INFLUENCE OF MOBILE MONEY SERVICES ON HUMANITARIAN RESPONSE; A CASE STUDY OF KISMAYU, SOMALIA

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DECLARATION

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

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I confirm that the work reported in this research proposal was carried out by the candidate under my supervision.

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DEDICATION

To my wife Farida Abdi Salat and my brother Abdullahi Sheikh Hassan for the unconditional support that you encouraged me throughout this project process and education journey.

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LIST OF ABBREVIATION AND ACRONYMS

CVA: Cash and Voucher assistance

CBI: Cash Based Interventions

DAC: Development Assistance Committee

HIR: Harvard International Review

FDP: Forcibly Displaced Persons

FTS: Financial Tracking Service

IDP: Internally Displaced Persons

IFRC: International Federation of Red Cross and Red Crescent Societies

NGOs: Non-Governmental Organizations

NSNP: Kenya National Safety Nets Programme

OCHA: Office for the Coordination of Humanitarian Affairs

OECD: Organization for Economic Co-operation and Development's

UN: United Nations

WFP: World Food Programme

ABSTRACT

This study examined the impact of mobile money services on humanitarian response effectiveness in Kismayu, Somalia, focusing on how these services enhance the delivery and management of aid. Specifically, the research examined the consequences of mobile money's efficiency and speed on aid delivery, the role of security and transparency in strengthening aid effectiveness, the cost-effectiveness of mobile money relative to conventional approaches, and the influence of accessibility and inclusivity on diverse community groups' involvement in aid distribution. Using a descriptive research design, the study targeted humanitarian aid recipients who use mobile money to receive and manage aid. A sample of 385 respondents from five locations that is Farjano, Fanoole, Guulwade, Luglow, and Bulagadud was surveyed. The results indicated that mobile money services greatly improved the timeliness, coverage, and sustainability of humanitarian aid. Key factors such as efficiency and speed played a critical role in enhancing aid delivery, while security and transparency built trust and contributed to the long-term sustainability of interventions. Cost-effectiveness was also pivotal in maximizing the coverage and long-term impact of aid distribution. Additionally, the accessibility and awareness of mobile money services were found to be crucial in ensuring that aid reached the community promptly and effectively. The study was grounded in the Innovation Diffusion Theory, which helped frame the acceptance of mobile money services in humanitarian contexts. Data analysis employed various statistical techniques, with findings presented through graphs, charts, and tables. The results showed moderate perceptions of mobile money services, with mean scores ranging from 2.80 to 3.19. Regression analysis revealed that Efficiency, Security, Cost Effectiveness, and Accessibility significantly influenced Timeliness, Coverage, and Impact (with R^2 values ranging from 0.1963 to 0.5558). Notably, Accessibility and Security had the strongest effect on sustainability, highlighting the significance of trust and access in humanitarian aid. The study underscores the significance of mobile money in improving humanitarian aid delivery and offers practical recommendations for integrating digital financial services into response strategies, such as investing in digital infrastructure, providing training, and strengthening policies to ensure the long-term success of mobile money-driven interventions.

CHAPTER ONE: INTRODUCTION

1.1 Background of study

Mobile money services have significantly transformed financial transactions, particularly in regions like Kismayu, Somalia, where traditional banking infrastructure remains limited. These digital platforms enable people to transmit and accept messages and store money securely using mobile phones, reducing dependence on cash-based transactions and enhancing financial inclusion (Ahmad & Jiang, 2020). The rapid adoption of mobile money services has been fueled by the increasing penetration of mobile networks, even in remote and conflict-prone areas. This technological advancement has created new financial opportunities for individuals and businesses, contributing to economic resilience in areas with scarce access to official services financial services institutions.

In parallel, humanitarian response efforts aim to provide critical assistance, including food, healthcare, shelter, and financial aid, to communities affected by crises such as natural disasters, armed conflicts, and economic instability. Traditionally, aid distribution has relied on physical cash transfers and in-kind donations, which often pose logistical challenges and security risks (Lashitew & Liasse, 2019). The handling and transportation of cash or physical goods in unstable environments increase exposure to theft, mismanagement, and delays in reaching beneficiaries. However, the integration of mobile money services into humanitarian assistance has revolutionized the way aid reaches vulnerable populations. By enabling direct cash transfers, these platforms allow recipients to exercise autonomy over how they utilize aid, promoting dignity, self-reliance, and economic participation.

Furthermore, mobile money services enhance the efficiency and transparency of aid distribution. Transactions are recorded digitally, reducing the risk of fraud, mismanagement, and corruption that can sometimes affect traditional aid mechanisms. This digital footprint ensures greater accountability for aid organizations while also providing data-driven insights that improve the monitoring and evaluation of humanitarian programs. Additionally, mobile money facilitates real-time communication between aid agencies and beneficiaries, ensuring timely interventions that address urgent needs more effectively. The ability to disburse funds rapidly is especially critical in emergency situations, where delays in financial assistance can exacerbate the suffering of affected populations.

This innovation is particularly relevant in Kismayu, a region that has faced ongoing humanitarian challenges due to conflict, displacement, and climate-related disasters. The presence of internally displaced persons (IDPs) and vulnerable households has heightened the need for effective financial solutions that facilitate the seamless distribution of aid. Mobile money services have emerged as a key component in bridging this gap, providing a secure and efficient means for individuals to access financial support without reliance on unstable physical infrastructure.

Despite its advantages, the utilization of mobile money in humanitarian response also presents challenges. Limited digital literacy among beneficiaries may hinder their ability to fully utilize

these services, necessitating targeted awareness campaigns and training programs. Additionally, network reliability issues, regulatory constraints, and challenges in ensuring equitable access for marginalized groups—such as women, elderly individuals, and those without mobile phones—can limit the effectiveness of mobile money-based aid distribution. Addressing these challenges requires collaboration between humanitarian organizations, mobile service providers, financial regulators, and local communities to optimize the utilization of digital financial services in crisis response efforts.

As such, this study seeks to analyze the effect of mobile money services on humanitarian response in Kismayu, Somalia. Specifically, it explores how mobile money impacts aid efficiency, transparency, and accessibility while identifying barriers and opportunities for enhancing these digital financial tools. By evaluating the impact of mobile money on enhancing humanitarian interventions, this study seeks to provide useful perspectives for policymakers, aid organizations, and financial service providers working to improve digital financial inclusion in crisis-affected areas.

Mobile money services are digital financial platforms that facilitate seamless transactions through mobile phones, enabling users to transfer funds, pay bills, and make purchases in the absence of a traditional bank account. These services have revolutionized financial access in regions with underdeveloped banking infrastructure, offering a secure, convenient, and inclusive alternative to conventional financial systems. Platforms like M-Pesa in Kenya, GCash in the Philippines, and Airtel Money across Africa have gained widespread adoption, especially in places where banking services are limited or inaccessible (Pueblos & Timoteo, 2023).

A key feature of mobile money services is their reliance on a network of local agents, who facilitate deposits, withdrawals, and cash transfers. Users can load money onto their mobile wallets through these agents and subsequently use their phones to send money to family members, purchase goods and services, or withdraw funds when needed. This accessibility has been instrumental in improving financial inclusion, allowing individuals without formal bank accounts to participate in economic activities.

Beyond personal financial management, mobile money services have had a profound impact on local economies. By digitizing transactions, they reduce reliance on cash, minimizing security risks associated with carrying physical money. Small businesses benefit from easier payment collection, while service providers—including utility companies and retailers—can streamline payment processing, enhancing efficiency and reducing operational costs. Additionally, governments and humanitarian organizations have increasingly leveraged mobile money platforms for social protection programs, salary disbursements, and emergency aid distribution.

The rise of mobile phone penetration globally has further accelerated the adoption of mobile money, making financial services more accessible than ever before. According to GSMA (2020), mobile money is an essential means of closing the financial gap, especially in emerging markets, where availability to traditional banking services is constrained. In fragile and crisis-prone regions,

like parts of Africa and Southeast Asia, mobile money provides a lifeline by ensuring financial continuity and resilience during times of economic instability or humanitarian crises.

Despite these advantages, challenges remain in fully integrating mobile money services into financial ecosystems. Issues such as network connectivity limitations, regulatory constraints, cybersecurity threats, and digital literacy gaps continue to hinder widespread adoption. Tackling these challenges demands joint efforts between governments, financial institutions, mobile service providers, and international organizations to develop policy frameworks and infrastructure that support the sustainable growth of mobile money ecosystems.

As digital financial services continue to evolve, mobile money remains a transformative force in global finance. It empowers communities, fosters economic development, and enhances financial security, making it an indispensable tool for both individuals and organizations navigating the modern financial landscape.

Efficiency and speed are critical factors in the effectiveness of mobile money services within humanitarian response efforts. Enabling instant financial transactions, these services significantly reduce the time it takes for aid to reach those in need. In emergency situations, every minute counts, as traditional banking methods can delay assistance due to bureaucratic processes and logistical challenges (Gomber et al., 2018). 2020). Mobile money allows humanitarian organizations to quickly transfer funds directly to beneficiaries' accounts, enabling individuals to access cash immediately for essential needs such as food, healthcare, and shelter (Holm-Nielsen, 2021). This rapid response not only addresses urgent demands but also enhances the overall efficiency of aid delivery systems. Additionally, the ability to track transactions in real-time promotes accountability and minimizes the risks of fraud or misallocation of resources, ensuring that support is directed precisely where it is needed (Mohammed, 2019). As mobile money services continue to gain traction, their role in streamlining humanitarian efforts and improving response times becomes increasingly vital in addressing the pressing challenges faced by vulnerable populations.

Security and transparency are key benefits of mobile money services, especially in humanitarian aid efforts. These digital platforms utilize sophisticated encryption and security protocols to safeguard users' financial data, minimizing the likelihood of fraud and theft (Magakwe, 2024). In environments plagued by conflict or instability, where physical cash can be vulnerable to looting or corruption, mobile money provides a safer alternative for both beneficiaries and humanitarian organizations (Kitimbo, 2021). Furthermore, the transparency inherent in mobile money transactions allows for better tracking of funds, ensuring that every transaction can be monitored and audited. This visibility fosters trust among stakeholders, including donors, aid organizations, and recipients, by providing clear evidence of how funds are utilized (Stuart et al., 2019). By leveraging mobile money services, humanitarian actors can enhance accountability, ensuring that aid reaches intended recipients efficiently and ethically. The ability to document and report on financial flows also supports broader goals of governance and compliance, further strengthening the integrity of humanitarian operations.

Cost-effectiveness is a critical aspect that highlights the value of mobile money services in humanitarian response efforts. Traditional cash distribution methods often entail significant

logistical expenses, including transportation, security, and personnel costs. In contrast, mobile money eliminates many of these overheads, enabling organizations to deliver aid more efficiently (Molla & Licker, 2020). Using mobile platforms allows humanitarian agencies to allocate resources directly to beneficiaries without the need for extensive physical infrastructure, thus optimizing their operational budgets (Vargas et al., 2020). Additionally, the speed of mobile transactions reduces the time spent on disbursement processes, allowing organizations to respond rapidly to crises without incurring additional costs associated with delays. This economic efficiency not only maximizes the impact of every dollar spent but also allows for more funds to be directed toward essential services, such as food and healthcare (Zins et al., 2019). Moreover, by minimizing the need for intermediaries, mobile money systems enhance transparency and reduce the risks of mismanagement or diversion of funds, ensuring that financial aid reaches the intended recipients promptly.

Furthermore, mobile money expands financial inclusion by integrating marginalized populations into the formal financial system, providing them with access to digital payment solutions and savings mechanisms. This not only benefits short-term humanitarian response efforts but also contributes to long-term resilience by enabling recipients to manage their finances more effectively and participate in local economies. The ability to track transactions electronically also enhances accountability, as donors and humanitarian agencies can monitor fund utilization in real-time, improving overall governance and trust in aid distribution mechanisms.

However, while mobile money services present significant cost advantages, challenges such as transaction fees, fluctuating exchange rates, and liquidity constraints must be considered. Some regions may face issues with agent availability or cash-out options, which could limit the efficiency of mobile-based aid transfers. Addressing these challenges requires strategic partnerships between humanitarian organizations, mobile network operators, and financial regulators to ensure the sustainability and scalability of mobile money interventions in crisis settings. Ultimately, the integration of mobile money services enhances the overall effectiveness of humanitarian interventions while ensuring that resources are used judiciously, thereby amplifying the reach and impact of aid initiatives. By leveraging digital financial technologies, humanitarian agencies can optimize cost-efficiency, improve the speed and transparency of aid distribution, and empower communities to recover and rebuild more effectively in the aftermath of crises.

Inclusivity and accessibility are vital attributes of mobile money services that significantly enhance humanitarian response efforts. These services help close the financial gap for marginalized communities, especially in areas where traditional banking infrastructure is limited or unavailable. Through mobile phone transactions, individuals gain access to financial resources that might otherwise be out of reach due to exclusion from conventional financial systems (Chu, 2018). This inclusivity is particularly important in emergency contexts, where vulnerable populations often face heightened barriers to accessing aid. Furthermore, mobile money services empower users to make their own choices regarding expenditures, allowing them to prioritize their specific needs in times of crisis (Qatawneh et al., 2024). The widespread availability of mobile networks also plays a crucial role in enhancing accessibility, as users can easily register for and utilize mobile money

services without requiring extensive documentation or physical presence at bank branches (Reynolds et al., 2018). Ultimately, the integration of mobile money not only facilitates immediate financial assistance but also fosters a more inclusive environment where individuals can actively participate in the economic recovery of their communities, thereby strengthening resilience in the face of ongoing challenges.

Humanitarian response encompasses efforts aimed at providing aid and assistance for individuals affected by emergencies such as natural disasters, conflict, and health outbreaks. It involves the delivery of vital services including food, water, shelter, and medical care to those facing urgent needs. For instance, during the 2010 Haiti earthquake, international organizations mobilized quickly to deliver aid, setting up temporary shelters and providing medical support to the injured (OCHA, 2011). Humanitarian efforts often rely on collaboration between governments, NGOs, and local communities to ensure that assistance is timely and effective. Additionally, innovative approaches, such as cash transfers and mobile technology, have been increasingly utilized to empower beneficiaries, allowing them to choose how best to meet their needs (ALNAP, 2020). As the frequency and complexity of crises grow, the humanitarian response landscape is evolving, emphasizing the significance of preparedness, resilience, and community involvement to address the root causes of vulnerability. Fostering partnerships and leveraging resources, humanitarian response aims to not only alleviate immediate suffering but also support long-term recovery and development for affected populations.

Humanitarian response has developed into a globally coordinated effort, with international organizations, governments, and NGOs working Collaborating to support individuals affected by crises. Countries like Turkey and Lebanon have set notable examples, especially in the context of the Syrian refugee crisis. Turkey has hosted millions of refugees, providing essential services like healthcare, education, and shelter (Atar & Sumnaya Kumasey, 2022). Similarly, Lebanon, with its limited resources, has worked closely with international organizations to offer aid and support to refugees, highlighting the complex interplay of humanitarian efforts in regions experiencing sudden influxes of displaced populations (UNHCR, 2020). The global community, through initiatives like the Global Humanitarian Response Plan, aims to mobilize resources and coordinate efforts to ensure that aid reaches those who need it most, emphasizing the importance of solidarity and shared responsibility in addressing humanitarian crises (OCHA, 2021).

In the Trans-Saharan region, humanitarian response faces unique challenges due to factors such as political instability, conflict, and environmental issues like drought. Countries like Niger and Mali have been at the forefront of addressing humanitarian needs, particularly with the ongoing conflict that has displaced many communities. In Niger, for instance, the government, alongside NGOs, has implemented programs to provide food security and healthcare services to vulnerable populations affected by both conflict and climate change (WFP, 2020). Regional bodies, like the Economic Community of West African States (ECOWAS), have also been involved in coordinating humanitarian efforts, showcasing the importance of collaboration in a region where crises are often interconnected. Pooling resources and sharing best practices, regional actors aim

to create a more effective humanitarian response that addresses the root causes of vulnerability and displacement.

In Somalia, humanitarian response plays a crucial role in addressing challenges caused by conflict, widespread famine, and natural disasters like drought. With millions in need of assistance, organizations such as the World Food Programme (WFP) and the International Committee of the Red Cross (ICRC) have been instrumental in delivering food, healthcare, and protection services to displaced communities (WFP, 2021). The integration of mobile money services into these humanitarian efforts has further enhanced the response, allowing for quicker and more efficient aid delivery. As aid organizations adapt to the unique challenges in Somalia, their strategies increasingly emphasize community resilience, ensuring that assistance not only meets immediate needs but also empowers individuals and families to rebuild their lives (FAO, 2020). This holistic approach highlights the ongoing commitment of both international and local actors to address the humanitarian crisis in Somalia effectively, underscoring the importance of sustained support in such a fragile context.

Mobile money services have emerged as a critical tool in humanitarian response efforts, particularly in crisis-prone regions like Kismayu, Somalia, where conflict and displacement have heightened the need for efficient, transparent, and secure aid distribution mechanisms. Organizations such as the United Nations, international NGOs, and local humanitarian groups have increasingly adopted mobile cash transfer programs to provide financial assistance directly to affected populations, thereby addressing the logistical and security challenges associated with traditional aid distribution (Lind et al., 2022). Unlike in-kind aid or physical cash handouts, mobile money transfers grant beneficiaries the autonomy to prioritize their own needs, enabling them to purchase food, medicine, and other essential supplies based on their household requirements (Aron & Muellbauer, 2019). This recipient-centered approach fosters a sense of dignity and empowerment among aid recipients, moving away from a one-size-fits-all model of humanitarian relief. Additionally, cash-based interventions via mobile platforms stimulate local economies by directing funds into community markets, thereby supporting small businesses and promoting economic resilience (Ahmed, 2020).

A key advantage of mobile money in humanitarian aid is its ability to mitigate risks associated with traditional cash distribution, including theft, fraud, and mismanagement. In conflict zones like Kismayu, where security threats are prevalent, transporting and distributing physical cash exposes both humanitarian workers and recipients to significant dangers. By contrast, mobile transfers offer a more secure and traceable alternative, ensuring that financial assistance reaches intended beneficiaries efficiently and with minimal risk of diversion (Juntunen et al., 2023). Despite its numerous benefits, the implementation of mobile money in humanitarian responses is not without challenges. Kismayu's weak infrastructure, intermittent mobile network coverage, low digital literacy rates, and regulatory constraints pose significant barriers to the widespread adoption of mobile financial solutions. Furthermore, marginalized groups, including elderly populations,

women, and individuals without formal identification documents, may face difficulties in accessing mobile money services, potentially exacerbating existing inequalities in aid distribution.

Given these realities, this study seeks to critically investigate the importance of mobile money services in humanitarian response efforts in Kismayu. It seeks to explore how mobile financial technologies enhance aid efficiency, improve transparency, and address logistical constraints in crisis settings. Additionally, the study will examine the challenges hindering the full integration of mobile money in humanitarian interventions and propose strategic solutions for optimizing digital financial tools to support vulnerable communities in conflict-affected regions. By doing so, the research will contribute valuable insights into how innovative financial solutions can transform humanitarian assistance, ensuring that aid is delivered more effectively, securely, and sustainably in fragile contexts.

1.2 Problem Statement

Research shows the importance of mobile money transfers in humanitarian aid, particularly in responding to conflicts, natural disasters, and economic crises. According to Daoudy et al. (2024), the devastating earthquakes in Syria and Turkey, the escalating war in Israel and Palestine, internal conflicts in Sudan, the Russia-Ukraine war, and prolonged humanitarian crises in Afghanistan, Yemen, the Horn of Africa, and the Democratic Republic of Congo have collectively plunged millions into displacement, economic hardship, and urgent need for humanitarian assistance. These crises are further intensified by unresolved conflicts, fragile peace processes, climate variability, deepening economic inequalities, and recurring outbreaks of deadly diseases. Such conditions leave affected populations in a state of protracted vulnerability, requiring timely, efficient, and transparent humanitarian interventions (The Philanthropic Initiative, 2024). In this context, mobile money has emerged as a promising mechanism to support aid delivery in ways that are both scalable and traceable.

The integration of mobile money services into humanitarian response strategies presents an innovative and potentially transformative solution for enhancing the efficiency, transparency, and inclusiveness of aid delivery, particularly in crisis-affected and hard-to-reach areas. Ideally, mobile financial services would enable fast, direct and secure cash transfers to vulnerable populations, bypassing the logistical hurdles and risks associated with in-person distributions. However, in practice, significant challenges persist especially in fragile settings such as Kismayu, Somalia. According to Ahmad, Green, and Jiang (2020), mobile money services often remain inaccessible in remote and marginalized communities due to infrastructure gaps and weak service penetration, limiting their potential to reach those in dire need. Furthermore, despite their promise, mobile platforms are not immune to systemic issues such as exclusion errors in beneficiary targeting, transaction delays, high service charges, and network unreliability (Osabutey & Jackson, 2024). These issues raise critical questions about whether mobile money can truly deliver on its promise of improving humanitarian response. Additionally, concerns over data privacy, cyber fraud, and regulatory shortcomings make digital financial transfers vulnerable in conflict-prone environments (Lakshmi et al., 2019). These barriers are compounded by disparities in digital literacy and access to mobile devices, further excluding marginalized groups from life-saving support.

Kismayu, a region plagued by drought, armed insecurity, and severe infrastructural deficits, exemplifies the operational challenges faced by humanitarian actors in conflict zones. With frequent criminal attacks, volatile political conditions, and impassable road networks, traditional aid distribution models struggle to function effectively (Cross, 2019). Consequently, humanitarian organizations have increasingly turned to mobile money platforms as an alternative approach, leveraging existing financial technology infrastructure to support remote cash transfer interventions (Mohammed, 2021). This shift reflects a broader trend toward digital humanitarianism aimed at overcoming last-mile delivery challenges. However, while there are anecdotal accounts of improved delivery mechanisms, empirical evidence remains limited regarding the actual effects of mobile money on enhancing the speed, reliability, and overall effectiveness of aid operations in such fragile areas.

In light of these realities, this study seeks to critically determine the consequences of mobile money services on humanitarian response efforts in Kismayu, Somalia. It seeks to evaluate how far mobile financial solutions have addressed delivery inefficiencies, expanded beneficiary reach, and ensured timely and secure assistance in a high-risk setting. By identifying both the achievements and persistent shortcomings of mobile money integration, the study intends to bridge the existing knowledge gap and generate insights that can inform the design of more effective, inclusive, and context-sensitive humanitarian interventions across conflict-affected regions in Africa.

1.3 Purpose of the study

The main purpose of the study was to assess the influence of mobile money services on humanitarian response in Kismayu, Somalia. The specific objectives are:

i. To evaluate the influence of the efficiency and speed of mobile money services on the effectiveness humanitarian response in Kismayu, Somalia.
ii. To analyze the effect of the security and transparency of mobile money services on the effectiveness of humanitarian response in Kismayu, Somalia.
iii. To examine the influence of the cost-effectiveness of using mobile money services compared to traditional methods on the effectiveness of humanitarian response in Kismayu, Somalia.
iv. To investigate how the inclusivity and accessibility of mobile money services among diverse community groups in Kismayu, Somalia impact the effectiveness of humanitarian response.

1.4 Research Questions

i. What is the influence of the efficiency and speed of mobile money services on the effectiveness of humanitarian response in Kismayu, Somalia?
ii. How do the security and transparency of mobile money services affect the effectiveness of humanitarian response in Kismayu, Somalia?
iii. How does the cost-effectiveness of using mobile money services, compared to traditional methods, influence the effectiveness of humanitarian response in Kismayu, Somalia?
iv. How do the inclusivity and accessibility of mobile money services among diverse community groups in Kismayu, Somalia impact the effectiveness of humanitarian response?

1.5 Justification of the study

The humanitarian landscape in Somalia, particularly in Kismayu, has been shaped by a myriad of challenges, including ongoing conflict, natural disasters, and socio-economic instability. Traditional methods of humanitarian assistance have often been hampered by these challenges, necessitating the exploration of innovative solutions (Zhou et al., 2024). One such solution is the utilization of mobile money services, which have demonstrated potential in improving the efficiency and effectiveness of humanitarian response.

While there is substantial literature on the general benefits of mobile money services, there is a notable lack of research specifically focusing on their impact within humanitarian contexts, particularly in conflict-affected regions like Kismayu. This study sought to bridge this gap by providing empirical

evidence on how mobile money services influence humanitarian response, thereby contributing to the body of knowledge at the intersection of technology and humanitarian aid. The potential benefits and impacts of mobile money services include expedited delivery of aid, enhancing efficiency and speed, increased security and transparency in transactions, cost-effectiveness by reducing operational costs compared to traditional methods, and improved inclusivity and accessibility for marginalized and hard-to-reach population.

1.6 Significance of the Study

The significance of the study refers to its contribution to policy, management, and the enhancement of literature on responses to humanitarian crises. This study seeks to bridge significant gaps in the recent humanitarian studies by evaluating the impact of mobile money services on humanitarian response, with a particular focus on Kismayu. Current research has limited insights into how mobile money can transform the efficiency and effectiveness of aid delivery in crisis settings. Exploring this specific context, the study contributes valuable knowledge that can enhance understanding and guide improvements in humanitarian relief practices.

Humanitarian groups working in Kismayu and other comparable settings may benefit from the practical insights gained from this research. Understanding the influence of mobile money services on efficiency, transparency, and inclusiveness can help organizations optimize their financial aid distribution processes. The findings may be utilized by policymakers at local and national levels to inform and develop policies related to the inclusion of mobile money services in humanitarian response efforts.

This study is also significant for various policymakers within the humanitarian sector and individuals engaged in the execution of humanitarian aid projects at the country level. In this regard, various linkages and interconnections between the assessed variables were established, and the magnitude of their influence on implementation was determined. This will be vital for policy formulation regarding the implementation of humanitarian aid using mobile money services in Somalia and other countries with similar attributes. Understanding tracking and monitoring procedures can help build confidence among stakeholders such as funders, recipients, and humanitarian groups. The research seeks to demonstrate how new technologies can increase availability to financial resources, particularly for vulnerable groups like women and displaced people.

1.7 Scope of the study

The study investigated the effect of mobile money services on humanitarian response specifically in Kismayu, Somalia. It focused on the accessibility and integration of mobile money services in various humanitarian operations. The research evaluated the impact of mobile money transfers on the speed and reliability of aid delivery in Kismayu. It assessed the security and transparency of these services, analyzed their cost-effectiveness for humanitarian efforts, and examined the accessibility and awareness of mobile money among beneficiaries and organizations. Additionally, the study explored

the technological infrastructure, including mobile network coverage that supported mobile money usage in the region. Key stakeholders involved in the Kismayu humanitarian response were examined, including humanitarian organizations (such as Non-Governmental Organizations and United Nations agencies), government entities responsible for coordinating aid, and the individuals and communities directly affected by crises. The study covered a five-year period from 2019 to 2024, allowing for the assessment of recent trends and developments in mobile money integration within humanitarian response efforts during a time of escalating regional crises and technological expansion.

1.8 Study limitations

The government and the humanitarian agencies' confidentiality policy restricted most of the employee some respondents refrained from answering certain questions, as disclosing confidential matters was deemed a violation of government and organizational confidentiality policies. Not all respondents were comfortable providing the information sought by the questionnaire, as they were unsure of how the information would be used. Moreover, the study was constrained by a limited timeframe for data collection and analysis. This restriction reduced the opportunity to comprehensively examine and capture the comprehensive impact of mobile money services on humanitarian aid response.

1.9 Delimitations of the study

This study concentrated exclusively on Kismayu, Somalia, evaluating the influence of mobile money services on humanitarian response within this specific geographic area, thereby allowing for a detailed understanding of the local context. It concentrated specifically on mobile money related to cash assistance and voucher support, excluding other forms of aid such as in-kind assistance or traditional cash distributions. The research targeted key participants in the humanitarian response, including humanitarian organizations, government agencies, and individuals affected by crises in Kismayu, while not considering perspectives from broader national or international contexts. Additionally, the study examined recent humanitarian crises, limiting its scope to events within the last five years, and specifically assessed mobile money services and their technological infrastructure, such as mobile network coverage, without exploring other technological solutions or communication methods. These delimitations established a focused framework for the research, ensuring a clear understanding of its boundaries.

1.10 Assumptions of the study

A substantial part of Kismayu's population is believed to have access to mobile phones and actively utilize mobile money services for financial transactions. Furthermore, the community likely perceives mobile money as convenient, secure, and reliable. It is also assumed that multiple humanitarian agencies in Kismayu have integrated mobile money services into their aid distribution processes. The local communication infrastructure is expected to be functional, with government support through appropriate regulations. Mobile money service providers are assumed to ensure adequate security and privacy measures. Additionally, these services are assumed to be accessible and inclusive for diverse groups, enhancing the efficiency and timeliness of humanitarian aid distribution, with strong community trust in these services.

1.11 Operational definition of key terms

The study incorporated the following technical terms, which were defined and applied as follows:

Mobile money services: These are financial services accessed via mobile phones, allowing users to send and receive money, pay bills, buy goods, and access basic banking functions without needing a traditional bank account.

Humanitarian response: This refers to the coordinated actions by governments, NGOs, and international agencies to provide emergency aid such as cash, food, water, shelter, and medical care to people affected by crises like conflict, disasters, or displacement.

Mobile Money Efficiency and Speed: Refers to how quickly and smoothly mobile money services process transactions, particularly in terms of reducing delays and enabling timely cash transfers during humanitarian operations.

Security of Mobile Money Services: The extent to which mobile money platforms protect user data and transactions from fraud, cyber threats, and unauthorized access.

Transparency of Mobile Money Services: The degree to which transactions can be tracked, audited, and verified by both humanitarian agencies and recipients, promoting accountability in aid disbursement.

Cost-Effectiveness of Mobile Money: A comparison of the overall costs (e.g., transaction fees, logistics) of using mobile money services versus traditional aid delivery methods, in relation to the outcomes achieved.

Inclusivity of Mobile Money Services: The extent to which mobile money platforms are designed to accommodate diverse user groups, including women, the elderly, persons with disabilities, and people in remote areas.

Accessibility of Mobile Money Services: How easily individuals can use mobile money, considering factors like mobile network availability, digital literacy, phone ownership, and agent presence.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter presented an evaluation of past research studies and publications conducted by various researchers aligned with the study objectives, the theoretical framework, conceptual framework, recap of the literature review, the concept of humanitarian response, as well as the idea of mobile money services and an overview of the research gaps and the method adopted by the study to tackle them.

2.2 Empirical Literature

2.2.1 Influence of the efficiency and speed of mobile money services on the effectiveness of humanitarian response.

Ochieng et al. (2023) examined the integration of mobile money in humanitarian supply chains with a focus on enhancing transparency and accountability. The authors used a mixed-methods approach, combining surveys of aid workers and beneficiaries. Their findings indicated that mobile money improved accountability by enabling traceable transactions, and enhanced operational efficiency within aid organizations. However, while the study touched on speed at the organizational level, it did not examine the direct influence of mobile money efficiency and speed on beneficiaries' timely access to aid. Moreover, the emphasis was on supply chain management, not on the real-time impact on aid recipients. This represents a significant conceptual gap. The current study addresses this gap by using primary data from beneficiaries in Kismayu to evaluate how the speed and ease of receiving mobile money affects their perception of aid timeliness and effectiveness, thus shifting the focus from organizational processes to end-user experiences.

Bennett and Wavinya (2022) explored the role of digital financial services, including mobile money, on the resilience of households affected by disasters in Kenya. The researchers employed a quantitative survey approach, collecting data from disaster-affected households. Their study revealed that mobile money services played a critical role in facilitating rapid access to funds, thereby enhancing household resilience during emergencies. This highlighted the importance of speed in financial disbursements. However, the study did not directly assess the efficiency of mobile money platforms or how the speed of fund delivery influenced the overall effectiveness of humanitarian interventions such as food, shelter, and health services. Additionally, the study did not consider variations across socioeconomic or demographic groups. The current research builds on these findings by analyzing how both the speed and transactional efficiency of mobile money affect perceived effectiveness of humanitarian aid, while incorporating demographic variables such as age, gender, and education to explore differences in beneficiary experiences.

Ali et al. (2023) investigated the impact of mobile money on educational support during humanitarian crises in refugee camps. The researchers used a mixed-methods design, combining beneficiary surveys with interviews of aid organizations. Their findings indicated

that mobile money significantly improved access to educational resources by enabling quick financial transfers to affected families. However, the study was confined to the education sector and did not examine the influence of mobile money on broader humanitarian response effectiveness. Moreover, it did not evaluate how efficiency and speed of mobile money transfers varied by demographic factors or influenced the timeliness of aid across sectors. This current study addresses these gaps by broadening the scope to include general humanitarian services such as food, health, and shelter while specifically evaluating the speed and reliability of mobile money from the beneficiaries' viewpoint in Kismayu. It also investigates how demographic characteristics shape perceptions of efficiency and effectiveness in mobile money-enabled aid.

Across all three studies, there is clear evidence of the value of mobile money in crisis settings, especially in facilitating access to resources. However, none of the studies explicitly analyzed how the efficiency (ease of access, reliability) and speed (timeliness of transfers) of mobile money services directly influence the effectiveness of humanitarian response as perceived by beneficiaries. Nor did they explore differences across demographic groups. This study fills these gaps by using both quantitative and qualitative data to assess how service speed and efficiency impact the effectiveness of humanitarian aid delivery in Kismayu, Somalia, with special attention to how demographic factors shape these outcomes.

2.2.2 Effect of the security and transparency of mobile money services on the effectiveness of humanitarian response.

Gikunda et al. (2022) explored the effect of mobile money on enhancing food security among rural households in Kenya, particularly within the framework of humanitarian interventions. The researchers adopted a longitudinal study design, tracking households over time to compare food security outcomes between those using mobile money and those receiving traditional forms of aid. The study revealed that mobile money recipients had improved food security, suggesting a reliable aid delivery mechanism. While the study implicitly acknowledged the structured nature of mobile money transfers, it did not directly examine issues of security (e.g., fraud protection, identity verification) or transparency (e.g., traceability of transactions) in the delivery process. Additionally, the study did not account for social and institutional factors that could affect the perceived trustworthiness of mobile money platforms, especially in conflict-affected regions. The current study fills this gap by assessing how security and transparency of mobile money systems affect beneficiaries' trust and the perceived effectiveness of humanitarian response in Kismayu, Somalia.

Adhiambo and Owino (2023) investigated how mobile money impacts food security among vulnerable populations receiving humanitarian aid in Kenya. Using a longitudinal study, the researchers tracked beneficiaries over a period to assess changes in food access and stability. Their findings showed that mobile money led to better and more consistent food security outcomes, attributed to the predictability and reliability of fund disbursement. However, while reliability may suggest a level of transparency, the study did not directly measure or assess the

transparency and security features of mobile money systems such as audit trails, fraud prevention mechanisms, or user protection protocols. Furthermore, they did not analyze how users' perceptions of safety or data security influenced the adoption and usage of mobile money in humanitarian aid. The current study extends this conversation by exploring how both system-level transparency and individual perceptions of security affect the perceived effectiveness of mobile money-facilitated aid among various demographic groups in Kismayu.

Sharma et al. (2022) analyzed the role of mobile money services in supporting healthcare interventions during post-disaster recovery in South Asia. Using a quantitative approach, they assessed how mobile money platforms helped fund and distribute healthcare services in affected communities. The findings highlighted that mobile money enabled more efficient and responsive health service delivery, and that a strong technological and regulatory infrastructure was key to successful implementation. However, the study focused primarily on infrastructure and logistical aspects, and did not examine how the transparency of transactions or user data protection impacted trust and long-term adoption of mobile money in humanitarian settings. Moreover, it did not assess the sustainability or perceived security of mobile money systems from the beneficiary's perspective, particularly in fragile or low-trust environments. The current study addresses this gap by investigating how perceived and actual security and transparency in mobile money use affect the long-term effectiveness and trustworthiness of aid delivery in Kismayu.

While existing studies confirm the usefulness of mobile money in improving food security and supporting healthcare delivery in humanitarian settings, they often overlook the critical roles of security and transparency in shaping beneficiaries' experiences and trust in these systems. Most studies focused on outcome variables like food or health, without assessing how secure and transparent systems contribute to the effectiveness of aid delivery. Moreover, the beneficiary's perspective on security features and trust remains underexplored, especially in high-risk and post-conflict areas. This study fills these gaps by analyzing how security protocols (e.g., fraud protection, PIN safety) and transparency mechanisms (e.g., transaction tracking, accountability) influence the effectiveness and acceptance of mobile money services in humanitarian response in Kismayu, Somalia.

2.2.3 Influence of cost-effectiveness using mobile money services on the effectiveness of humanitarian response.

Mwega and Wambua (2023) examined the impact of mobile money on humanitarian aid distribution during the COVID-19 pandemic in Kenya. Using a case study methodology, they assessed various aid programs that integrated mobile money platforms to deliver emergency assistance. Their findings showed that mobile money greatly enhanced the efficiency and speed of aid disbursement, reducing logistical costs and minimizing physical contact. These outcomes implied a cost-effective alternative to traditional aid delivery methods. However, the study was event-specific and did not assess the cost-effectiveness of mobile money in routine or protracted humanitarian settings, creating a contextual gap. Furthermore, the study lacked a

deep dive into user-level experiences and perceptions of cost-related benefits, which constitutes a methodological gap. The current study addresses both by examining how recipients in Kismayu perceive mobile money's cost-effectiveness in terms of minimizing transaction costs, reducing travel expenses, and improving overall aid delivery efficiency in an ongoing humanitarian context.

Kumar et al. (2023) conducted an in-depth investigation into how mobile money improved disaster response efficiency in East Africa. Utilizing a large-scale survey along with case studies, the researchers found that mobile money drastically reduced disbursement times and operational costs, improving satisfaction among beneficiaries and minimizing overhead costs for aid agencies. These findings reinforce the cost-saving advantages of mobile money in crisis response. However, the study concentrated largely on immediate emergency response phases and did not explore the long-term financial sustainability or scalability of mobile money in rural or protracted humanitarian environments. This creates a sustainability gap. The current study builds upon Kumar et al.'s work by evaluating how mobile money maintains cost-effectiveness over time, particularly in rural, conflict-prone areas like Kismayu, where access to financial infrastructure is limited and sustained affordability is crucial.

Njuguna et al. (2023) explored the use of mobile money services among smallholder farmers receiving humanitarian assistance in Uganda. Employing a survey and focus group discussions, the researchers investigated user experiences and perceptions. The study found that mobile money increased financial inclusion, improved access to agricultural inputs, and reduced dependence on intermediaries, indirectly suggesting cost advantages for aid recipients. However, the research did not explicitly assess how mobile money use translates into long-term cost-effectiveness for both aid agencies and beneficiaries, nor did it evaluate how this cost-effectiveness influences the overall effectiveness of humanitarian programs. The present study addresses this gap by analyzing the sustained cost-saving effects of mobile money services in humanitarian contexts and how these savings impact the perceived and actual effectiveness of aid delivery in Kismayu.

While the reviewed studies confirm that mobile money systems reduce operational costs and improve efficiency in humanitarian response, they fall short in addressing long-term cost-effectiveness and beneficiary-level economic impacts in non-crisis or rural humanitarian settings. Moreover, few studies examine how perceived affordability and reduced logistical burdens affect the overall effectiveness and scalability of aid interventions. This study fills these conceptual and methodological gaps by evaluating both institutional cost efficiencies and beneficiaries' perceptions of cost-related benefits in using mobile money for humanitarian aid in Kismayu, Somalia.

2.2.4 Inclusivity and accessibility of mobile money services among diverse community groups.

Wright et al. (2021) investigated how mobile money platforms contributed to the delivery of humanitarian assistance during crises. The study employed a mixed-methods approach, drawing on quantitative data about aid distribution and qualitative interviews with recipients. Results showed that mobile money improved the speed and safety of aid disbursement, particularly in urban settings. However, the study largely excluded rural populations and did not account for disparities in access across demographic groups, such as women, persons with disabilities, and the elderly highlighting a contextual and inclusivity gap. The current research addresses these limitations by concentrating on remote communities in Kismayu, assessing how factors such as geography, literacy, and socio-cultural norms influence the inclusiveness of mobile money systems in humanitarian aid.

Karanja et al. (2022) focused on the practical challenges and benefits associated with mobile money use in rural Kenyan regions for humanitarian purposes. Through interviews and focus group discussions, the study captured the lived experiences and perceptions of local community members. The findings suggested that while mobile money had the potential to expand access to emergency support, barriers such as digital illiteracy, infrastructure gaps, and affordability limited its reach. Nonetheless, the study did not employ quantitative tools to measure the extent or consequences of these obstacles, presenting a methodological shortfall. This study builds on that by incorporating survey data alongside qualitative insights to offer a more comprehensive understanding of how mobile money's accessibility varies across social and demographic boundaries in Kismayu.

Mugisha et al. (2022) explored the application of mobile technology, specifically mobile money, in enhancing healthcare delivery within humanitarian environments. Utilizing a mixed-methods framework, the researchers gathered insights from both health professionals and beneficiaries. Their analysis indicated that mobile money helped remove some financial and logistical barriers to healthcare access. However, the study lacked disaggregated analysis, leaving unclear whether these benefits reached marginalized or underrepresented groups. Additionally, the long-term implications of such digital interventions were not considered, signaling a conceptual and sustainability gap. The current research addresses these issues by examining how various community groups experience and engage with mobile money platforms over time in humanitarian operations, especially in underserved areas like Kismayu.

Collectively, these studies affirm the potential of mobile money to enhance aid delivery and health access. However, they fall short in addressing how inclusive and accessible these services truly are, particularly for vulnerable and hard-to-reach populations. Most previous work lacks comprehensive demographic analysis or focuses solely on urban populations. This study seeks to close that gap by investigating the real-world accessibility and inclusivity of

mobile money services across diverse community segments in Kismayu, thereby contributing to more equitable and effective humanitarian responses..

2.3 Theoretical Framework

The study draws on the Innovation Diffusion Theory (IDT), formulated by Everett Rogers in 1962, which serves as a foundational model for examining the adoption and diffusion of innovations such as mobile money within societal structures. The theory outlines that the adoption of innovations is influenced by several factors that determine whether individuals or organizations perceive the innovation as valuable and relevant to their needs. Grounding this study in the Innovation Diffusion Theory (IDT) provides a valuable theoretical framework for analyzing the adoption of mobile money systems. It enables the research to explore not only how these systems are adopted but also the specific attributes that facilitate or impede their integration in humanitarian contexts, with a focus on Kismayu, Somalia. This approach provides clarity on the factors shaping the success of mobile money adoption, enhancing the relevance of the findings for practitioners in humanitarian aid.

Rogers (2003) delineates five core attributes that affect the pace at which an innovation is adopted is shaped by key attributes: its perceived superiority over existing solutions (relative advantage), congruence with users' beliefs and needs (compatibility), simplicity of use (complexity), the ease with which its benefits can be observed (observability), and the extent to which it can be tested prior to full-scale adoption (trialability). These dimensions directly informed the development of this study's objectives and variables. For instance, the study investigates how the relative advantage of mobile money such as improved speed, cost-efficiency, and security compared to traditional aid delivery affects its effectiveness in humanitarian response. By framing the study within the concept of relative advantage, it becomes possible to understand how these perceived benefits directly influence the willingness of aid recipients and agencies to adopt mobile money as an alternative to conventional aid methods. Similarly, the element of compatibility is reflected in the study's focus on how mobile money systems align with the technological readiness and socio-cultural realities of communities in Kismayu, Somalia. The compatibility attribute also guides the exploration of local infrastructure and community values, ensuring that the innovation is not merely functional but also socially and contextually relevant, which is crucial for adoption in humanitarian contexts.

Recent empirical studies further support the relevance of IDT to this context. Ochieng et al. (2023) demonstrated that the perceived relative advantage of mobile money in humanitarian supply chains enhances adoption due to increased efficiency and traceability. Their findings underscore the importance of considering the tangible benefits that mobile money offers over traditional methods in improving supply chain management, efficiency, and transparency. Similarly, Karanja et al. (2022) emphasized compatibility as crucial, showing that mobile money systems must resonate with local practices and infrastructural capabilities. This finding aligns with Rogers' (2003) argument that innovations must fit well with the existing system to

ensure seamless adoption. Furthermore, Wright et al. (2021) underlined the importance of social influence and communication networks (an aspect inherent to IDT) by showing how community perceptions and information flows shape adoption behavior. By incorporating this insight into the study, the research will be able to explore the role of local networks and communication channels in shaping attitudes toward mobile money adoption, especially in areas where traditional means of communication and trust are deeply embedded in the culture.

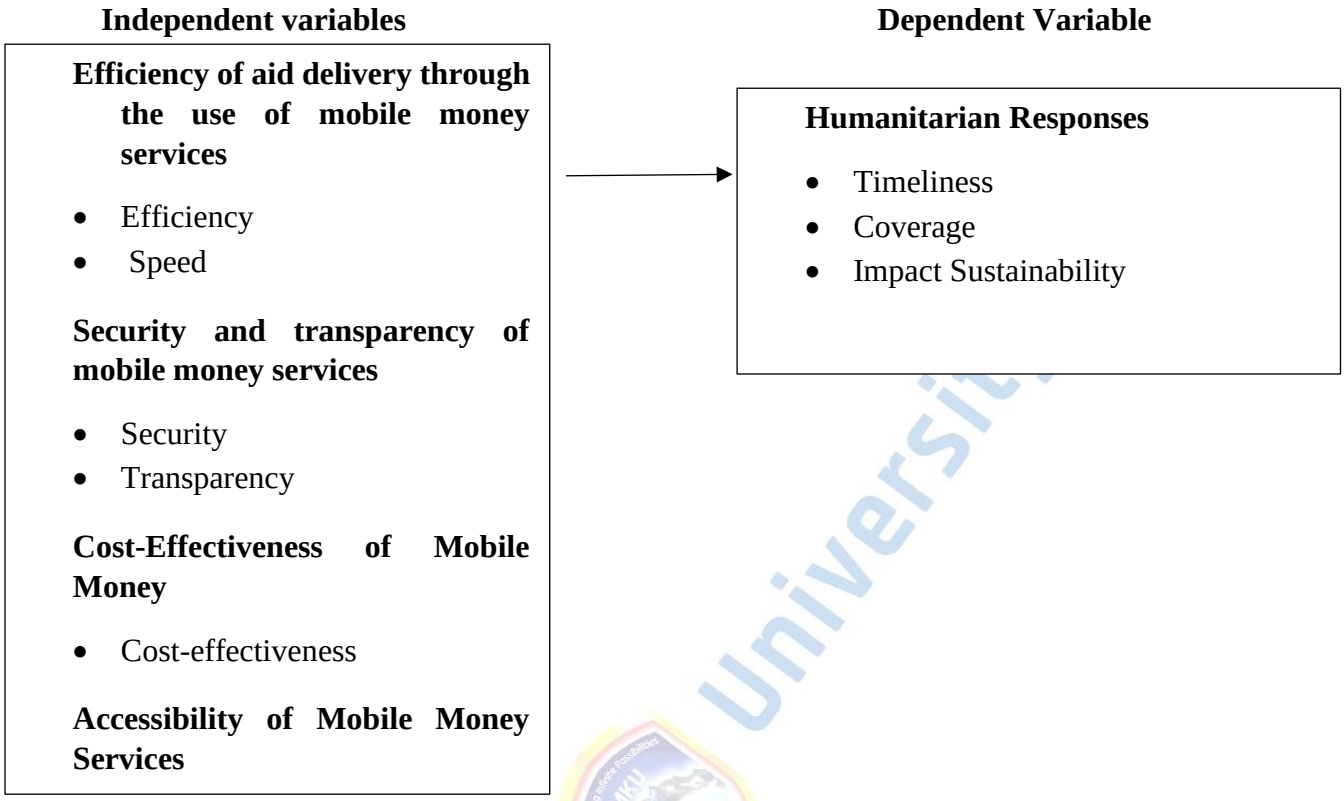
By applying IDT, this study moves beyond simply assessing the functionality of mobile money services. It offers a structured lens to evaluate the drivers and barriers to adoption in humanitarian settings, particularly through the five key attributes. This theoretical foundation enables the study to systematically analyze how different components of IDT influence the effectiveness of mobile money in crisis response efforts in Somalia. Additionally, the application of IDT allows for a comprehensive examination of the interplay between technological, social, and cultural factors, offering insights that are crucial for understanding the multi-dimensional aspects of mobile money adoption. It also supports the identification of practical recommendations for NGOs and humanitarian agencies aiming to optimize the integration of mobile money technologies in aid distribution. Through this theoretical framework, the study offers a deeper understanding of the nuanced challenges and opportunities that emerge when introducing innovative solutions in complex, resource-constrained environments.

2. 4 Conceptual frameworks

The conceptual framework provides a structured representation of key concepts, illustrating the relationship between research variables (Mugenda & Mugenda, 2003). It highlights the various determinants of mobile money services in humanitarian response. This study specifically examines how mobile money services (independent variable) influence humanitarian response (dependent variable) in Kismayu, Somalia.

Figure 2.1 Conceptual framework

Independent Variable



Source: Researcher (2024)

Timeliness is a fundamental aspect, as the effectiveness of humanitarian interventions largely relies on the speed with which aid is delivered. Integrating mobile money services is expected to enhance this timeliness, ensuring that support reaches those in need promptly, particularly during crises. Additionally, coverage is crucial; mobile money services can significantly expand the reach of humanitarian assistance. Leveraging technology, organizations can ensure that aid is distributed to a broader audience, thereby improving overall coverage and facilitating more equitable assistance. Furthermore, the impact sustainability of humanitarian interventions is essential for long-term recovery. Utilizing mobile money services, organizations can implement sustainable financial support mechanisms that empower communities, helping them build resilience and better cope with future challenges.

On the other hand, the independent variables provide insight into how mobile money services influence humanitarian responses. The efficiency of aid delivery through mobile money services plays a vital role in streamlining processes and reducing delays. This improvement allows humanitarian organizations to allocate resources more effectively, resulting in a quicker response to the requirements of affected populations. Alongside efficiency, the speed of aid delivery is critical in crisis situations. Mobile money services facilitate swift transactions and transfers, enabling timely assistance to beneficiaries, which is vital during emergencies when immediate support is necessary.

Moreover, the safety and transparency of mobile money services are essential for maintaining trust among beneficiaries and humanitarian organizations. Ensuring secure financial transactions mitigates the risks associated with cash-based aid, such as theft or fraud. Transparency in financial transactions enhances accountability in aid distribution. Mobile money services can track transactions, providing clear records of how funds are utilized, which fosters trust among stakeholders and beneficiaries.

The affordability and efficiency of mobile money services are another significant factor. Utilizing these services can reduce transaction costs compared to traditional cash distribution methods. Minimizing operational costs related to cash handling and transportation, organizations can maximize the impact of their financial resources, ensuring that a larger portion reaches those in need. Furthermore, the accessibility of mobile money services is crucial for beneficiaries. Inclusivity is necessary to ensure that all segments of the population, including marginalized groups, can access and utilize these services. The ease of accessing mobile money is determined by indicators such as network coverage, availability of mobile devices, and user-friendly interfaces.

The conceptual framework illustrates how mobile money services serve as a pivotal factor in enhancing humanitarian responses in Kismayu, Somalia. Examining the dependent variable of humanitarian responses—timeliness, coverage, and impact sustainability—and the independent variables of efficiency, security, cost-effectiveness, and accessibility, this framework aims to clarify the function of mobile money in improving aid delivery and outcomes. Through this analysis, the research sought to offer valuable understanding into the potential of mobile money to transform humanitarian assistance.

2.5 The Recap of Literature Review

Although the existing body of literature acknowledges the growing relevance and benefits of mobile money services in humanitarian response, several important research gaps remain. Many prior studies have primarily focused on urban and relatively stable environments, often overlooking fragile and conflict-affected regions such as Kismayu, Somalia. This presents a significant contextual gap, as the unique challenges associated with humanitarian operations in remote, insecure, or infrastructure-poor settings remain insufficiently addressed. Understanding how mobile money services perform in such environments is critical to formulating responsive and inclusive aid strategies.

Furthermore, a substantial portion of the literature emphasizes the short-term efficiency gains of mobile money systems such as faster transactions and reduced costs—while paying limited attention to their long-term sustainability and their integration into broader financial inclusion frameworks. Questions about whether mobile money usage leads to lasting economic empowerment, institutional resilience, or improved recovery outcomes remain largely unanswered.

Another key gap involves the influence of demographic and socioeconomic characteristics on mobile money adoption and usage. While digital financial tools are often lauded for their inclusivity, there is little empirical analysis that disaggregates adoption patterns by factors such as gender, age, income level, education, or digital literacy. This omission limits the ability to design targeted interventions that address the unique barriers faced by marginalized groups, including women, youth, and rural populations.

In addition, the existing literature often lacks quantitative and statistically rigorous assessments of mobile money's effectiveness in improving humanitarian outcomes. While anecdotal evidence and qualitative case studies abound, fewer studies employ quantitative methods to evaluate the impact of mobile money on key metrics such as delivery speed, cost-efficiency, coverage, reliability, and user satisfaction. Such metrics are essential for evidence-based policymaking and performance benchmarking.

Another underexplored dimension is the role of social dynamics in influencing the success or failure of mobile money adoption in humanitarian settings. Cultural perceptions of financial technology, levels of trust in mobile platforms, and the influence of local power structures or community networks are seldom examined in depth. These factors can have a significant impact on uptake and effectiveness, particularly in closely-knit or conservative societies where social approval and interpersonal trust heavily shape behavior.

Finally, there is a notable lack of research that brings together these diverse dimensions—geographic, technological, social, demographic, and institutional into a context-specific and data-driven framework. This study seeks to address these multifaceted gaps by offering a focused investigation into the use of mobile money services in humanitarian response operations in Kismayu, Somalia. By grounding the analysis in both empirical data and local realities, the study contributes to a more nuanced understanding of how mobile financial technologies can be optimized for aid delivery in crisis-affected regions.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section details the methodology employed in carrying out the study. It covers research design, geographical area of the study, and the target population. It explains the sampling techniques and procedures used to select participants, the development of research instruments, and the measures taken to assess their validity and reliability. The section also describes the data collection process, the analytical methods applied to interpret the findings, and the diagnostic tests conducted to ensure accuracy. Lastly, it highlights the ethical considerations observed throughout the research to maintain integrity and confidentiality.

3.2 Research Design

A research design is a systematic plan that outlines the steps and procedures for conducting a study in order to achieve its objectives (Kothari, 2004). It was considered a composition of the framework implemented to collect, measure, and analyze the research data. This study applied a descriptive survey design in line with Orodho's (2003) suggestion that it was the best design to collect data and information through questionnaires distributed to the research population. Data was sequentially gathered in phases and carefully evaluated to obtain reliable and factual information of the influence on mobile money in humanitarian response.

The study examined in detail the role of mobile money disbursement in curbing insecurity and attacks against humanitarian personnel during humanitarian response, the influence of digital cash transfers in offering an entry point to financial inclusion during humanitarian response, and the function of mobile money in facilitating faster, secure, and transparent disbursements in humanitarian response.

3.3 Location of the study

The study was conducted in Kismayu town, located in the Jubaland region of Somalia. As a key port city, Kismayu plays a vital role in the region's administrative and economic activities, serving as the capital of Jubaland. This study focused specifically on five villages in Kismayu town and its surrounding areas: Farjano, Fanoole, Guulwade, Luglow, and Bulagadud. These villages encompassed a diverse cross-section of the town's population and socio-economic conditions, offering a well-rounded perspective on the consequences of mobile money services on humanitarian response efforts. Kismayu had experienced significant challenges due to prolonged conflict, displacement, and recurrent droughts, making it a critical area for examining the efficiency of mobile money in delivering aid. The selection of these specific villages intended to encompass a wide range of experiences and consequences connected to utilizing mobile money services in addressing the needs of vulnerable populations in a complex humanitarian setting. Furthermore, by focusing on these areas, the study provided valuable insights into how mobile financial technology could enhance the delivery and impact of humanitarian aid in similar contexts across Somalia and beyond.

3.4. Target population

The targeted population for this research consisted humanitarian aid recipients in Kismayu, Somalia, who used mobile money services to receive and manage aid. Kismayu was chosen due to its reliance on mobile money platforms, such as Hormuud and EVC Plus, for the distribution of humanitarian assistance, given the region's limited financial infrastructure. These aid recipients represented the population most directly impacted by the integration of mobile money in humanitarian efforts. The population size was 10,000 individuals, based on data from humanitarian organizations operating in the area. This population formed the foundation for evaluating the impact of mobile money services on the effectiveness and productivity of humanitarian response.

3.5. Sampling procedures and techniques

Sampling was the method of choosing a subset of cases from a larger population to draw conclusions about that population (Orodho, 2004). In this study, the researcher utilized a purposive sampling technique to select key officials from humanitarian response teams and NGOs in Kismayu, as these individuals possessed specific administrative responsibilities relevant to the research objectives. This approach ensured that the sample included participants with the necessary expertise and insight into mobile money services and their impact on humanitarian responses.

Additionally, simple stratified random sampling was employed to include beneficiaries from various communities and IDP camps in Kismayu. The beneficiaries were drawn from the five villages of Farjano, Fanoole, Guulwade, Luglow, and Bulagadud. Stratifying the sample allowed for representation from each village, ensuring that the perspectives of different community groups were adequately captured, thus reflecting the diverse nature of the target population.

To determine the sample size, the researcher aimed to include 10% to 30% of the total population, which was appropriate for studies of this nature (Kothari, 2009). This percentage was applied to both the officials and the beneficiaries, ensuring fair representation of the entire population. The selection of both groups employed simple random sampling techniques, minimizing potential biases and enhancing the validity of the findings. Following these sampling procedures, the study gathered comprehensive data that accurately reflected the effect of mobile money services on humanitarian response efforts in Kismayu, Somalia.

3.6 Sample size

The sample size represents a specific subset of the population that serves as a representative of the whole. In this study, the researcher will determine the sample size using Yamane's (1967) formula for sample size calculation. The computation is as follows:

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

Where: Whereby; n = required sample size; N = population size (total humanitarian aid recipients using mobile money services in Kismayu); and e = the error term (5%).

$$n = \frac{10000}{1 + 10000(0.05)^2} = \frac{10000}{1 + (10000 \times 0.0025)} = \frac{10000}{1 + 25} = \frac{10000}{26} = 384.62$$

Thus, rounding to the nearest whole number, the sample size n will be 385. This sample size ensured a 95% confidence level, allowing for robust statistical analysis of the consequences of mobile money services on humanitarian response in Kismayu.

3.7 Construction of research instruments

Harris and Brown (2019) observed that questionnaires were the best instrument for collecting data in a research case, as they established rapport and outlined the purpose of the study. They also provided greater anonymity for the respondents. Kombo and Tromp (2014) recommended that for surveys, researchers should utilize self-administered questionnaires to obtain unbiased opinions from respondents regarding their attitudes and viewpoints. In line with this suggestion, Harris and Brown (2019) agreed that questionnaires were the most preferable method for case studies. Accordingly, the researcher formulated well-structured questionnaires with closed questions to collect respondents' opinions, administered them to the study participants, and subsequently collected and analyzed the completed questionnaires to formulate the results.

The researcher obtained an authorization letter from the University alongside authority from the administrations of the town and its five villages before conducting the study. Prior to administering the questionnaires, the researcher held a meeting and discussion with the respondents to build confidence in the privacy of their information. The researcher then administered the questionnaires to all the sampled respondents and collected all the filled-in questionnaires.

3.8 Testing for validity and reliability

Validity pertains to the extent to which the findings from data analysis accurately represent the phenomenon under investigation. There exist three primary approaches to assessing the validity of tests and measurements: content validity, face validity, and construct validity (Bryman & Cramer, 2009). Content validity evaluates how effectively the developed items represent a comprehensive and relevant sample of all possible measures of a given construct. Since no statistical test can definitively evaluate whether a measure fully captures a subject matter or concept, content validity is typically assessed based on expert judgment in the field (William, 2024).

Reliability, in contrast, refers to the steadiness of a measurement or how reliably an instrument yields consistent results when applied under identical conditions with the same participants (Bryman & Cramer, 2009). Sürücü and Maslakçi (2020) emphasized that reliability reflects the stability of a measurement, with higher reliability indicating greater consistency. Internal

consistency is based on the idea that all individual items within a measurement tool should assess the same construct and therefore exhibit a positive correlation with each other.

3.9 **Data Collection Methods and Procedures**

This study employed structured questionnaires as the main tool for collecting quantitative data from the target population of humanitarian aid recipients in Kismayu, Somalia, who used mobile money services. Two distinct questionnaires were designed: one for beneficiaries and another for authorities or organizations involved in humanitarian efforts. The questionnaires captured key information, including respondents' demographic details, their usage of mobile money platforms, and their perceptions of the impact these services had on the productivity and effectiveness of humanitarian aid delivery.

The data collection process involved field assistants distributing the questionnaires in person to ensure a high response rate, with mobile-based electronic surveys used as a backup where in-person distribution was not feasible. Prior to full deployment, a pilot test was conducted on a small subset of the population to guarantee that the questions were well-structured and effectively gathered the intended information Based on responses from the pilot, necessary revisions were made to refine the questionnaires. The finalized collection of data took place over a fortnight, during which completed feedback were gathered by the field assistants, ensuring data completeness and reliability. All collected data were securely stored for subsequent analysis.

3.10 Pilot Study

Prior to the main data collection, a pilot study was conducted to evaluate the feasibility and effectiveness of the structured questionnaire designed for this research. The pilot study involved a small sample of approximately 30 humanitarian aid recipients in Kismayu, Somalia, who were representative of the target population. This initial phase aimed to identify any potential issues related to the clarity of questions, the survey's length, and the overall data collection process.

During the pilot study, feedback was gathered from participants regarding their understanding of the questions, the time taken to complete the survey, and any suggestions for improvement. Based on this feedback, necessary adjustments were made to refine the questionnaire to ensure it effectively captured the required data. Additionally, the pilot study presented an opportunity to assess the data collection procedures, including the performance of field assistants and the logistics involved in reaching respondents. Insights gained from the pilot study informed the final implementation of the information collection process, ensuring the reliability and validity of the study results.

3.11 **Data Analysis**

The data gathered from the field underwent a meticulous cleaning and coding process to enhance accuracy and reliability. Quantitative analysis was performed using the Statistical Package for Social Sciences (SPSS), facilitating both descriptive and inferential assessments. Descriptive statistics, such as frequencies and percentages, were generated to summarize the dataset, providing insights into the distribution patterns and key characteristics of the sample population.

For inferential analysis, correlation evaluation was initially carried out to determine the correlations among the independent and dependent variables. This was followed by a multivariate regression analysis to evaluate the combined impacts of multiple independent variables on various dependent variables. The regression model assessed how factors such as Efficiency and Speed, Security and Transparency, Cost-effectiveness, and Inclusivity and Accessibility influenced key outcomes, including Timeliness, Coverage, and Impact and Sustainability. The model was structured as follows:

The general model was:

$$Yi = \beta_0 + \beta_1 efficiency\ and\ speed + \beta_2 security\ and\ transparency + \beta_3 Cost - effectiveness + \beta_4 Inclusivisity\ and\ Accessibility + \varepsilon$$

Where: Yi= Dependent variables ($Yi = Y1$, $Y2$ & $Y3$ i.e. Timelines, Coverage and Impact and Sustainability respectively).

3.12. Diagnostics Tests

To guarantee the accuracy of the results from the multivariate regression model, several diagnostic tests were conducted. Multicollinearity was assessed using the Variance Inflation Factor (VIF) and Tolerance; VIF values exceeding 10 indicated potential multicollinearity, while Tolerance values below 0.1 suggested problematic multicollinearity. The normality of residuals was examined through the Shapiro-Wilk Test, where p-values below 0.05 showed non-normality. Heteroscedasticity was assessed using the Breusch-Pagan Test, with significant p-values signaling potential issues. These diagnostics were essential for validating the assumptions of the multivariate model and ensuring the robustness of the analysis.

3.13 Ethical considerations

All ethical issues, including but not limited to confidentiality and informed consent, were strictly observed in this study. Before initiating data collection, the researcher aimed approval from relevant authorities, including the university and any applicable local government bodies. Participants were notified of the studies objectives are to ensure transparency and understanding of how their data would be used.

Throughout the data collection phase, the researcher presented a clear explanation of the study's purpose and obtained consent from each respondent before proceeding with data gathering. Participants were granted full autonomy throughout the research, including the freedom to withdraw or refuse engagement at any phase. Additionally, they had the option to skip any questions they found uncomfortable, ensuring that their rights and well-being were prioritized. To minimize bias, the researcher also employed trained research assistants to aid in the distribution and administration of the research instruments, ensuring that data collection was conducted fairly and ethically.

CHAPTER FOUR: RESULTS AND FINDINGS

4.0 Introduction

The study's results highlight the impact of efficiency and speed, security and transparency, cost-effectiveness, and accessibility and awareness on key service delivery outcomes. These factors serve a vital role in shaping timeliness, coverage, and the broader impact and sustainability of humanitarian interventions. Through data analysis, the relationships between these variables were explored to offer a comprehension of how mobile money services contribute to enhancing service effectiveness and ensuring equitable access to aid. Through descriptive statistics, correlation analysis, and regression techniques, the chapter outlines the data characteristics and significant trends in perceptions regarding these factors. It further explores the correlation between independent and dependent variables, revealing their interdependencies and quantifying each factor's impact on service delivery outcomes, thereby offering insights for improving service quality and accessibility.

4.1 Response rate

The data for this study was collected using Kobo Toolbox, which ensured comprehensive coverage and efficient data management. A sample of 385 humanitarian aid recipients and key stakeholders was drawn from Kismayu, Somalia. All 385 respondents completed and returned the questionnaires, resulting in a 100% response rate. This exceptional participation was attributed to the effective use of self-administered questionnaires, support from trained field assistants, and a combination of in-person and mobile-based distribution across the five villages of Farjano, Fanoole, Guulwade, Luglow, and Bulagadud. A pilot study involving 30 participants was also successfully conducted prior to the main data collection, ensuring clarity and accuracy of the instruments. The high response rate exceeded the benchmark of 70% considered satisfactory for academic research (Babbie, 2010), thereby affirming the adequacy of the data for analysis and interpretation.

4.2 Demographic Characteristics

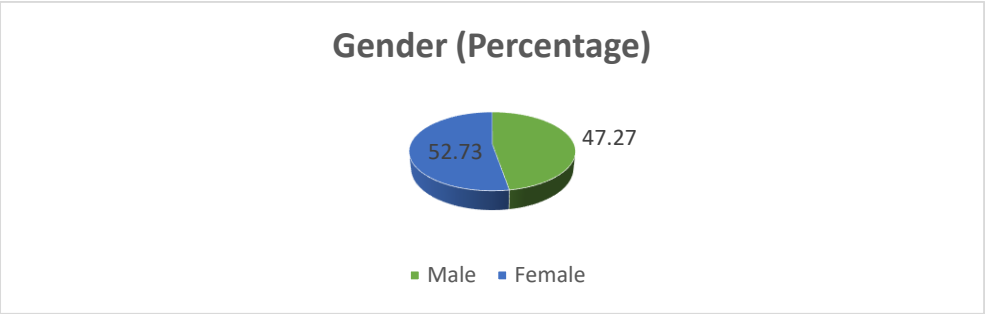
This section outlines the study's results on the influence of socio-demographic characteristics on the outcomes of interest. The key variables examined include gender, age, respondents' roles, education level, village context, and mobile money service usage. These factors shape availability and use of financial services, particularly in humanitarian response settings. Differences in age and education level often determine an individual's ability to engage with mobile money platforms, while gender and village context may affect financial service accessibility due to cultural, economic, or infrastructural factors.

The roles of respondents, whether community members, local business owners, or humanitarian workers, also influence their experiences and perspectives regarding mobile money services. Identifying patterns in mobile money adoption and financial accessibility among different community groups highlights challenges that may impact service accessibility. The findings contribute to a broader discussion on financial inclusion and humanitarian

interventions, offering insights into the effectiveness and reach of mobile money services in regions like Kismayu, Somalia. The results are presented in the subsequent sections.

4.2.1 Gender

Figure 4.1: Gender Distribution of Respondents

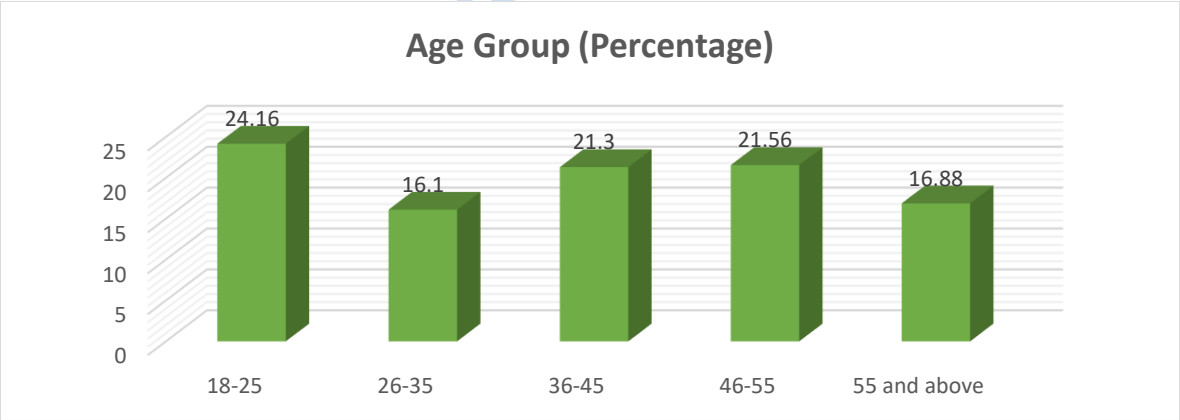


Source: primary data (2024)

Figure 4.1 illustrates the gender distribution of respondents in the study. The data reveals a nearly even split between male and female participants, with females representing a slightly higher proportion. Specifically, 52.73% of the respondents are female, while 47.27% are male. This close balance between genders ensures a fair representation of both male and female perspectives in the analysis.

4.2.2 Age

Figure 4.2: Age Distribution of Respondents



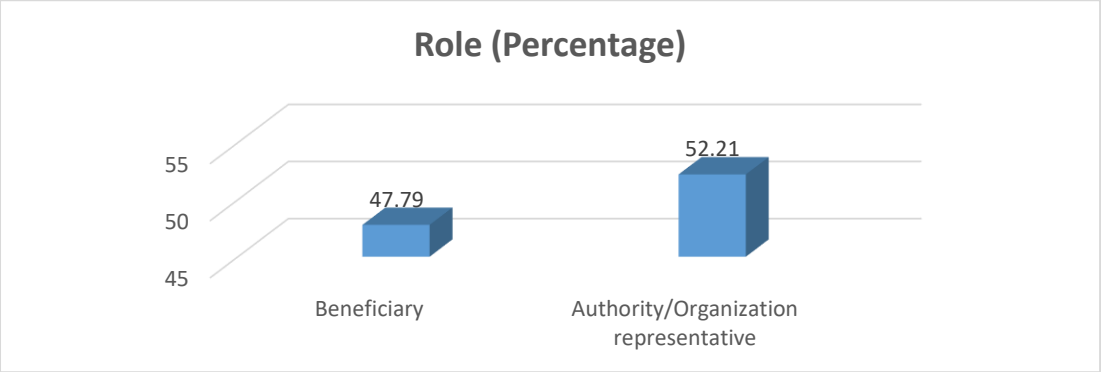
Source: primary data (2024)

Figure 4.2 presents the respondents' age spread across five distinct categories, with the majority belonging to the 18-25 age groups, accounting for 24.16% of the total. The 46-55 age group follows closely, representing 21.56% of respondents, while the 36-45 age group makes up

21.3%. Respondents aged 55 and above constitute 16.88%, and those in the 26-35 age group comprise 16.1% of the participants. This spread suggests that the most of respondents are between 18 and 55 years old, with a relatively balanced distribution across the age groups, providing a diverse range of perspectives from both younger and older participants.

4.2.3 Role of respondents

Figure 4.3: Respondent's Role

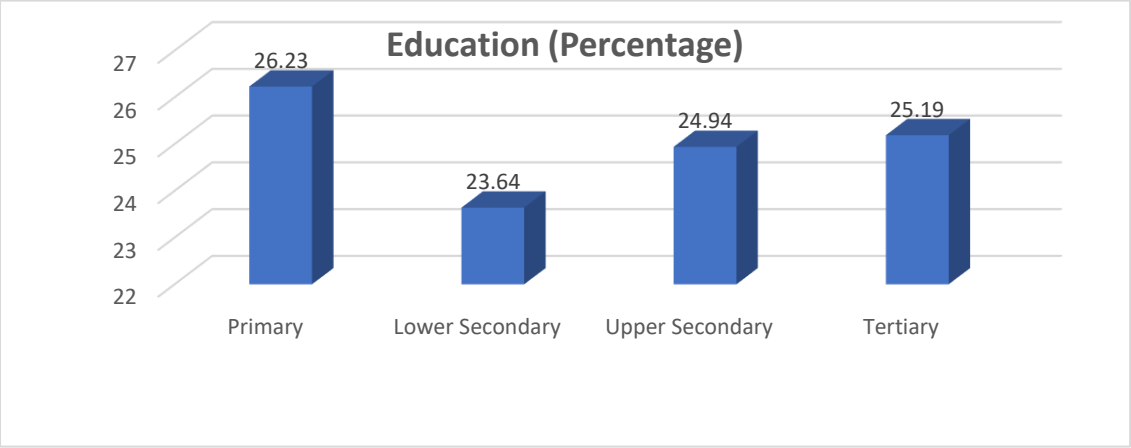


Source: primary data (2024)

Figure 4.3 illustrates the distribution of respondents based on their roles in the study. The figure shows that 52.21% of the respondents are representatives of authorities or organizations, while the remaining 47.79% are beneficiaries. This distribution indicates a nearly balanced participation between organizational representatives and beneficiaries, allowing for a comprehensive understanding of the perspectives from both those who implement services and those who receive them.

4.2.4 Education levels

Figure 4.4: Education Levels of Respondents

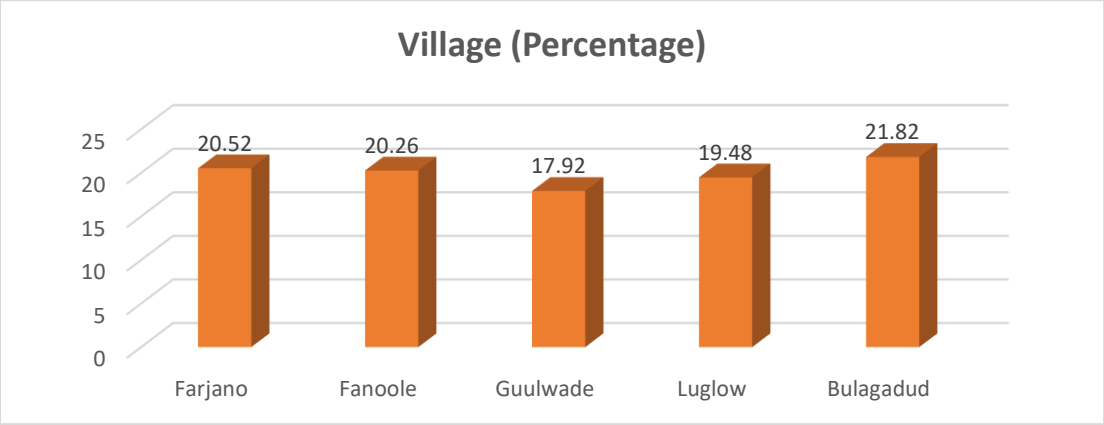


Source: primary data 2024

Figure 4.4 illustrates the distribution of respondents based on their education levels. The data shows a relatively even spread across the four categories. A slight majority, 25.19%, have attained tertiary education, followed closely by those with upper secondary education at 24.94%. Respondents with lower secondary education make up 23.64%, while those with primary education account for 26.23%. This distribution indicates that the study includes participants with diverse educational backgrounds, which enhances the breadth of insights gathered from the respondents.

4.2.5 Respondents Village

Figure 4.5: Distribution of Respondents by Village

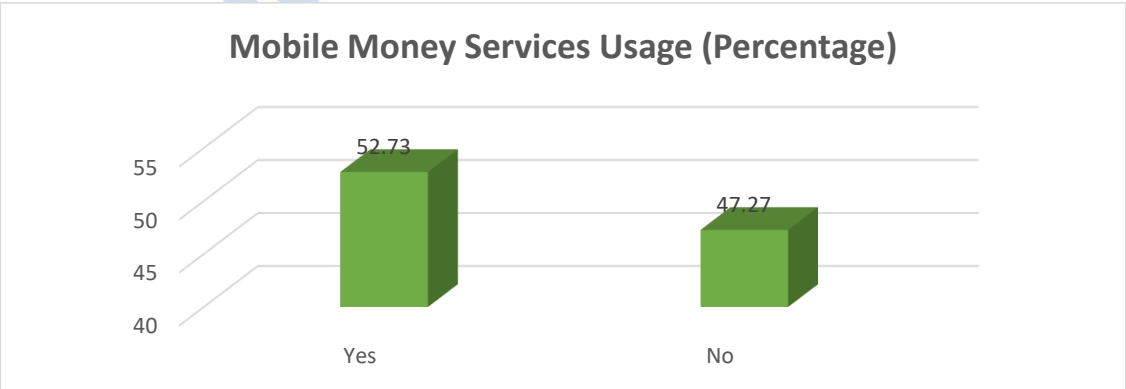


Source: primary data (2024)

Figure 4.5 illustratess the distribution of respondents across five different villages. The largest proportion of respondents, 21.82%, are from Bulagadud, followed by 20.52% from Farjano and 20.26% from Fanoole. Luglow accounts for 19.48% of the respondents, while Guulwade represents the smallest group at 17.92%. This distribution shows that respondents are fairly well-represented across all five villages, ensuring that the findings reflect a broad range of perspectives from different areas within the region.

4.2.6 Usage of Mobile Money Services

Figure 4.6: Respondents' Usage of Mobile Money Services



Source: primary data 2024

Figure 4.6 presents the distribution of respondents according to their use of mobile money services. The figure shows that 52.73% of the respondents use mobile money services, while 47.27% do not. This shows that a slight majority of the participants are familiar with and actively use these services, which is important for understanding how mobile money impacts the humanitarian response in the region.

4.3 Descriptive Statistics

In this section, descriptive statistics are used to summarize respondents' perceptions of key independent variables that influence humanitarian response. These variables include: efficiency and Speed of Mobile Money, Security and Transparency of mobile money, cost-effectiveness of mobile money and accessibility and awareness of mobile money. Each variable is assessed through multiple Likert-scale statements, with responses measured on a five-point scale (1 = Strongly Disagree to 5 = Strongly Agree). The mean and standard deviation for each item is presented, followed by an interpretation of the average response level.

Measuring responses to the independent variables i.eEfficiency and speed of mobile money, Security and Transparency of Mobile Money, Cost- effectiveness of mobile money and Accessibility and awareness of mobile money

The study's descriptive statistics provide valuable insights into respondents' perceptions of the consequences of mobile money services on humanitarian responses in Kismayu, Somalia. The analysis includes measures of central tendency (mean) and dispersion (standard deviation), along with lowest and highest values, for all the dependent and independent variables.

Table 4.1: Summary Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Timeliness	385	2.992208	1.479879	1	5
Coverage	385	3.096104	1.398887	1	5
Impact and Sustainability	385	2.863203	1.016239	1	5
Efficiency and Speed	385	3.193506	1.054779	1	5
Security and Transparency	385	2.804329	.9574777	1	5
Cost Effectiveness	385	2.996104	1.013822	1	5
Accessibility and Awareness	385	2.937662	.9586405	1	5

Source: Author's computation from respondent's information

In table 4.1 above Timeliness had a mean score of 2.99, indicating that, on average, respondents rate the timeliness of mobile money services as moderate. The relatively high standard

deviation of 1.48 reflects considerable variability in the data, suggesting that while some respondents find the services prompt and timely, others may have experienced delays. This implies that mobile money services may not consistently meet expectations for timely aid delivery across all humanitarian efforts.

Coverage had a mean of 3.10, reflecting a slightly above-average perception of the coverage of mobile money services. This implies that most respondents view the geographical reach and accessibility of these services as adequate. However, the standard deviation of 1.40 shows there is some variation in responses, implying that while coverage may be satisfactory for many, others might experience limitations in accessing these services.

The mean score for Impact and Sustainability was 2.86, signaling that respondents generally rate the long-term impact and sustainability of mobile money services as below average. The standard deviation of 1.02 indicates that respondents' opinions are fairly consistent, although some may feel that mobile money services do not significantly enhance the sustainability of humanitarian responses. This finding suggests a need for improvement in ensuring that the use of mobile money fosters lasting benefits in humanitarian contexts.

Efficiency and Speed had a higher mean score of 3.19, suggesting that respondents view mobile money services as relatively efficient and fast in aiding humanitarian efforts. The standard deviation of 1.05 demonstrates moderate variability in responses, suggesting that most respondents' answers are relatively spread out around the average share similar views on the efficiency of these services. This finding reinforces the idea that mobile money services are perceived to expedite aid delivery.

For Security and Transparency, the mean was 2.80, indicating a slightly below-average rating for these aspects. The low standard deviation (0.96) suggests that most respondents have similar concerns about the security and transparency of mobile money services, which could hinder wider adoption and trust in these platforms. Addressing security concerns could improve the overall effectiveness and reliability of mobile money in humanitarian contexts.

Cost Effectiveness received a mean score of 2.99, indicating neutral perceptions regarding whether mobile money services offer value for money in humanitarian responses. With a standard deviation of 1.01, there is moderate variability in opinions, suggesting that while some respondents find mobile money services affordable, others may perceive them as costly or not delivering sufficient value for the cost involved.

Finally, Accessibility and Awareness had a mean score of 2.94, which suggests that respondents find mobile money services moderately accessible and that awareness is neither too high nor too low. The standard deviation of 0.96 indicates some consistency in responses, but there is still room for improvement in ensuring broader accessibility and raising awareness among both beneficiaries and humanitarian organizations.

4.4 Correlation Analysis

The correlation matrix reveals several important relationships between the key variables in this study, which helps in understanding how mobile money services influence humanitarian response in Kismayu, Somalia. The values range from -1 to 1, with positive values indicating that as one variable rises, the other tends to rise as well, and higher values closer to 1 represent stronger relationships.

Table 4.2: Correlation Matrix

Variable	Timeliness	Coverage	Impact and Sustainability	Efficiency and Speed	Security and Transparency	Cost Effectiveness	Accessibility and Awareness
Timeliness	1.0000						
Coverage	0.1991	1.0000					
Impact and Sustainability	0.2746	0.3885	1.0000				
Efficiency and Speed	0.3655	0.4409	0.5908	1.0000			
Security and Transparency	0.3582	0.4136	0.6259	0.5133	1.0000		
Cost Effectiveness	0.3506	0.4397	0.5379	0.5275	0.4699	1.0000	
Accessibility and Awareness	0.3533	0.4453	0.6513	0.5612	0.5401	0.5175	1.0000

Source: Author's computation from respondent's information

In table 4.2 above, timeliness shows moderate positive correlations with variables like Efficiency and Speed (0.3655), Security and Transparency (0.3582), Cost Effectiveness (0.3506), and Accessibility and Awareness (0.3533). This suggests that humanitarian aid becomes more efficient when mobile money services are efficient, secure, cost-effective, and easily accessible. The correlation between Timeliness and Coverage (0.1991), however, is weaker, indicating that while broader coverage of mobile money services does contribute to timely responses, it has a smaller impact compared to other factors.

Coverage shows moderate correlations with several key variables such as Efficiency and Speed (0.4409), Security and Transparency (0.4136), and Cost Effectiveness (0.4397). This implies that when mobile money services cover a broader geographic area, they tend to be perceived as more efficient, secure, and cost-effective. The moderate relationship between Coverage and Impact and Sustainability (0.3885) indicates that broader mobile money service coverage helps improve the long-term impact and sustainability of humanitarian responses.

Impact and Sustainability has strong positive correlations with Security and Transparency (0.6259) and Accessibility and Awareness (0.6513), which indicates that when mobile money services are secure and transparent, and when both beneficiaries and organizations are aware of them, the sustainability of humanitarian interventions improves. It also shows moderate correlations with Efficiency and Speed (0.5908) and Cost Effectiveness (0.5379), meaning that these factors also contribute to the lasting impact of humanitarian responses.

Efficiency and Speed is significantly correlated with Impact and Sustainability (0.5908), Security and Transparency (0.5133), and Accessibility and Awareness (0.5612). These strong relationships suggest that when mobile money services are efficient and quick, they not only improve the immediate outcomes but also contribute to longer-term benefits and are perceived as more secure and accessible.

Security and Transparency is not only strongly correlated with Impact and Sustainability but also with Accessibility and Awareness (0.5401), showing that secure and transparent mobile money systems enhance their accessibility and increase awareness among stakeholders. This security factor is critical for ensuring trust in mobile money services in humanitarian contexts.

Lastly, Cost Effectiveness shows moderate correlations with Security and Transparency (0.4699), Efficiency and Speed (0.5275), and Accessibility and Awareness (0.5175). This suggests that when mobile money services are more cost-effective, they tend to also be perceived as secure, efficient, and accessible, further supporting the overall humanitarian response efforts.

4.4 Diagnostic Tests

4.4.1 Normality Test

In this section, the normality of the study's data is examined to determine whether the statistical methods used later are appropriate. The Shapiro-Wilk test is used to check if the distributions of different variables follow a normal pattern. This assessment is important because data that do not meet normality can lead to incorrect results. The findings from the normality tests, both before and after applying a quantile transformation, provide valuable insights into how well the data fits a normal distribution. The results are shown below.

Table 4.3: Shapiro Wilk Test Results

Before quantile transformation					
Variable	**Observations**	**W**	**V**	**Z**	**Prob>z**
Timeliness	385	0.99490	1.356	0.723	0.23488
Coverage	385	0.99723	0.736	-0.728	0.76674
Impact and Sustainability	385	0.99540	1.224	0.479	0.31586

Efficiency and Speed	385	0.97069	7.797	4.878	0.00000
Security and Transparency	385	0.95740	11.334	5.767	0.00000
Cost Effectiveness	385	0.98836	3.097	2.685	0.00363
Accessibility and Awareness	385	0.98225	4.722	3.687	0.00011
After quantile transformation					
Efficiency and Speed	385	0.99953	0.126	-4.922	1.00000
Security and Transparency	385	0.99963	0.097	-5.537	1.00000
Cost Effectiveness	385	0.99980	0.053	-6.961	1.00000
Accessibility and Awareness	385	0.99962	0.100	-5.473	1.00000

Source: Author's computation from respondent's information

Table 4.3 shows that examination of normality in the study's data is essential for selecting the appropriate statistical analyses. The initial Shapiro-Wilk test results indicated varied outcomes across different variables. Specifically, the variables Timeliness, Coverage, and Impact and Sustainability exhibited W statistics near 1, coupled with p-values exceeding 0.05. This suggests that these variables align closely with the normal distribution, thus making them suitable for parametric testing, which requires normally distributed data.

In contrast, variables such as Efficiency and Speed, Security and Transparency, Cost Effectiveness, and Accessibility and Awareness showed significant deviations from normality, as reflected in their lower W values and p-values below 0.05. This indicates potential skewness or other forms of non-normality, which could adversely impact the validity of statistical analyses if unaddressed.

Post-quantile transformation, all variables demonstrated significant improvement in normality, with W statistics approaching 1 and p-values nearing 1.00000 for the variables previously identified as non-normally distributed. This transformation indicates that the data now satisfies the normality assumption, thereby enhancing the reliability of subsequent analyses utilizing parametric methods.

4.4.2 Multicollinearity

Assessing multicollinearity among the study's variables is crucial to maintaining the reliability of the regression analysis. Multicollinearity occurs when independent variables are highly

correlated, which can distort the estimation of regression coefficients and weaken the interpretability of results. The Variance Inflation Factor (VIF) is used to quantify the extent of multicollinearity. A VIF value above 10 suggests severe multicollinearity, which may compromise the stability of the model, while values exceeding 5 indicate potential concerns that warrant further examination. By evaluating VIF values, the study ensures that the regression model remains robust and produces reliable estimates. The results of the multicollinearity test are presented in the subsequent section.

Table 4.4: Variance Inflation Factor Results

Variable	**VIF**	**1/VIF**
Accessibility and Awareness	1.77	0.563602
Efficiency and Speed	1.74	0.574763
Security and Transparency	1.61	0.622509
Cost Effectiveness	1.59	0.628686
Mean VIF	1.68	

Source: ***Author's computation from respondent's information***

In table 4.4, the VIF values for all variables are as follows: Accessibility and Awareness (1.77), Efficiency and Speed (1.74), Security and Transparency (1.61), and Cost Effectiveness (1.59). These values are well below the commonly accepted threshold of 5, suggesting that multicollinearity is not a significant issue among the independent variables. The mean VIF of 1.68 further reinforces this conclusion, indicating that the variables are not excessively correlated with one another.

The relatively low VIF values suggest that each variable contributes unique information to the model, thereby supporting the robustness of the regression analysis. This lack of multicollinearity is crucial as it ensures that the coefficients estimated for each independent variable can be interpreted accurately, enhancing the reliability of the findings related to the influence of mobile money services on humanitarian response. This assessment shows that the independent variables in this study maintain acceptable levels of correlation, allowing for valid interpretations of their relationships with the dependent variables. This outcome is advantageous for the overall integrity of the statistical analyses employed.

4.4.3 Heteroscedasticity

This section presents the findings from the heteroscedasticity test, which examines whether the residuals in the regression model maintain constant variance across varying values of the independent variables. A violation of this assumption known as heteroscedasticity—can result

in inefficient estimators, questionable statistical conclusions, and diminished reliability in hypothesis testing..

To assess the presence of heteroscedasticity, the Breusch-Pagan test was conducted. This test evaluates whether the residuals maintain a constant variance, ensuring the robustness of the regression model. Identifying and addressing heteroscedasticity enhances the consistency of the study's findings by improving the precision of coefficient estimates and strengthening the validity of conclusions drawn from the analysis.

The findings of the heteroscedasticity test are shown in the following section.

Table 4.5: Pagan Test Results

chi2(1)	1.14
Prob > chi2	0.2863

Source: Author's computation from respondent's information

The results in table 4.5 show that the chi-squared test for heteroscedasticity revealed a chi2 value of 1.14 and a p-value of 0.2863. This outcome suggests that there is an absence of significant evidence of heteroscedasticity in the regression model. The null hypothesis positing constant variance among the residuals cannot be rejected, indicating that the assumption of homoscedasticity holds true in this analysis. A p-value greater than the conventional threshold of 0.05 reinforces the conclusion that it is essential that the error terms exhibit constant variance across all values of the independent variables, as this assumption underpins the reliability of the regression outcomes.

4.5 Multivariate Regression Analysis

This section outlines the findings of the multivariate regression analysis performed to assess the relationships between the independent variables and the dependent variable of timeliness, coverage, and impact and sustainability. This analytical approach enables the discernment of the influence of various factors on these key outcomes, providing a comprehensive understanding of their interactions and contributing insights for future strategies and improvements.

4.5.1 Timeliness

Table 4.6: Timelines Regression Results

Timeliness	Coefficient.	Std. Err.	T	P>t	[95% Conf. Interval]	
Efficiency and Speed	.2089774	.0925983	2.26	0.025	.0269081	.3910467
Security and Transparency	.2314097	.0860586	2.69	0.007	.062199	.4006204
Cost Effectiveness	.2576219	.0875963	2.94	0.003	.0853878	.429856
Accessibility and Awareness	.1861722	.0913514	2.04	0.042	.0065547	.3657896
Constant	2.991194	.0679692	44.01	0.000	2.857552	3.124837
Number of observations = 385 F (4, 380) = 23.21 Prob > F = 0.0000 R-squared = 0.1963 Adjusted R-squared = 0.1879 Root MSE = 1.3336						

Source: Author's computation from respondent's information

The results in Table 4.5.1 indicate meaningful correlations among the independent variables and the dependent variable, Timeliness. The coefficients show that Efficiency and Speed has a positive effect on Timeliness, with a coefficient of 0.209 (p = 0.025), suggesting that improvements in the efficiency and speed of mobile money services are associated with a noticeable increase in the timeliness of humanitarian aid delivery. Similarly, Security and Transparency (coefficient = 0.231, p = 0.007) and Cost Effectiveness (coefficient = 0.258, p = 0.003) also positively influence Timeliness, with both variables demonstrating strong statistical significance. These results imply that higher levels of security and transparency, along with cost-effective solutions, enhance the speed of aid delivery in humanitarian responses.

Additionally, Accessibility and Awareness is positively associated with Timeliness, indicated by a coefficient of 0.186 (p = 0.042). This suggests that as awareness and accessibility of mobile money services increase among beneficiaries, the timeliness of humanitarian aid also improves. The overall model demonstrates a strong fit with an F-statistic of 23.21 and a p-value of 0.0000, indicating that the independent variables together significantly explain the variability in Timeliness. The R-squared value of 0.1963 indicates that approximately 19.63% of the variance in Timeliness can be interpreted by the independent variables, which, while modest, highlights the significance of these indicators in influencing the effectiveness of humanitarian responses. The root mean square error (RMSE) of 1.3336 reflects the standard deviation of the residuals, suggesting a reasonable level of precision in the model's predictions.

4.5.2 Coverage

Table 4.7: Coverage Regression Results

Coverage	Coefficient	Std. Err.	T	P>t	[95% Conf. Interval]	
Efficiency and Speed	.228423	.0825608	2.77	0.006	.0660897	.3907563
Security and Transparency	.1753994	.07673	2.29	0.023	.0245308	.326268
Cost Effectiveness	.3133444	.078101	4.01	0.000	.1597801	.4669086
Accessibility and Awareness	.2823799	.081449	3.47	0.001	.1222326	.4425271
Constant	3.095013	.0606015	51.07	0.000	2.975857	3.214169
Number of observations = 385 F (4, 380) = 37.87 Prob > F = 0.0000 R-squared = 0.2850 Adjusted R-squared = 0.2775 Root MSE = 1.1891						

Source: Author's computation from respondent's information

Table 4.5.2 shows the regression analysis for the dependent variable Coverage which reveals significant relationships with the independent variables related to mobile money services. The results show that Efficiency and Speed positively influences Coverage, with a coefficient of 0.228 (p = 0.006). This indicates that enhancements in the efficiency and speed of mobile money services lead to improved coverage of humanitarian assistance, suggesting that faster and more efficient services can reach a broader segment of the population in need.

The variable Security and Transparency also has a positive effect on Coverage, with a coefficient of 0.175 (p = 0.023), emphasizing the importance of secure and transparent transactions in fostering trust among beneficiaries. Moreover, Cost Effectiveness shows a strong positive effect on Coverage, with a coefficient of 0.313 (p = 0.000), which suggests that cost-effective mobile money solutions significantly contribute to increasing the coverage of humanitarian aid. Finally, Accessibility and Awareness is positively correlated with Coverage, with a coefficient of 0.282 (p = 0.001). This finding underscores that raising awareness and improving access to mobile money services among beneficiaries can enhance the extent of humanitarian responses.

In general, the model demonstrates a robust fit, as indicated by an F-statistic of 37.87 with a corresponding p-value of 0.0000, confirming the significance of the predictors in explaining Coverage. The R-squared value of 0.2850 indicates that approximately 28.50% of the variability in Coverage is accounted for by the independent variables, which suggests a substantial effect but also indicates room for additional factors influencing Coverage to be explored. The root mean square error (RMSE) of 1.1891 reflects the average deviation of the predicted values from the observed values, signifying a reliable model for estimating Coverage in the context of humanitarian responses.

4.5.3 Impact and Sustainability

Table 4.8: Impact and Sustainability Regression

Impact and Sustainability	**Coefficient**	**Std. Err.**	**T**	**P>t**	**[95% Conf. Interval]**	
Efficiency and Speed	.2212799	.0472745	4.68	0.000	.1283275	.3142323
Security and Transparency	.2832104	.0439358	6.45	0.000	.1968228	.3695981
Cost Effectiveness	.1543296	.0447208	3.45	0.001	.0663984	.2422608
Accessibility and Awareness	.3495023	.0466379	7.49	0.000	.2578017	.4412029
Constant	2.861987	.0347005	82.48	0.000	2.793758	2.930216
Number of observations = 385 F (4, 380) = 118.86 Prob > F = 0.0000 R-squared = 0.5558 Adjusted R-squared = 0.5511 Root MSE = .68087						

Source: ***Author's computation from respondent's information***

The Table 4.5.3 shows regression analysis for the dependent variable Impact and Sustainability indicates that there is a strong relationship with the independent variables related to mobile money services. The results reveal that Efficiency and Speed significantly contributes to Impact and Sustainability, with a coefficient of 0.221 (p = 0.000). This suggests that improvements in the efficiency and speed of mobile money transactions can positively influence the long-term effectiveness and sustainability of humanitarian assistance programs.

Additionally, Security and Transparency demonstrates a strong positive impact, with a coefficient of 0.283 (p = 0.000). This highlights the critical role of secure and transparent systems in enhancing trust among beneficiaries, thereby contributing to the overall impact of the services provided. The variable Cost Effectiveness also shows a noteworthy positive relationship with Impact and Sustainability, evidenced by a coefficient of 0.154 (p = 0.001), indicating that cost-effective mobile money solutions can enhance the sustainability of aid

programs. Lastly, Accessibility and Awareness has the highest coefficient among the predictors at 0.350 (p = 0.000), underscoring the importance of raising awareness and ensuring accessibility to mobile money services for maximizing the impact and sustainability of humanitarian efforts.

The model demonstrates a strong overall performance, as evidenced by an F-statistic of 118.86 and a p-value of 0.0000, indicating that the independent variables significantly contribute to explaining the variation in the dependent variable. An R-squared value of 0.5558 implies that the model accounts for approximately 55.58% of the variance in Impact and Sustainability, highlighting its considerable explanatory strength. Furthermore, the adjusted R-squared value of 0.5511 confirms the model's robustness after adjusting for the number of predictors. The root mean square error (RMSE) of 0.68087 reflects a low average difference between observed and predicted values, supporting the model's reliability in estimating Impact and Sustainability.

4.6 Discussion of Findings

The findings of this study revealed that the efficiency and speed of mobile money services significantly enhance the timeliness of humanitarian aid delivery in Kismayu, Somalia. This aligns with the work of Wright et al. (2021), who also found that mobile money improves the speed of transactions, thereby increasing access to aid. However, while Wright et al. focused on urban settings, this study expands upon those findings by demonstrating that these benefits extend to rural areas, such as Kismayu. Additionally, this study addresses gaps left by Wright et al., as it explores not only the efficiency but also the sustainability of mobile money in the long-term delivery of humanitarian aid.

Security and transparency in mobile money transactions also had a positive influence on the timeliness of humanitarian response. This is consistent with Ochieng et al. (2023), who noted that mobile money enhances transparency, thereby promoting trust and speeding up aid distribution. However, Ochieng et al. focused more on the operational aspects of aid distribution within supply chains, whereas the current study brings a different perspective by emphasizing the direct experiences of beneficiaries and their perceptions of the timeliness of aid. As such, this study fills a conceptual gap by shifting focus toward the end recipients of aid.

The cost-effectiveness of mobile money services was another key factor found to positively impact the timeliness of humanitarian aid distribution. This complements the resultss of Kumar et al. (2023), who reported that mobile money reduces disbursement time during crises, thereby increasing the efficiency of aid distribution. While Kumar et al. centered their research on immediate financial needs during disaster response, this study broadens the context by showing that cost-effectiveness contributes to the ongoing efficiency of aid programs, particularly in rural and protracted humanitarian settings like Kismayu.

Additionally, accessibility and awareness of mobile money services were found to significantly enhance the timeliness of humanitarian aid delivery. This finding supports Karanja et al. (2022), who reported that mobile money improves access to aid, especially in remote

communities. However, while Karanja et al. focused on challenges such as digital literacy, the present study quantifies the positive effects of accessibility and awareness on the timeliness of aid delivery. This contributes a more comprehensive understanding of how mobile money services can be scaled in less digitally literate populations.

The influence of efficiency and speed was not limited to timeliness but also extended to the coverage of humanitarian aid. Mobile money services ensured that aid reached a broader population more quickly. This finding aligns with Bennett and Wavinya (2022), who found that mobile money enhances household resilience by providing timely access to resources. However, while Bennett and Wavinya did not analyze demographic variations, this study adds to the discourse by exploring how different demographic factors, such as income and education, affect the effectiveness of mobile money in expanding aid coverage.

Furthermore, security and transparency were also found to have a positive impact on aid coverage. This finding resonates with Ochieng et al. (2023), who emphasized that secure mobile money transactions build trust, thereby encouraging wider participation in aid programs. However, while Ochieng et al. centered their analysis on the operational side of humanitarian supply chains, this study adds to the literature by focusing on how security measures impact beneficiaries' trust and the broader reach of humanitarian aid.

Cost-effectiveness was another important driver of expanded coverage. Mobile money's affordability enabled aid organizations to distribute resources to more people. This finding echoes Mugisha et al. (2022), who noted that mobile money improves access to services such as healthcare during humanitarian interventions. However, this study goes further by linking cost-effectiveness not only to service access but also to the overall scalability of humanitarian aid programs, particularly in under-resourced environments like Kismayu.

Accessibility and awareness also played a crucial role in broadening the coverage of humanitarian aid. The more aware people were of mobile money services, the more effective these services became in reaching marginalized populations. This finding complements the work of Karanja et al. (2022), who found that mobile money improves aid delivery in rural areas. The present study builds on these findings by quantifying the impact of increased awareness and accessibility, thus offering a more robust understanding of how mobile money can expand the reach of humanitarian efforts.

Moreover, the study found that the efficiency and speed of mobile money services positively influenced the long-term impact and sustainability of humanitarian interventions. This aligns with Kumar et al. (2023), who reported that mobile money significantly reduces the time required for aid distribution, leading to greater beneficiary satisfaction. However, while Kumar et al. primarily focused on immediate disaster response, this study takes a broader view by examining how sustained efficiency and speed contribute to the ongoing success of humanitarian interventions in Kismayu, addressing a gap in Kumar et al.'s research.

Security and transparency were also found to enhance the sustainability of humanitarian aid. This finding is in agreement with Ochieng et al. (2023), who noted that transparent mobile money transactions improve accountability, which in turn fosters trust and promotes the long-term viability of aid programs. However, while Ochieng et al. concentrated on the operational side of humanitarian supply chains, the current study adds depth by focusing on how secure and transparent transactions improve beneficiaries' long-term perceptions of aid programs.

Cost-effectiveness further contributes to the sustainability of humanitarian interventions as affordable mobile money services ensure that aid organizations can continue delivering resources over an extended period. This supports Sharma et al. (2022), who found that mobile money plays a crucial role in post-disaster recovery, particularly in health interventions. However, while Sharma et al. focused on health outcomes, this study offers a more comprehensive analysis by showing how cost-effective mobile money services support the overall sustainability of various types of humanitarian aid, including food, healthcare, and education.

Finally, accessibility and awareness of mobile money services were discovered to have the most significant positive impact on the sustainability of humanitarian interventions. This in line with Gikunda et al. (2022), who reported that mobile money enhances food security in rural Kenya. The present study builds upon this by showing that increased accessibility and awareness can enhance the sustainability of aid programs across multiple sectors, thereby maximizing the long-term impact of humanitarian interventions in resource-constrained settings like Kismayu.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides an in-depth summary of the study's main findings, drawing conclusions from the analysis and suggesting policy actions and directions for future research. It integrates the results outlined in the preceding chapter, emphasizing the impact of mobile money services on humanitarian aid efforts in Kismayu, Somalia.

5.2 Summary of the Findings

Mobile money services have significantly revolutionized the way financial transactions are conducted, especially in developing regions such as Kismayu, Somalia. These digital platforms enable individuals to send and receive money, pay for goods and services, and manage their finances without the need for conventional banking systems. In areas where physical banking infrastructure is limited or non-existent, mobile money presents a powerful alternative. Its relevance is particularly evident in humanitarian contexts, where efficiency, security, cost-effectiveness, and accessibility are crucial in ensuring that aid reaches beneficiaries quickly, safely, and equitably.

The findings from this study underscore the growing significance of mobile money in enhancing the effectiveness of humanitarian response. The services not only streamline financial flows but also promote accountability and transparency, thereby building trust among stakeholders. The data analysis revealed that efficiency and speed of mobile money had a strong positive impact on both timeliness (coefficient = 0.209, p = 0.025) and coverage (coefficient = 0.228, p = 0.006). Furthermore, mobile money enhances the flexibility of aid programs, allowing implementing agencies to adjust quickly to changing field realities while minimizing administrative overheads. This aligns with the study's findings that faster movement of funds enhances coverage, with a positive correlation between timeliness and accessibility (r = 0.3533), indicating that more people are reached within shorter timeframes. Moreover, the enhanced efficiency contributed to the sustainability of humanitarian programs by fostering operational predictability and reducing dependency on manual systems. These findings are consistent with literature, which emphasizes that rapid financial access can be lifesaving in crisis situations, especially where response time directly influences survival outcomes.

The second objective focused on evaluating the role of security and transparency in mobile money platforms. The study found a significant positive relationship between these factors and all three humanitarian response outcomes. Secure systems ensured that aid was protected from fraud and misappropriation, thus instilling confidence among both beneficiaries and donors. Transparent financial transactions also facilitated tracking and auditing, which are essential in maintaining integrity and donor accountability. These aspects were statistically significant, with security and transparency positively impacting timeliness (r = 0.3582) and sustainability

(r = 0.6259). The consistency of this finding with global best practices in digital humanitarian finance suggests that building secure and transparent platforms is critical in maintaining the credibility and efficiency of humanitarian aid delivery. These attributes not only improve the timeliness and coverage of aid but also reinforce long-term sustainability through improved donor confidence and continuous funding.

The third objective sought to examine the cost-effectiveness of mobile money services in comparison to traditional delivery mechanisms. The results indicated that mobile money is a highly cost-effective option, particularly due to reduced overhead costs and logistical efficiencies. The regression analysis revealed that cost-effectiveness significantly impacted coverage (coefficient = 0.313, p = 0.000), with lower transaction costs ensuring that a greater portion of funds reached intended beneficiaries, thereby enhancing coverage and overall impact. The mean score for cost-effectiveness was 2.99 (SD = 1.01), signaling that respondents generally perceive mobile money as an affordable solution. Additionally, the affordability of these systems contributed to sustainability by making recurrent aid delivery financially feasible. Cost-effectiveness also allows humanitarian agencies to respond more flexibly to urgent needs without incurring prohibitive expenses. These findings are in line with earlier studies that highlight digital financial services as enablers of scalable and financially sustainable interventions in disaster and post-disaster settings.

The final objective of the study was to assess how accessibility and awareness of mobile money services influence humanitarian response. The results demonstrated that increased awareness among target communities and the ability to access mobile platforms significantly improved aid timeliness and reach. Beneficiaries who were familiar with mobile money were able to respond more quickly to aid disbursements, reducing transaction time and minimizing confusion. The analysis showed a moderate positive correlation between accessibility and awareness with both timeliness (r = 0.3533) and coverage (r = 0.4453), suggesting that awareness and accessibility play key roles in improving aid delivery. Accessibility also ensured that marginalized populations including women, elderly persons, and those in remote areas could participate in aid programs without facing institutional barriers. This inclusiveness strengthened the sustainability of humanitarian interventions, as it built community ownership and engagement. The findings underscore the need for robust awareness campaigns and technological inclusion strategies in digital humanitarian programming.

Overall, the study affirms that mobile money services play a transformative role in improving humanitarian response outcomes. By fostering faster aid delivery, improving coverage, and supporting long-term impact, mobile money platforms have become indispensable tools in modern humanitarian assistance. The positive associations across all four independent variables that is efficiency and speed, security and transparency, cost-effectiveness, and accessibility and awareness and the dependent outcomes of timeliness, coverage, and

sustainability, highlight the systemic relevance of digital financial services in fragile and crisis-affected contexts such as Kismayu, Somalia.

5.3 Conclusions of the Study

The study concluded that mobile money services significantly enhance the effectiveness of humanitarian response in Kismayu, Somalia. The findings demonstrated that the key dimensions of mobile money namely efficiency and speed, security and transparency, cost-effectiveness, and accessibility and awareness play a critical role in shaping the outcomes of aid delivery. These variables were found to be positively associated with improved timeliness, broader coverage, and stronger sustainability of humanitarian interventions. For instance, efficiency and speed was found to significantly improve timeliness (coefficient = 0.209, p = 0.025) and coverage (coefficient = 0.228, p = 0.006), underlining the crucial role of fast and effective digital financial services in humanitarian aid.

Among the variables assessed, security and transparency emerged as particularly influential in ensuring the credibility and reliability of aid transactions. In a region marked by political instability and conflict-related disruptions, secure and transparent platforms foster trust among beneficiaries and stakeholders. The correlation between security and transparency and sustainability (r = 0.6259) highlights how secure systems ensure that aid is protected from fraud and misappropriation, thus instilling confidence in both recipients and donors. When recipients feel confident that aid disbursements are protected from fraud and mismanagement, they are more likely to engage with and benefit from such platforms. This trust accelerates the acceptance and utilization of aid, thereby reducing delays and enhancing responsiveness in humanitarian programming. The regression results for security and transparency (coefficient = 0.231, p = 0.007) demonstrate how vital these factors are in improving the timeliness of aid delivery.

In addition, the study found that cost-effectiveness and accessibility are vital enablers of equitable and impactful aid delivery. Cost-effective digital platforms reduce overheads and allow resources to be redirected toward direct support for beneficiaries. The regression analysis showed that cost-effectiveness significantly impacted coverage (coefficient = 0.313, p = 0.000), with lower transaction costs ensuring that a greater portion of funds reached intended beneficiaries. Simultaneously, the accessibility of mobile money services ensures that marginalized and vulnerable groups such as those in remote or underserved areas are not excluded from receiving aid. The correlation between accessibility and awareness and coverage (r = 0.4453) indicates that improved access and awareness contribute to broader and more inclusive aid distribution. These findings underscore the importance of designing financial tools that are not only affordable but also inclusive and responsive to the socio-economic realities of affected populations.

The study further emphasized that the integration of mobile money services into formal humanitarian response frameworks contributes to long-term effectiveness and program sustainability. By enabling informed decision-making and promoting autonomy among

beneficiaries, mobile financial platforms support community resilience and encourage responsible resource use. The findings of this study, particularly the significant correlations with impact and sustainability (r = 0.6513 for accessibility and awareness), reinforce the notion that digital innovation is not only a tool for rapid emergency response but also a driver of sustained development in fragile settings.

To realize the full potential of mobile money in humanitarian contexts, the study advocates targeted investments in digital literacy, financial education, and technological infrastructure. Barriers such as limited internet access, weak mobile coverage, and low awareness must be addressed to expand reach and usability. Increasing digital literacy and improving technological infrastructure can enhance accessibility, as shown by the moderate positive correlation between accessibility and awareness and timeliness (r = 0.3533). Empowering users with the knowledge and skills to engage confidently with digital financial platforms ensures greater adoption and long-term value.

Moreover, the study highlights the importance of multi-sectoral collaboration. Effective partnerships between governments, humanitarian agencies, mobile network operators, and financial service providers are essential for scaling mobile money solutions. Strengthening policy frameworks and regulatory oversight enhances service delivery, mitigates fraud risks, and encourages innovation. Incorporating advanced technologies such as blockchain for transaction tracking and artificial intelligence for fraud detection can further improve system reliability, transparency, and user confidence. These innovations align with the study's findings, which point to the importance of security and transparency in promoting trust among stakeholders.

In conclusion, the findings affirm that mobile money services have transformed the landscape of humanitarian aid delivery in Kismayu. When designed and implemented strategically, these services offer a powerful combination of speed, security, affordability, and inclusivity. As humanitarian needs continue to evolve, mobile money platforms provide a flexible and scalable solution that not only addresses immediate crises but also contributes meaningfully to long-term resilience and sustainable development within vulnerable communities. The positive associations across all independent variables and the dependent outcomes underscore the importance of incorporating mobile money into humanitarian frameworks, ensuring that aid is not only delivered more efficiently but also more inclusively and sustainably.

5.4 Policy Recommendations

The findings of this study offer critical insights that can inform targeted policy actions to strengthen the effectiveness of humanitarian aid delivery in Kismayu, Somalia. Mobile money services have emerged as pivotal tools for transforming humanitarian operations, particularly in fragile and resource-constrained environments. As such, policymakers are encouraged to prioritize the structured integration of mobile money platforms into formal humanitarian response strategies. Evidence from this study shows that key attributes of mobile money such

as efficiency, speed, security, and transparency are directly linked to improved timeliness, broader coverage, and increased sustainability of aid delivery.

To maximize these benefits, it is recommended that governments, development agencies, and humanitarian organizations work collaboratively to foster strong partnerships with mobile money service providers. Such collaborations can streamline operational processes, reduce administrative inefficiencies, and facilitate faster disbursement of aid to affected populations. This shift from traditional aid modalities to digital financial services can mitigate bureaucratic bottlenecks and logistical delays that often hinder timely and equitable response in emergency settings.

Moreover, the study highlights the importance of cost-effectiveness and accessibility as key enablers of inclusive aid delivery. Policymakers should design and implement targeted interventions to expand mobile money access, particularly in remote, marginalized, and underserved areas. This may involve expanding mobile network infrastructure, subsidizing operational costs for mobile agents, and offering fiscal or logistical incentives to service providers operating in hard-to-reach locations. These efforts would bridge the digital divide and ensure that vulnerable populations—including the elderly, women, youth, and people with disabilities—are not excluded from receiving timely assistance.

Community engagement and awareness campaigns are also essential for encouraging wider adoption of mobile money services. Informational drives should be culturally sensitive, linguistically accessible, and strategically deployed to raise public understanding of how mobile money platforms operate and what benefits they offer in humanitarian contexts. By demystifying digital financial tools and addressing common misconceptions, these campaigns can significantly enhance user confidence and participation.

Another crucial recommendation emerging from the study is investment in digital literacy and training programs. Limited technical skills and digital unfamiliarity remain significant barriers to the adoption and effective use of mobile money services. Therefore, capacity-building efforts should target both aid recipients and local stakeholders, equipping them with the necessary knowledge to navigate and utilize mobile financial tools confidently. Programs may include hands-on training workshops, mobile-based learning modules, or peer support systems to reinforce long-term learning and behavioral change.

Furthermore, it is essential that mobile money platforms be designed with inclusivity and user-friendliness in mind. This means developing interfaces that are intuitive and accessible to individuals with varying literacy levels, as well as supporting transactions in local languages and dialects. By tailoring digital tools to the specific needs and contexts of local communities, humanitarian agencies can ensure that no one is left behind in the digital aid ecosystem.

In summary, this study recommends a comprehensive policy approach that supports infrastructure development, public awareness, capacity building, and technological innovation. Policymakers should also advocate for the development of supportive regulatory frameworks that facilitate the secure and transparent use of mobile financial services in humanitarian operations. Aligning national financial inclusion strategies with humanitarian objectives can

further ensure coherence, sustainability, and impact. Ultimately, by addressing access gaps, enhancing user knowledge, and fostering institutional partnerships, mobile money can be transformed from a transactional tool into a strategic asset for resilience, recovery, and long-term development in crisis-affected regions like Kismayu

5.5 Further Areas of Study

The dynamic role of mobile money services in humanitarian response presents a promising foundation for continued scholarly inquiry. While this study focused primarily on the influence of mobile money on aid delivery outcomes such as timeliness, coverage, and sustainability, several critical dimensions remain underexplored and warrant further research. Understanding the long-term transformative impact of mobile money services on community resilience, economic recovery, and local development would provide a more holistic view of their value beyond immediate humanitarian needs.

Future research could investigate the post-crisis economic implications of mobile money, particularly its role in fostering household financial stability, promoting entrepreneurship, and improving access to markets. By assessing how beneficiaries transition from receiving digital aid to leveraging mobile financial services for income generation or business activities, researchers could uncover vital linkages between financial inclusion and long-term development. Such studies would be invaluable in informing policy frameworks aimed at integrating emergency response systems with sustainable economic recovery strategies.

Another essential area for future exploration involves analyzing barriers to access and usage among specific demographic groups. While this study identified accessibility and awareness as important factors, a more granular investigation could explore disparities along lines of age, gender, education level, and socio-economic status. For example, do women or older adults face unique challenges in adopting mobile money platforms due to cultural norms, household power dynamics, or literacy limitations? Addressing these questions would inform the development of targeted and inclusive digital solutions that ensure equitable access to financial technologies across all segments of the population.

Additionally, exploring the influence of cultural beliefs, language, and social norms on the perception and adoption of mobile money services in humanitarian settings like Kismayu could offer critical insights. Local attitudes toward technology, trust in financial systems, and community-led practices may either facilitate or hinder adoption. Research in this domain could support the design of more effective communication strategies and training programs that resonate with local realities and address existing misconceptions. By embedding cultural competence into the rollout of mobile money initiatives, humanitarian organizations can enhance engagement, trust, and impact.

Further research could also examine the role of education and digital literacy in optimizing the use of mobile money services. While this study recommends investing in training and awareness, empirical investigations into the most effective methods for delivering such education would be highly beneficial. Comparative studies could assess the impact of various approaches such as in-person workshops, mobile-based learning, or peer mentoring on beneficiary understanding and platform usage.

In addition, as mobile money technology evolves, there is a growing need to explore the intersection of mobile financial services with emerging digital tools such as artificial intelligence, blockchain, and biometric authentication. Research into how these technologies can improve transaction security, user verification, and fraud detection within humanitarian operations could further enhance efficiency and trust. Understanding the implications of integrating such innovations into existing aid delivery systems will be critical for future-proofing humanitarian responses in increasingly complex environments.

In conclusion, further research should aim to bridge the knowledge gaps around equity, inclusion, sustainability, and innovation in mobile money-enabled humanitarian response. By examining the broader economic, social, and technological dimensions of digital financial services, scholars and practitioners can co-create more adaptive, inclusive, and resilient humanitarian systems. These efforts will ensure that mobile money continues to evolve from a transactional tool into a transformative force for long-term development and human security in crisis-affected regions such as Kismayu, Somalia.

REFERENCES

Adhiambo, E., & Owino, S. (2023). Enhancing food security among vulnerable populations through mobile money: A longitudinal study. Food Security Journal, 15(3), 789-803.

Ahmad, A. H., Green, C., & Jiang, F. (2020). Mobile money, financial inclusion and development: A review with reference to African experience. *Journal of economic surveys*, *34*(4), 753-792.

Ali, M., Khamis, A., & Noor, Z. (2023). Mobile money and educational support during humanitarian crises: A case study of refugee camps. Journal of Education and Humanitarian Studies, 11(2), 98-113.

Aron, J., & Muellbauer, J. (2019). The Economics of Mobile Money: harnessing the transformative power of technology to benefit the global poor. Centre for the Study of African Economies.

Atar, E., Hossain, F., & Sumnaya Kumasey, A. (2022). Public service provision for Syrian refugees in Turkey: challenges and prospects. Asian journal of political science, 30(1), 82-98.

Bennett, R., & Wavinya, M. (2022). The impact of digital financial services on the resilience of households affected by disasters in Kenya. Disaster Management Journal, 9(1), 101-118.

Bryman, A., & Cramer, D. (2009). *Quantitative data analysis with SPSS 14, 15 & 16: A guide for social scientists*. Routledge/Taylor & Francis Group.

Chu, A. B. (2018). Mobile technology and financial inclusion. In Handbook of Blockchain, Digital Finance, and Inclusion, Volume 1 (pp. 131-144). Academic Press.

Gikunda, R., Mukulu, A., & Ndung'u, E. (2022). The role of mobile money in promoting food security in rural Kenya during humanitarian responses. Journal of Agricultural Economics, 10(4), 284-301.

Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018). On the fintech revolution: Interpreting the forces of innovation, disruption, and transformation in financial services. Journal of management information systems, 35(1), 220-265.

Holm-Nielsen, P. V. THE INFLUENCE OF CASH ASSISTANCE ON DISASTER RESPONSE AND THE HUMANITARIAN SYSTEM.

Juntunen, E. A., Kalla, C., Widera, A., & Hellingrath, B. (2023). Digitalization potentials and limitations of cash-based assistance. International Journal of Disaster Risk Reduction, 97, 104005.

Karanja, T., Mwangi, P., & Gathua, K. (2022). Challenges and opportunities of using mobile money for humanitarian aid in rural Kenyan communities. Journal of Development Studies, 58(4), 635-651.

Kitimbo, A. (2021). Mobile money and financial inclusion of migrants in sub-Saharan Africa. In Research Handbook on International Migration and Digital Technology (pp. 251-266). Edward Elgar Publishing.

Kumar, S., Lee, J., & Venkatesh, R. (2023). Enhancing disaster response efficiency with mobile money in East Africa. International Journal of Disaster Risk Management, 48, 150-165.

Lashitew, A. A., Van Tulder, R., & Liasse, Y. (2019). Mobile phones for financial inclusion: What explains the diffusion of mobile money innovations? Research Policy, 48(5), 1201-1215.

Magakwe, J. (2024). Curbing Corruption, Bribery, and Money Laundering in Public Procurement Processes: An International Perspective. In Corruption, Bribery, and Money Laundering-Global Issues. IntechOpen.

Mohammed, A. M. (2019). Exploring the Relationship between Mobile Money Development and Economic Growth: Evidence from Nigeria.

Mugisha, E., Karamagi, H., & Luwaga, R. (2022). Mobile technology and health interventions in humanitarian settings: A mixed-methods approach. Global Health Action, 15(1), 1234567

Mwega, F., & Wambua, P. (2023). Mobile money in humanitarian aid distribution during the COVID-19 pandemic in Kenya: A case study approach. International Journal of Disaster Risk Reduction, 42, 101-110.

Njuguna, W., Gachanja, J., & Karanja, L. (2023). Adoption of mobile money services among smallholder farmers receiving humanitarian aid in Uganda. African Journal of Agricultural Research, 18(1), 36-48.

Ochieng, J., Olweny, M., & Nyongesa, M. (2023). Integration of mobile money in humanitarian supply chains: Improving transparency and accountability. Journal of Humanitarian Logistics and Supply Chain Management, 13(2), 123-139.

Pueblos, K. J., & Timoteo Jr, E. (2023). Impact of E-Payment Platforms among Selected Micro-Entrepreneurs in Taguig City: Determinants for Enhanced Guidelines in Collection and Disbursement Process. Indonesian Journal of Business Analytics, 3(4), 1401-1424.

Qatawneh, N., Al-Okaily, A., Al-Okaily, M., & Ur Rehman, S. (2024). Exploring the antecedent factors of continuous intention to use mobile money: insights from emerging markets. Digital Policy, Regulation and Governance.

Sürücü, L., & Maslakçi, A. (2020). Validity and reliability in quantitative research. *Business & Management Studies: An International Journal*, *8*(3), 2694-2726.

Wright, A., Smith, L., & Johnson, M. (2021). The effectiveness of mobile money in enhancing the delivery of humanitarian aid in crisis situations. Journal of Humanitarian Affairs* 12(3), 245-259.

APPENDICES

Appendix A: Introduction Letter

Dear Sir/Madam,

RE: LETTER OF INTRODUCTION

I trust this letter finds you in good health. My name is Abdiaziz Sheik Hassan, a master's student at Mount Kenya University, currently undertaking a research study entitled *"Influence of Mobile Money Services on Humanitarian Response in Kismayu, Somalia."*

I am kindly requesting your permission to conduct this study within your organization. The research is strictly for academic purposes, and all responses will be treated with the highest level of confidentiality.

Your support and cooperation in facilitating this research will be highly appreciated. I look forward to your positive response.

Yours sincerely

Abdiaziz Sheik Hassan
Email: abdiazizukash23@gmail.com

Appendix B: Research Questionnaires

THE INFLUENCE OF MOBILE MONEY SERVICES ON HUMANITARIAN RESPONSE (A CASE STUDY OF KISMAYU-SOMALIA)

This questionnaire explores the role of mobile money services in humanitarian response efforts in Kismayu, Somalia. Your insights are crucial for optimizing the effectiveness of aid delivery. All responses are confidential and used solely for academic purposes. Thank you in advance for your time and participation.

Do you agree to participate? Please tick:

Yes [ ] No [ ]

Part A: Demographic Information

1. What is your gender?
   1=Male [ ]
   2=Female [ ]
2. What is your age group?
   1= 18-25 [ ]
   2= 26-35 [ ]
   3= 36-45 [ ]
   4 = 46-55 [ ]
   5 = 55 and above [ ]
3. **What is your role?**
   1= Beneficiary [ ]
   2= Authority/Organization representative [ ]
4. What is your highest level of education?

   1= Primary [ ]
   2= Lower Secondary [ ]
   3= Upper Secondary [ ]
   4= Tertiary [ ]
5. Which village are you from?
   1=Farjano [ ]
   2=Fanoole [ ]
   3= Guulwade [ ]
   4=Luglow [ ]
   5= Bulagadud [ ]

6. Have you or your organization used mobile money services for humanitarian aid distribution?

1= Yes [ ]

2= No [ ]

Section B: Efficiency and Speed

7. Please indicate the extent of your satisfaction with the following statement regarding Efficiency and Speed. (Tick (√) the appropriate response using the scale below: Key: 1=Very Dissatisfied 2=Dissatisfied 3=Neutral 4=Satisfied 5=Very Satisfied.)

Efficiency and Speed	**Very Dissatisfied**	**Dissatisfied**	**Neutral**	**Satisfied**	**Very Satisfied**
1. You were satisfied with the speed of aid delivery using mobile money services?					
2. Mobile money services have significantly improved the speed of aid delivery in Kismayu.					
3. The efficiency of mobile money services meets the needs of aid distribution effectively.					
4. I believe mobile money facilitates faster responses in emergencies.					
5. Mobile money services reduce delays in aid distribution.					
6. Overall, I feel that mobile money services enhance the effectiveness of					

humanitarian responses.					

Section C: Security and Transparency

8. Please indicate the extent to which you agree or disagree with the following statement regarding Security and Transparency. (Tick (√) the appropriate response using the scale below. Key: 1 = Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly Disagree.)

Security and Transparency	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1. You felt secure when using mobile money services?					
2. Mobile money services increase transparency in the distribution of humanitarian aid.					
3. The use of mobile money helps to reduce corruption in humanitarian aid distribution.					
4. The level of information provided about mobile money services ensures transparency in aid distribution.					
5. I trust that mobile money services protect my personal information during transactions.					
6. I believe that mobile money services improve accountability in aid distribution processes.					

Section D: Cost Effectiveness

9. Please indicate the extent to which you agree or disagree with the following statement regarding Leadership and Management Practices. Key: 1=Strongly Agree, 2=Agree, 3=Neutral, 4= Disagree, and 5=Strongly Disagree

Cost Effectiveness	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1. Mobile money services are cost-effective for aid distribution compared to traditional methods?					

2. Mobile money services help in reducing the overall costs of humanitarian response.					
3. The savings from using mobile money services can be redirected towards other humanitarian efforts.					
4. Using mobile money has improved the financial sustainability of humanitarian efforts.					
5. Overall, I believe that mobile money enhances the cost-effectiveness of humanitarian aid delivery.					
6. I find mobile money services to be a valuable tool for reducing operational costs in humanitarian response.					

Section E: Inclusivity and Accessibility

10. Please indicate the degree to which you agree or disagree with the following statement concerning accessibility and awareness. Key: 1=Strongly Agree, 2=Agree, 3=Neutral, 4= Disagree, and 5=Strongly Disagree

Inclusivity and Accessibility	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1. Mobile money services in Kismayu are inclusive of all individuals regardless of their gender, age, or socio-economic status.					
2. The design of mobile money services considers the needs of vulnerable populations such as the elderly, disabled, or those with low literacy levels.					
3. Mobile money services in Kismayu are easily accessible to people living in remote or rural areas.					
4. I believe that mobile money services are equitably distributed among different communities within Kismayu.					

5. The inclusivity of mobile money services improves its utilization in humanitarian aid efforts.					
6. Training or support on using mobile money services is accessible to all segments of the population, including marginalized groups.					

Section F: Humanitarian Response (Timeliness, Coverage and Impact and Sustainability)

11. Please specify the extent to which you agree or disagree with the statement below in relation to humanitarian Response. Key: 1=Strongly Agree, 2=Agree, 3=Neutral, 4= Disagree, and 5=Strongly Disagree

Humanitarian Response (Timeliness, Coverage and Impact and Sustainability)	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1. Mobile money services ensure timely delivery of humanitarian aid.					
2. The use of mobile money has improved the coverage of humanitarian assistance in Kismayu.					
3. Mobile money services enhance the overall impact of humanitarian aid efforts.					

4. The effectiveness of humanitarian response has improved due to the integration of mobile money services.					
5. I feel that mobile money contributes to the sustainability of humanitarian initiatives.					

Thank you for your participation and valuable insights. Your input will significantly contribute to understanding the role of mobile money services in humanitarian response in Kismayu, Somalia. Your feedback will help inform strategies aimed at improving aid delivery efficiency and effectiveness, ultimately enhancing the resilience and well-being of communities in crisis situations.

Appendix C: NACOSTI Letter

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Date of Issue: **31/January/2025**

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Appendix C :Field Entry Authorization

DOWLAD GOBOLEEDKA JUBALAND
EE SOOMAALIYA
WASAARADDA GARGAARKA
IYO MAAREYNTA MUSIIBOOYINKA

JUBALAND STATE OF SOMALIA
MINISTRY OF HUMANITARIAN AFFAIRS AND
DISASTER MANAGEMENT

دولة إقليم جوبالاند الصومالية
وزارة الشؤون الإنسانية
وادارة الكوارث

Ref/Som/Jss/Mohadm/00167/2025 Date: 29/03/2025

TO WHO IT MAY CONCERN

SUBJECT: RESEARCH AND FIELD DATA COLLECTION IN KISMAYO DISTRICT

Abdiaziz sheikh Hassan with Registration number **MSCPM/2020/61547** pursuing master of science in management, department of Management in the school of Business and Economics in mount Kenya university, Nairobi campus through distance learning process is hereby permitted to carry on research and field data collection in Kismayo district under Jubaland state from **1st March to 31st march 2025** that's authorized by the ministry of Humanitarian and disaster management **(MOHADM)** in Jubaland state of Somalia.

For any further information or clarification, please do not hesitate to contact me.

Sincerely,

Abdirahman Mohomed Mohamud
Admin, Finance and HR Director

Ministry of Humanitarian Affairs and Disaster Management

Jubaland State of Somalia.