGOLESE	KAKUMA 2
36	SYVIE IHUNGA TUMBA	CONGOLESE	KAKUMA 2
37	NYONGOLO DORCASI	CONGOLESE	KAKUMA 2
38	JANNETTI ISSAYA	CONGOLESE	KAKUMA 2
39	NWASITE SANGANI	CONGOLESE	KAKUMA 2

40	SOFIA TANTINE FATUMA	CONGOLESE	KAKUMA 2
41	KASONGO JASEPINE MARIE	CONGOLESE	KAKUMA 2
42	CATHRINA ANGELLE	CONGOLESE	KAKUMA 2
43	SAFI KARABA	CONGOLESE	KAKUMA 2
44	SAIDO OMAR	SOMALI	KAKUMA 2
45	ADIJAH MOHAMENDI ALI	SOMALI	KAKUMA 2
46	OJUT OCUT ODOL	ETHIOPIAN	KAKUMA 2
47	ADAU MAJOK MARIAL	S.SUDANESE	KAKUMA 2
48	SELEMANI NEEMA	CONGOLESE	KAKUMA 2
49	AGUT OMEL GORA	ETHIOPIA	KAKUMA 2
50	JACQUELINE NIYONGIRA	RWANDESE	KAKUMA 2
51	LALIYA ASENDE	CONGOLESE	KAKUMA 2
52	ADIJAH MOHAMENDI ALI	SOMALI	KAKUMA 2
53	NZIHORA ANASTAZIA	BURUNDIAN	KAKUMA 2
54	ZENA KEBABA	CONGOLESE	KAKUMA 2
55	NEEMA FADHILI	CONGOLESE	KAKUMA 2
56	LUL BAYAK KUTEI	S. SUDANESE	KAKUMA 3
57	FAIDA ZIHINGA	CONGOLESE	KAKUMA 3
58	REBECCA LAM	S. SUDANESE	KAKUMA 3
59	EMMA AMANA	CONGOLESE	KAKUMA 3
60	TERESA NAKENYA	CONGOLESE	KAKUMA 3
61	KABUKA MBILIKA	CONGOLESE	KAKUMA 3
62	SUNDAY COSMAS	S. SUDANESE	KAKUMA 3
63	AFSA CHANDIRU	CONGOLESE	KAKUMA 3
64	ELIZABETH LOBALE	CONGOLESE	KAKUMA 3
65	NAMUNU HELLEN	S. SUDANESE	KAKUMA 3
66	ZAWADI JACKILINE	CONGOLESE	KAKUMA 3
67	PONE ANET	S. SUDANESE	KAKUMA 3
68	AGNES AKETO	S. SUDANESE	KAKUMA 3
69	BORA ASOKULU	CONGOLESE	KAKUMA 3
70	JUAN JIMA	CONGOLESE	KAKUMA 3
71	NYIRAKUNDA JONIN	BURUNDI	KAKUMA 3
72	MIBURO MARGRET	CONGOLESE	KAKUMA 3
73	UMJUMA JACOB	SUDANESE	KAKUMA 3
74	SHARIFO HUSSEIN HASSAN	SOMALI	KAKUMA 3
75	AWOY KHALIF ALI	SOMALI	KAKUMA 3
76	REGINA IBOI JOSEPH	S. SUDANESE	KAKUMA 4
77	SARAH SIKATENDA	CONGOLESE	KAKUMA 4
78	ROSE ACHEN OKOT	S.SUDANESE	KAKUMA 4
79	NEEMA NABINTU	CONGOLESE	KAKUMA 4
80	FLORENCE IDIONG	S.SUDANESE	KAKUMA 4

81	NYANHIAL MALUAL	S.SUDANESE	KAKUMA 4
82	NDIYUMIRIZA KIJENGE LETISIA	BURUNDI	KAKUMA 4
83	NYIRANDORIMANA PRIMITIVE	BURUNDI	KAKUMA 4
84	LUCY NAMILO PHILIP	S.SUDANESE	KAKUMA 4
85	GRACE PAUL NAGUM	S.SUDANESE	KAKUMA 4
86	CECILIA AKEKE	S.SUDANESE	KAKUMA 4
87	AWAL MADOL	S.SUDANESE	KAKUMA 4
88	LILIAN TIMOTHY YOHANA	S.SUDANESE	KAKUMA 4
89	OBANYO GULO PEACH	S.SUDANESE	KAKUMA 4
90	ADAM ALAMIN KHARTOUM	SUDANESE	KAKUMA 4
91	ALINE NITUNZE	CONGOLESE	KAKUMA 4
92	HAMAD HASSAN KIYA	SOMALI	KAKUMA 4
93	ROSE NAMUGE JOHN	S.SUDANESE	KAKUMA 4
94	SHUKRANI HOTA BI CLAIRE	CONGOLESE	KAKUMA 4
95	AMINO ALI IBRAHIM	SOMALI	KAKUMA 4
96	MKESHIMANA VIRGINIE	CONGOLESE	KAKUMA 4
97	ICONGITUNGIYE VIOLET	BURUNDI	KAKUMA 4
98	GRACE ACHI	S.SUDANESE	KAKUMA 4
99	MAGRATH NIGHT	S.SUDANESE	KAKUMA 4
100	OSIA OSMAN	SUDANESE	KAKUMA 4
101	AGNES PRIMO	S.SUDANESE	KAKUMA 4
102	ROSE NADIA	S.SUDANESE	KAKUMA 4
103	ROSE APULE	S.SUDANESE	KAKUMA 4
104	REGINA LOMEO	S.SUDANESE	KAKUMA 4
105	PASCALINE INTERUKIMANA	BURUNDI	KAKUMA 4
106	NYATIMA KEK PATH	S.SUDAN	KAKUMA 4
107	NYAKIN MAEK	S.SUDAN	KAKUMA 4
108	ISSA ESPERANCE	CONGOLESE	KAKUMA 4
109	M.MUKENGERE	CONGOLESE	KAKUMA 4
110	BAGALIWA FARIJKA	CONGOLESE	KAKUMA 4
111	MARTHA NYIBUOL DENG	S.SUDAN	KAKUMA 4

Source: Turkana County Business Licenses Register