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EFFECT OF M-PESA USAGE DIMENSIONS ON HOUSEHOLD RESILIENCE AMONG WOMEN VEGETABLE VENDORS IN WESTLANDS CONSTITUENCY, NAIROBI COUNTY

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REGISTRATION NO. 167732

A RESEARCH DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN DEVELOPMENT FINANCE AT STRATHMORE BUSINESS SCHOOL AT STRATHMORE UNIVERSITY IN NAIROBI, KENYA

JUNE 2026

Declaration

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.

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Approval

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Abbreviations and Acronyms

ANOVA	Analysis of Variance
KNBS	Kenya National Bureau of Statistics
MMTS	Mobile Money Transfer Services
NACOSTI	National Commission for Science, Technology and Innovation
NGO	Non-Governmental Organization
POS	Point of Sale
ROA	Return on Assets
ROSCA	Rotating Savings and Credit Associations
SMEs	Small and Medium-Sized Enterprises
SPSS	Statistical Package for the Social Sciences
VIF	Variance Inflation Factor

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Definition of Key Terms

M-Pesa	A mobile money platform that enables users to send and receive money, make payments, save funds, access credit, and participate in digital financial transactions using mobile phones without necessarily requiring a conventional bank account (Safaricom, 2025).
M-Pesa Payment Services	The use of M-Pesa to facilitate business and household financial transactions, including receiving customer payments, paying suppliers, and transferring funds electronically through mobile devices (Yao et al., 2023).
M-Pesa Savings Functionalities	Digital savings services provided through M-Pesa platforms such as M-Shwari that enable users to accumulate and store funds securely for future consumption, investment, or emergency needs (Wachira, 2023).
M-Pesa Digital Credit Access	The ability of users to obtain short-term loans and overdraft facilities through M-Pesa-linked products such as M-Shwari and Fuliza without requiring traditional collateral or extensive loan processing procedures (Magale, 2024).
M-Pesa Group Contribution Platforms	Mobile-enabled financial platforms that facilitate collective saving and contribution arrangements such as chamas, allowing members to make regular contributions, access pooled funds, and support one another financially through digital channels (Tiony, 2024).
Household Resilience	The capacity of a household to anticipate, withstand, adapt to, and recover from economic, social, or environmental shocks while maintaining essential functions, welfare, and livelihood activities (Rakauskienė et al., 2025).
Women Vegetable Vendors	Women engaged in the buying and selling of fresh vegetables within informal or semi-formal markets as a primary source of household income and livelihood support (KNBS, 2021).
Mobile Money	A digital financial service that allows users to store, send, receive, and transact money electronically through mobile devices without the need for physical cash transactions (Abubakar, 2024).

Financial Inclusion	The accessibility and utilization of affordable, appropriate, and formal financial products and services by individuals and businesses, particularly those traditionally excluded from the formal financial system (World Bank, 2024).
Informal Sector	Economic activities and enterprises that operate outside formal regulatory, taxation, and employment frameworks but contribute significantly to employment and income generation (International Labour Organization [ILO], 2024).

Abstract

Women vegetable vendors constitute a substantial share of Kenya's informal sector, with estimates indicating that women account for approximately 50–60% of all fresh produce traders in urban markets. Despite their significant contribution to household welfare and local food systems, many operate under precarious economic conditions that limit their ability to withstand shocks and build long-term resilience. Mobile money platforms such as M-Pesa have become central to daily financial transactions, presenting an opportunity to strengthen household resilience among women engaged in informal trade. Nevertheless, there was inadequate empirical evidence on how different dimensions of M-Pesa usage contribute to household resilience among women vegetable vendors. This study examined the effect of M-Pesa usage dimensions on household resilience among women vegetable vendors in Westlands Constituency, Nairobi County. Specifically, the study investigated the effects of M-Pesa payment services, M-Pesa savings functionalities, M-Pesa digital credit access, and M-Pesa group contribution platforms on household resilience. The study was anchored on the Diffusion of Innovations Theory and the Resilience Theory. A descriptive cross-sectional survey design was adopted. Data were collected using structured questionnaires administered to women vegetable vendors actively using M-Pesa services within the five wards of Westlands Constituency. The collected data were analysed using descriptive and inferential statistical techniques with the aid of SPSS. The findings established that all four dimensions of M-Pesa usage positively influenced household resilience. The study further found that M-Pesa savings functionalities had the strongest influence on household resilience, followed by digital credit access, group contribution platforms, and payment services. The study concluded that M-Pesa usage plays a significant role in enhancing household resilience among women vegetable vendors by improving their ability to manage daily expenses, respond to emergencies, and sustain income-generating activities. The study recommends that policymakers and mobile financial service providers strengthen access to mobile savings products, enhance digital credit solutions tailored for informal-sector users, expand financial literacy programs, and support the development of digital group-based financial platforms. Future studies should adopt longitudinal research designs and incorporate additional variables such as financial literacy and income levels to provide deeper insights into household resilience.

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Keywords: M-Pesa, Mobile Money, Household Resilience, Women Vegetable Vendors, Digital Financial Services, Financial Inclusion, Westlands Constituency, Nairobi County.

Chapter One: Introduction

1.1 Background of the Study

Informally employed women, particularly those working as informal vegetable sellers, endure precarious livelihoods on a global scale, defined by volatile income streams, limited access to formal credit, and minimal social protection (Ojarikre et al., 2024). They remain financially marginalized and lack access to formal financial services, trapping them in a cycle of economic and environmental shocks that increases their vulnerability to poverty and food insecurity (Rets'epile & Matamanda, 2023). Despite the accolades that mobile money systems have received regarding financial inclusion and resilience, informal sector women still cannot fully grasp the benefits of such services owing to low levels of digital literacy, underlying sociocultural barriers, financial infrastructural difficulties, and other economically motivated gaps (Mishra & Choudhury, 2025). Research conducted in the Global South has shown the potential of digital finance on saving culture and access to safeguarding money, but the impact among women in informal trades remains inconclusive and under-researched (Udohaya, 2025).

Regionally, SSA rose as a leader in mobile money innovation, with mobile money platforms restyling access to payments, credit, and savings for low-income populations (Abubakar, 2024). In nations like Nigeria, Ghana, and Tanzania, there is evidence that mobile payment services and digital credit products can help women entrepreneurs smooth cash flows, acquire working capital, and invest in household welfare (Cordes et al., 2014). Mobile crowd-contributing platforms, especially digital versions of ROSCAs, have been found to enhance social capital and coping strategies for economic shocks (Siddika and Sarwar, 2024). Yet even as access to these services improves access for women traders in African cities, many were unable to adopt mobile money owing to infrastructural difficulties, social and cultural constraints, and targeted financial literacy (Zhanda et al., 2022). Remarkably, most studies at the regional level have treated mobile money as a widespread innovation rather than disaggregating it into specific constructs, and that along the gender lines across the different categories of the informal trade.

In Kenya, mobile money platforms, notably M-Pesa, altered how people manage their finances, making it possible for the vast majority to save, send, receive, and borrow money without the necessity of a bank account (Nyokwoyo, 2024). Among those who have embraced this innovation

are women vegetable vendors, a crucial part of the informal economy. Many of them are the primary providers for their households, balancing their trade with family responsibilities amid unpredictable incomes, rising living costs, and limited access to formal safety nets (KNBS, 2021). Although both genders participate in vegetable vending, women lead the sector, making up more than half of all vendors in urban open-air markets (Odiyo & Gatobu, 2025). This dual burden as entrepreneurs and caregivers leaves them especially vulnerable to financial shocks, whether it's illness, school fees, or price fluctuations (Dudi, 2024). Considering these challenges, gaining deeper insight into how mobile money platforms like M-Pesa support their household resilience is not just timely; it's a necessary step for shaping inclusive economic policies (Omego, 2024).

Household resilience has become increasingly central in development scholarship. It is understood as a multidimensional measure of how households absorb, adjust, and recover from shocks while still preserving their overall welfare (Zhang et al., 2024). This resistance is observed in the ability of households to cope with crises, to continue with the day-to-day activities of life, maintain income generation activities, and sustain livelihoods in the face of, for example, illness, high prices, and lack of food or a natural disaster (Rakauskiene et al., 2025). Among women who sell vegetables on the informal markets of Kenya, resilience is frequently evident in their ability to keep their stalls open even if the markets are unpredictable, keep their children in school, pay medical bills, and gather food for their families daily. In practice, researchers assess household resilience by signs such as how regularly bills are paid, responsiveness to emergencies, or business serving through bad times (Ma et al., 2024). These adjustments are particularly relevant in informal urban areas where there is still poor or no access to formal credit or insurance (Nyokwoyo, 2024).

M-Pesa was selected for this study because it remains the dominant mobile money platform in Kenya, accounting for over 90 percent of all mobile money transactions in the country (Mwangi, 2024). While other platforms such as Airtel Money and T-Kash exist, their market penetration and user adoption are relatively limited, especially within informal urban markets. M-Pesa plays a significant role in strengthening household resilience, particularly when viewed through four key dimensions of its use: mobile payments, savings options, digital credit, and group contribution platforms (Salami, 2024). For many women vendors, the ability to receive payments instantly and securely has reduced the risks associated with handling cash, while also opening the door to a broader customer base, especially those who prefer cashless transactions (Nderitu, 2024). These

features help improve daily sales flow, save time, and simplify recordkeeping, all of which are critical for running a stable business in an unpredictable environment (Markus & Nan, 2020).

Beyond payments, M-Pesa's savings tools give vendors a simple way to build up small but regular savings, helping them weather emergencies and make future-oriented choices, whether reinvesting in their business or paying school fees (Mwangi, 2024; Omego, 2024). The digital credit services like Fuliza and M-Shwari offer a lifeline during difficult times, providing quick access to funds without the paperwork or collateral demanded by traditional lenders (Tiony, 2024; Nyella, 2024). Additionally, M-Pesa's group contribution platforms have modernized how women participate in chamas, digitizing collective savings and lending within trusted networks, which not only boosts financial support but reinforces the social bonds that many rely on during hard times. These digital ROSCAs allow vendors to borrow lump sums, fund school fees, and support each other during crises (Markus & Nan, 2020; Asongu et al., 2024).

Scholarly work on mobile money in Kenya has frequently treated M-Pesa as a single entity, overlooking the distinct impacts of its various features on household resilience. While digital credit can provide immediate financial relief and group contributions may foster long-term stability through collective backing, few studies have differentiated these effects, especially among women engaged in informal urban trade (Magale, 2024; Wachira, 2023). Moreover, knowledge about the influence of market location, daily cash flow, and digital infrastructure access, and how these variables profile how women vegetable vendors utilize and benefit from the specific M-Pesa services. This is an imperative literature gap. Enhancing household resilience will require contemplating not only access to aiding innovations like M-Pesa, but also how the realities on the ground shape actual utilization of these innovations, encompassing social norms and vendor informal networks, and the problematic work women perform in the home and in the marketplace (Musembi, 2024; Moi, 2025).

Nairobi County Westlands Constituency served as a fascinating area to survey the mobile money effect on household resilience. It comprises informal business centres, uneven infrastructural development, and a relatively dense concentration of women informal traders in the wards of Kitisuru, Parklands/ Highridge, Kangemi, Mountain View, and Karura. Each of the wards has a unique socio-economic profile, differing in the extent of digital penetration, level of vendor

concentration and organized commerce, and access to financial services. This variation makes Westlands a fascinating case to study how differing local conditions within a single urban area shape M-Pesa usage and its impact on resilience. While Tiony (2024) and Nyokwoyo (2024) examined the impact of mobile money on Nairobi's economy, not much work has been done on Westlands as an urban microcosm. Westlands is undergoing digital and infrastructural transformations, which can provide other Sub-Saharan African cities insights on how to design tailored, scalable interventions.

1.1.1 M-Pesa Usage Dimensions

Mobile money use gained substantial interest in various disciplines due to its implications for financial inclusion, as well as its impact on business and household survival in high-risk communities (Markus & Nan, 2020). In 2007, M-Pesa was launched in Kenya; it was estimated by a minority as a disruptor in the dynamics of mobile money services globally, from a basic money transfer solution into a low-income entrepreneurs' saving, borrowing, and group finance systems access (Mwangi, 2024). The core uses include mobile payments, mobile savings, digital credit, and a group contributions platform by many women in the informal economy and finance management daily (Foster, 2024). Together, they serve not only transactional requirements but also support a broader spectrum of financial planning and security for users over time (Nderitu, 2024).

M-Pesa utilization is considered in four major operational dimensions. First, payments with M-Pesa, namely the extensive utilization of mobile money to pay for daily sales and purchases by customers, allows sellers to minimize the risk associated with cash payment improve the speed and efficiency of transactions (Khoza et al., 2024). The second feature is M-Pesa's saving features that enable sellers to save in small increments in a safe and easy way, build assets, and have stronger protection against unexpected events at the household or enterprise level (Salami, 2024). The third is access to digital credit services such as Fuliza or M-Shwari, which give quick, collateral-free loans that support and/or enable day-to-day business operations when income is low or meets sudden emergencies (Jepkomen et al., 2024). Fourthly, M-Pesa mobile money group facilitator platforms, such as chamas, support informal collective saving mechanisms by creating a smooth and transparent way of placing regular monetary contributions and availing funds to

members for investment and emergency use, thereby promoting social and financial resilience (Nyella, 2024).

This study takes four aspects of mobile money use as independent variables, as each is measured by indicators that are specifically designed for how women vegetable vendors experience their everyday life. These are the frequency and value of mobile payments, regularity and extent of savings from mobile portals, the quantity and size of mobile credit facilities utilized, and the frequency and volume of group contributions via mobile money (Asongu et al., 2024). Through an examination of these parameters, the research aims to ascertain what specific dimensions of mobile money usage matter for household resilience. The results seek to provide empirical guidance to the policymakers, financial service providers, and development partners who are interested in boosting mobile fiscal inclusion and women vendors' economic empowerment in Westlands Constituency, Nairobi.

1.1.2 Household Resilience

Household resilience is now a dominant theme in development and social research; it is considered an important lens through which to explore how families manage and survive economic, social, and environmental shocks (Zhang et al, 2024). At its core, it depends on how well a family can regain or maintain a sense of well-being despite problems such as the unpredictability of income, variations in weather, or fluctuations in markets (Rakauskiene et al., 2025). Grounded in resilience theory, the concept highlights the mobilization by firms of material and immaterial strategies of coping with pressure, change, and maintaining production (Quételet al., 2022). It is judgmental and extends beyond balancing costs, avoiding the sole consideration of income to focus instead on the other dimensions of social capital, relationships, and the capacity to react in ways that nurture long-term recovery and upward social mobility (Salisbury et al., 2023).

Practically, household resilience is essentially quantitatively assessed via various indicators capturing its multidimensionality. Scholars have considered what happens if a household is forced to keep expenditure constant, pay the essentials such as health care and school fees, and save for a small investment for the future, or invest a little (Ma et al., 2024). Other researchers have focused on coping strategies, for example, early access to emergency cash via mobile money and the

possibility of being able to generate income after a loss or for a negative shock (Nyokwoyo, 2024). This shows that resilience is about more than just balance sheets, but also choices under pressure and a company's behaviour. This manifests especially when one looks at the low-income entrepreneurs and the numerous women vegetable vendors who go through the daily hesitations inside Kenya's informal economy.

The household resilience in this research denotes the magnitude of the capacity to which women vegetable vendors in Westlands Constituency of Nairobi can pay household expenses, absorb shocks, and continue working in the event of undesirable financial, social, and environmental deviations. This perspective comprises economic and behavioural orientations to resilience, but most of all the effects orientation, the one based on survey data on how resilient households have been with respect to important resilience indicators, such as ability to meet daily costs during a shock, health care and education access, and continued existence of vendors' businesses in the face of the shocks (Nyokwoyo, 2024). In defining resilience in this way, the research offers a detailed understanding of how mobile money technologies, and M-Pesa in particular, can impact economic security and longer-term upward mobility for women in the low-income, informal marketplace of Nairobi, Kenya.

1.1.3 Women Vegetable Vendors in Westlands Constituency, Nairobi County

Women vegetable vendors serve an imperative mandate in the Kenyan economy by contributing expressively to national output and employment generation. As per the KKNBS (2021), the informal segment accounts for about 33% of Kenyan GDP, with women traders in food and fresh produce markets forming a large share of this contribution. These vendors provide vital linkages between rural producers and urban consumers, ensuring food security, price stability, and daily income generation for thousands of households. The sector offers livelihood opportunities for low-income women who regularly encounter difficulties in accessing formal employment, thereby reducing poverty and fostering micro-entrepreneurship in urban settings. However, despite their economic importance, women vegetable vendors in Westland's Constituency continue to grapple with restricted credit access, income instability, a lack of commercial premises, and vulnerability to shocks such as fluctuating food prices and environmental changes. These challenges threaten their household welfare and financial resilience, making it imperative to investigate how mobile

money platforms like M-Pesa can enhance their ability to manage risks, sustain income, and contribute more effectively to Kenya's economic growth (KNBS, 2021).

This research places women vegetable vendors in Westlands Constituency in Nairobi County at the centre-stage of its analysis as they exemplify the resilience and entrepreneurship defining the Kenyan urban informal economy (Dudi, 2024). The vendors are the critical link between the rural vegetable producers in Kikuyu and the larger rural setting and urban consumers and are imperative in the city's fresh produce supply chain (Dudi, 2024). Regardless of their mandate, the operating environment is precarious, characterised by unstable incomes, poor infrastructure, and vulnerability to economic and environmental variations (Oyaro, 2024). Exploring how mobile money programs such as M-Pesa contribute to their resilience may be useful for the formation of policy aimed at inducing more inclusive growth and financial stability in the informal urban setting (Asongu et al., 2024).

Westlands Constituency reflects the overall Nairobi economic and social features and thus is an appropriate area for this research. Characterised by an amalgamation of an upscale residential area, vibrant markets, and an emergent informal sector, where large numbers of women vegetable traders are part of the employed workforce (KNBS, 2019). In contrast to most areas in Nairobi, Westlands features numerous of the city's most crowded markets: Kitisuru, Parklands/Highridge, Kangemi, Mountain View, and Karura (Breadcrumb-IO, 2023), thus offering a heterogeneous environment in which to study patterns of mobile money usage (Nyokwoyo, 2024). Moreover, its demographic and economic diversity presents a chance for data on the Mobile money transfer services (MMTS) collection by a diversity of agents, enabling an integrated assessment of how MMTS enhances commercial and household resilience in urban settings.

In addition, Westlands Constituency's choice is justified by its status as the economic hub and the fact that most women entrepreneurs operate there. Because 50-60% are female in other markets, the figures are always mostly unjustified, though not in the least surprising. Though far from ideal, fresh fruit and vegetables amount to a category market, and a critical one, for understanding gendered experiences of mobile financial services in Kenya. Its strong mobile money landscape and market vibrancy, in combination with the constituency market vibrancy and ease of access, make it a good place to capture rich, context-specific data on how digital platforms such as M-

Pesa influence household resilience and women's economic being among informal women traders (Tiony, 2024). In addition, variations in the number of and types of vendors in its wards and the differences in access to, or exposure of, vendors to mobile money also provide a useful dimension to analyse intra-constituency differences and, by extension, investigate the impact of adoption and transfer through the mobile money platform.

Further, Westlands Constituency has undergone rapid urbanisation and infrastructural developments in recent years, and thus, a suitable case study to investigate the connection between mobile money and household resilience in a transitioning urban space (Mensah et al., 2021). The marketplaces in the same region also present currently increasing electronic payment and mobile commerce, a suitable temporal context to investigate how street vending routines are being re-negotiated by platforms such as M-Pesa (Nyella, 2024). It is a trend here at home that is playing out across the continent, where the mobile handset is an ever more powerful lever for social change as people turn to mobile money and use it to subscribe to mobile communication; it's evolving into a basic tool of financial inclusion and resilience. Hence, the research results can be generalized to other urban areas experiencing comparable socio-economic transition, such as Westlands (Asongu et al, 2024).

Westlands Constituency women vegetable vendors characterize gender distinguished dimensions of the Kenyan informal markets, which are dominated by women who are repetitively involved in income-earning as well as management of household tasks. With the already noted substantial economic contributions made, vendors nevertheless also continue to face increasing economic insecurity and other social barriers that obstruct their scale and safety (Dudi, 2024). In this context, mobile money benefits have included the capacity to save, access credit, and participate in local financial systems, such as chamas. Subsequently, the survey of the use of mobile money and its effect on household resilience has attracted the attention of development practitioners, academicians, and policymakers (Mwangi, 2024)

In this regard, Westlands Constituency women vegetable vendors are timely and pertinent. This research, therefore, provides context in which to explore the extent to which mobile money platforms are, for instance, supporting coping among demographic groups that are pivotal to Kenya's urban economy. The objective of the research was to investigate the potential mobile

money holds for economic resilience and flexibility and to generate new lessons for policy and practical interventions, primarily in Kenya, but also in other urban areas in SSA.

1.2 Statement of the Problem

Ideally, mobile money services such as M-Pesa should enhance household resilience among low-income entrepreneurs by improving access to secure payment systems, savings mechanisms, digital credit facilities, and group-based financial support platforms (Salami, 2024; Nderitu, 2024; Tiony, 2024). Through these services, households are expected to improve their ability to absorb shocks, maintain consumption, finance emergencies, and sustain income-generating activities during periods of economic uncertainty (Asongu et al., 2024; Rakauskienė et al., 2025). In Kenya, M-Pesa has been widely recognized as a transformative financial innovation that has expanded financial inclusion among populations traditionally excluded from formal banking services (Nyokwoyo, 2024; Omego, 2024). Consequently, women operating small informal businesses such as vegetable vending are expected to benefit from improved financial security and stronger household resilience through the effective utilization of M-Pesa services (Mwangi, 2024; Musembi, 2024).

However, many women vegetable vendors continue to experience considerable financial vulnerability despite the widespread adoption of mobile money services. The informal sector accounts for more than 80% of employment opportunities in Kenya, with women constituting approximately 50–60% of fresh produce traders operating within urban markets (KNBS, 2021; Odiyo & Gatobu, 2025). These traders often operate under conditions characterized by unstable incomes, limited access to formal credit, inadequate savings, and high exposure to economic and social shocks (Dudi, 2024; Oyaro, 2024). Studies have shown that women engaged in informal trade remain particularly vulnerable to disruptions arising from illness, inflation, school fee obligations, business losses, and fluctuations in commodity prices, all of which negatively affect household welfare and business continuity (Ojarikre et al., 2024; Rets'epile & Matamanda, 2023; Zhanda et al., 2022). Despite increasing digital financial inclusion, many households within the informal economy still struggle to accumulate emergency savings and maintain stable consumption during periods of financial distress (Mishra & Choudhury, 2025; Ma et al., 2024).

The persistence of these challenges raises concerns regarding the extent to which M-Pesa usage translates into meaningful household resilience outcomes. Although mobile money adoption in Kenya is among the highest globally, evidence suggests that many users continue to utilize M-Pesa primarily for money transfers and routine payments while underutilizing other functionalities such as savings products, digital credit facilities, and mobile-enabled group contribution platforms (Wachira, 2023; Magale, 2024; Seck-Sarr, 2024). Yet these additional functionalities have been identified as critical mechanisms through which mobile money can strengthen financial preparedness, facilitate income smoothing, and support recovery from household shocks (Asongu et al., 2024; Markus & Nan, 2020; Nyella, 2024). Consequently, there remains uncertainty regarding the relative contribution of different M-Pesa usage dimensions to household resilience among women operating within the informal economy.

Existing empirical studies provide inadequate evidence to guide policymakers, development partners, and mobile financial service providers in designing interventions that specifically target household resilience among women traders. Conceptually, most studies have examined mobile money as a single construct and have not sufficiently disaggregated its various dimensions to determine how payment services, savings functionalities, digital credit access, and group contribution platforms independently influence household resilience (Omego, 2024; Magale, 2024; Wachira, 2023; Seck-Sarr, 2024). Contextually, available studies have focused largely on broad populations of micro-entrepreneurs, financial inclusion outcomes, or national-level analyses, with limited attention given to women vegetable vendors operating within specific urban settings such as Westlands Constituency (Nyokwoyo, 2024; Mwangi, 2024; Musembi, 2024). This is significant because women vegetable vendors face unique economic realities, including irregular cash flows, dependence on daily sales, and heightened exposure to household and business shocks (Dudi, 2024; Oyaro, 2024).

Methodologically, previous studies have predominantly employed qualitative approaches, mixed populations, or broad surveys that do not adequately isolate the individual effects of specific M-Pesa usage dimensions on household resilience (Siddika & Sarwar, 2024; Abubakar, 2024; Cordes et al., 2024). Furthermore, inconsistencies in the measurement of both mobile money usage and household resilience have made comparison of findings difficult and have limited the generation of context-specific policy recommendations (Mishra & Choudhury, 2025; Markus & Nan, 2020).

These conceptual, contextual, and methodological gaps have practical implications because they constrain the ability of policymakers, mobile financial service providers, and development agencies to formulate evidence-based interventions aimed at strengthening the resilience of women traders within the informal sector.

This study therefore sought to address these gaps by empirically examining the effect of M-Pesa payment services, savings functionalities, digital credit access, and group contribution platforms on household resilience among women vegetable vendors in Westlands Constituency, Nairobi County. The findings were expected to generate evidence that would inform financial inclusion policies, product development strategies, and interventions aimed at enhancing the resilience of women-led informal enterprises.

1.3 Study Objectives

1.3.1 General Objective

To establish the effect of M-Pesa usage dimensions on the household resilience of Women vegetable vendors in Westlands Constituency, Nairobi County.

1.3.2 Specific Objectives

i. To establish the effect of M-Pesa-based payment services on household resilience among Women vegetable vendors in Westlands Constituency, Nairobi County.
ii. To assess the effect of M-Pesa savings functionalities on household resilience among Women vegetable vendors in Westlands Constituency, Nairobi County.
iii. To evaluate the effect of M-Pesa digital credit access on household resilience among Women vegetable vendors in Westlands Constituency, Nairobi County.
iv. To examine the effect of M-Pesa group contribution platforms on household resilience among Women vegetable vendors in Westlands Constituency, Nairobi County.

1.4 Research Questions

i. What is the effect of M-Pesa-based payment services on household resilience among women vegetable vendors in Westlands Constituency, Nairobi County?

ii. What is the effect of M-Pesa savings functionalities on household resilience among women vegetable vendors in Westlands Constituency, Nairobi County?
iii. What is the effect of M-Pesa digital credit access on household resilience among women vegetable vendors in Westlands Constituency, Nairobi County?
iv. What is the effect of M-Pesa group contribution platforms on household resilience among women vegetable vendors in Westlands Constituency, Nairobi County?

1.5 Scope of the Study

Conceptually, this research focused on assessing the effects of four dimensions of M-Pesa usage: payment services, savings functionalities, digital credit access, and group contribution platforms on household resilience. These dimensions have been identified as critical mobile money services that potentially enable women vegetable vendors to mitigate economic and social shocks. The research sought to establish how each of these services influences' household resilience, defined by the ability to maintain expenditures, cover emergencies, and sustain income-generating activities despite external challenges.

Contextually, the research was conducted among women vegetable vendors in Westlands Constituency, Nairobi County. This segment works in an informal setting in the city and is heavily dependent on M-Pesa for transactions, savings, and credit. Specifically, the research aimed at highlighting gendered dynamics and then discuss how mobile money services are pushing economic resilience in this pivotal sector of Kenya's urban markets. Geographically, the study was conducted in the Westlands Constituency's five wards: Kitisuru, Parklands / Highridge, Kangemi, Mountain View, and inhabitants living in Karura. The area comprises Women dealing in the Vegetable Trade Sector, enabling the research to produce results that portray one of Nairobi's busiest urban marketplaces: mobile money and household resilience.

The research was undertaken in the period between November 2025 and March 2026. The duration permitted the collection of data reflecting up-to-date mobile money usage trends and the predominant economic conditions impacting women vegetable vendors. As a result, the findings were both timely and relevant, offering practical insights for mobile money service providers, NGOs, and policymakers. By capturing the most recent developments within Kenya's mobile

money landscape, the study aimed to contribute evidence that can inform targeted interventions and responsive policy design.

Methodologically, the study employed a quantitative approach anchored on a descriptive cross-sectional survey design. The unit of analysis was the individual woman vegetable vendor, with data collected through structured questionnaires administered to respondents who met the inclusion criteria of being active women vendors within Westlands and users of M-Pesa services. Respondents were identified through a triangulated process combining local market associations, ward administration lists, and on-site vendor mapping to capture both registered and unregistered traders. A purposive sampling strategy was used, with proportional representation from each ward to ensure adequate market coverage. The sample size of 422 vendors was determined using Cochran's formula for large populations, ensuring statistical reliability and representativeness. Quantitative data was analyzed by applying descriptive and inferential statistics.

1.6 Chapter Summary

The chapter offered the background within global, regional, and local discourse on mobile money and economic resilience. It offered justification for targeting the use of M-Pesa among women vegetable vendors in Westlands Constituency in Nairobi County and the gaps in existing knowledge. The context highlighted the importance of mobile money for supporting informal sector households in financial shocks and unpredictability. The chapter also highlighted the research objectives and questions, scope, and significance of the study.

Chapter Two: Literature Review

2.1 Introduction

This chapter offers a literature review shedding light on M-Pesa usage and household resilience. It encompasses reviews of empirical and theoretical studies that enrich mobile money services and financial stability in the informal economy. The review also surveys the impact of digital financial services on building the resilience of low-income households. Through highlighting the existing knowledge gaps, the chapter also provides a conceptual framework for this research.

2.2 Theoretical Framework

This section presents the theories underpinning the study and explains how they inform the conceptualization of the relationship between M-Pesa usage and household resilience among women vegetable vendors in Westlands Constituency. The study was anchored on the Diffusion of Innovations Theory developed by Everett Rogers (1962) and supported by the Resilience Theory advanced by Holling (1973).

2.2.1 Diffusion of Innovations Theory

Diffusion of Innovations Theory was developed by Rogers (1962) to explain how innovations spread among members of a social system over time. The theory posits that the rate and extent of adoption of an innovation are influenced by five key attributes: relative advantage, compatibility, complexity, trialability, and observability. Relative advantage refers to the extent to which an innovation is perceived as better than the practice it replaces, while compatibility relates to its consistency with users' values, experiences, and needs. Complexity concerns the ease with which an innovation can be understood and utilized; trialability refers to the opportunity to test the innovation before full adoption, and observability denotes the visibility of its benefits to others (Rogers, 1962). In the context of this study, M-Pesa payment services may be adopted because they provide a safer and more convenient alternative to cash transactions, thereby offering a clear relative advantage to women vegetable vendors (Yao et al., 2023). M-Pesa savings functionalities align with the financial management needs of informal traders who require accessible mechanisms for accumulating savings, thus reflecting compatibility with their circumstances (Wachira, 2023). Digital credit services such as Fuliza and M-Shwari reduce liquidity constraints by providing

immediate access to short-term financing, making them attractive to traders seeking working capital (Magale, 2024). Likewise, group contribution platforms gain acceptance when vendors observe peers successfully using digital chamas to mobilize savings and access emergency funds, thereby demonstrating observability and encouraging wider adoption (Tiony, 2024).

Despite its widespread application in technology adoption studies, the theory has attracted criticism for placing excessive emphasis on the characteristics of the innovation while paying limited attention to broader socio-economic and institutional factors that influence adoption decisions. Critics argue that adoption is not always determined by perceptions of usefulness or ease of use because structural barriers such as poverty, limited education, inadequate infrastructure, and social inequalities may constrain individuals from utilizing innovations even when they recognize their benefits (Nourallah et al., 2024). The theory has also been criticized for assuming that individuals make rational adoption decisions, yet behavioural choices are often shaped by cultural norms, social pressures, and resource limitations that may not be adequately captured by the innovation attributes alone (Greenhalgh et al., 2020). In developing economies, gender disparities continue to influence access to mobile technologies, with women frequently experiencing lower levels of digital literacy and financial capability than men (Ojarikre et al., 2024). Furthermore, the theory provides limited explanation regarding post-adoption behaviour and the extent to which continued utilization of an innovation generates desired outcomes among users (Abubakar, 2024).

Despite these limitations, the theory is highly relevant to this study because it provides a useful framework for understanding the adoption and utilization of the various M-Pesa services examined. The decision by women vegetable vendors to utilize payment services, savings functionalities, digital credit facilities, and group contribution platforms is influenced by their perceptions regarding the benefits, convenience, accessibility, and practicality of each service within their business and household environments (Siddika & Sarwar, 2024). The theory explains why some vendors may extensively utilize multiple M-Pesa functionalities while others restrict their usage to basic money transfer services despite having access to the same platform (Mwangi, 2024). It further provides a basis for understanding how observable benefits arising from M-Pesa utilization can encourage wider uptake among traders operating within the same markets and social networks (Nyella, 2024). Therefore, the theory supports the study by explaining the behavioural

processes that influence adoption of M-Pesa usage dimensions and how such adoption may ultimately contribute to improved household resilience among women vegetable vendors in Westlands Constituency, Nairobi County (Musembi, 2024).

2.2.2 Resilience Theory

Resilience Theory was advanced by Holling (1973) to explain the capacity of individuals, households, organizations, and systems to withstand, adapt to, and recover from adverse shocks while maintaining their essential functions. The theory postulates that resilience is not merely the ability to resist disruptions but also the capacity to adjust and reorganize in response to changing circumstances (Holling, 1973). Within socio-economic contexts, household resilience is reflected in the ability to sustain consumption, maintain income-generating activities, meet essential expenditures, and recover from financial setbacks without experiencing long-term welfare deterioration (Zhang et al., 2024). The theory further suggests that access to resources and adaptive mechanisms strengthens the ability of households to cope with shocks and uncertainties (Rakauskienė et al., 2025). In the context of this study, M-Pesa payment services may enhance resilience by facilitating uninterrupted business transactions and improving cash flow management among women vegetable vendors (Yao et al., 2023). M-Pesa savings functionalities can strengthen resilience by enabling households to accumulate precautionary savings that can be utilized during emergencies (Ma et al., 2024). Similarly, digital credit services provide immediate liquidity during periods of financial distress, allowing vendors to sustain business operations and meet urgent household obligations (Magale, 2024). Group contribution platforms further promote resilience by enabling collective savings and access to pooled financial resources that can support members during periods of economic hardship (Markus & Nan, 2020).

Despite its extensive application in development and social research, Resilience Theory has been criticized for its broad and sometimes ambiguous conceptualization of resilience. Critics argue that the theory often focuses on outcomes without adequately explaining the processes through which resilience is developed and sustained over time (Xiao & Meng, 2024). The theory has also been faulted for overlooking structural inequalities and power dynamics that may influence the ability of different groups to build resilience, particularly among vulnerable populations such as women operating in informal economic sectors (Siddika & Sarwar, 2024). Furthermore, resilience is a

multidimensional concept that can be difficult to measure consistently across different contexts, resulting in variations in operational definitions and empirical findings (Mishra & Choudhury, 2025). Some scholars further contend that the theory tends to emphasize adaptation to adverse conditions without sufficiently addressing the underlying causes of vulnerability that expose households to repeated shocks and hardships (Quételet al., 2022).

Despite these criticisms, Resilience Theory is highly relevant to this study because it provides a direct explanation of the dependent variable, namely household resilience. The theory offers a useful framework for understanding how women vegetable vendors utilize available financial resources and coping mechanisms to maintain household welfare in the face of economic uncertainty (Nyokwoyo, 2024). It helps explain how access to M-Pesa savings, digital credit, payment services, and group contribution platforms can enhance the capacity of households to absorb shocks, respond to emergencies, and sustain business continuity during periods of financial stress (Asongu et al., 2024). The theory further recognizes that resilience is strengthened through the accumulation of financial, social, and economic resources that improve households' adaptive capacity and recovery potential (Salisbury et al., 2023). Consequently, Resilience Theory provides the foundation for examining whether and how the various dimensions of M-Pesa usage contribute to improved household resilience among women vegetable vendors in Westlands Constituency, Nairobi County (Moi, 2025).

2.3 Empirical Review

This segment offers a critical review of how M-Pesa usage dimensions affect household resilience, predominantly for informal segment women vendors. It focuses on empirical work globally, regionally, and locally, pointing out patterns and insights in the making. Drawing upon the lessons from the conclusions of prior studies, the section points to limitations underlining the theoretical framework and research method that frame this research.

2.3.1 M-Pesa Payment Services and Household Resilience

M-Pesa payment services have become an important component of digital financial inclusion because they enable users to receive, transfer, and make payments electronically through mobile devices. Existing studies commonly operationalize mobile payment services using indicators such

as transaction frequency, proportion of sales conducted through mobile money, transaction value, and ease of payment processing (Yadav & Kapoor, 2024). These indicators suggest that mobile payments can influence business performance by reducing transaction costs, improving convenience, and enhancing cash-flow management among micro-entrepreneurs. However, although there is considerable agreement regarding the operational benefits of mobile payments, scholars differ regarding the extent to which these benefits translate into broader household resilience outcomes, particularly among women operating within informal markets.

Several empirical studies have reported a positive relationship between mobile payment usage and economic stability among small-scale entrepreneurs. A systematic review by Siddika and Sarwar (2024) found that mobile payments improve transaction security, reduce dependence on cash, and facilitate business continuity during periods of uncertainty. Similarly, Wamukekhe (2024) established that mobile payment adoption among urban traders in Nairobi and Mombasa strengthened relationships with customers and suppliers while reducing the adverse effects of income volatility. Comparable findings were reported by Abubakar (2024), who observed that mobile payment systems increased sales turnover and expanded market reach among informal traders in Ghana and Nigeria. These findings suggest a growing consensus that mobile payment services contribute positively to financial stability by improving transaction efficiency and supporting business operations. Consequently, scholars generally agree that mobile payment technologies can strengthen the economic capacity of low-income entrepreneurs.

Despite this convergence of findings, important inconsistencies and methodological limitations remain. Whereas Siddika and Sarwar (2024) relied on a systematic review of existing studies, Wamukekhe (2024) utilized survey data drawn from a broad range of urban micro-enterprises, while Abubakar (2024) focused on informal traders across multiple sectors. The use of diverse populations and methodological approaches makes comparison of findings difficult and limits the ability to conclude specific groups of entrepreneurs. Furthermore, most studies assessed mobile money as a composite construct rather than isolating payment services from other functionalities such as savings and credit. For example, Mwangi (2024) found that mobile money enhanced the resilience of women-led micro-enterprises in Nairobi, but the study examined mobile payments together with savings, credit, and group financial platforms, making it impossible to determine the independent contribution of payment services. In addition, most studies concentrated on business

outcomes such as sales growth, transaction efficiency, and market expansion while paying limited attention to household resilience outcomes such as the ability to manage emergencies, maintain household expenditures, and sustain livelihoods during shocks.

The reviewed literature therefore demonstrates broad agreement that mobile payment services improve transaction efficiency and business performance among informal traders. However, there remains limited empirical evidence regarding how M-Pesa payment services independently influence household resilience among women vegetable vendors. Existing studies have largely focused on mixed populations of micro-entrepreneurs, employed broad measures of mobile money adoption, and paid insufficient attention to gender-specific experiences within informal urban markets. Consequently, the specific contribution of M-Pesa payment services to household resilience among women vegetable vendors in Westlands Constituency remains insufficiently understood. This study addresses this conceptual, contextual, and methodological gap by examining the direct effect of M-Pesa payment services on household resilience among women vegetable vendors in Westlands Constituency, Nairobi County.

2.3.2 M-Pesa Savings Functionalities and Household Resilience

M-Pesa savings functionalities have emerged as an important component of digital financial inclusion by enabling users to accumulate savings conveniently through mobile platforms without relying on conventional banking institutions. Existing studies commonly measure mobile savings using indicators such as frequency of saving, total savings accumulated, and the proportion of income saved through mobile accounts (Asongu et al., 2024). These indicators are considered useful in assessing the extent to which mobile savings contribute to financial security, consumption smoothing, and preparedness for unforeseen shocks. While there is broad agreement that mobile savings improve financial management among low-income populations, scholars differ regarding the magnitude and pathways through which such savings translate into household resilience, particularly among women operating in informal economic activities.

Several empirical studies suggest that mobile savings functionalities positively influence resilience and economic well-being. A systematic review conducted by Seck-Sarr (2024) concluded that mobile savings platforms promote financial discipline, reduce dependence on informal saving mechanisms, and enhance the ability of micro-entrepreneurs to cope with economic shocks. Similar findings were reported by Nzilano and Magoti (2025), who found that mobile savings

enabled women entrepreneurs in urban Tanzania to manage household emergencies, restock businesses, and smooth consumption during periods of financial difficulty. Likewise, Riley and Shonchoy (2025) established that entrepreneurs utilizing mobile savings applications demonstrated stronger capacity to withstand short-term shocks and adapt to prolonged economic downturns. In Kenya, Wachira (2023) similarly observed that mobile savings platforms contributed to economic empowerment by encouraging financial discipline and providing emergency financial buffers. Collectively, these studies suggest a growing consensus that mobile savings functionalities strengthen financial resilience by enhancing households' capacity to prepare for and respond to adverse events.

Despite this apparent convergence, notable methodological and conceptual limitations persist within the literature. Seck-Sarr (2024) relied on a systematic review approach, which synthesized findings from multiple studies but did not generate primary evidence regarding the specific experiences of women traders. In contrast, Nzilano and Magoti (2025) utilized survey data from women entrepreneurs, yet their study examined broad mobile money usage rather than isolating the independent effect of mobile savings functionalities. Similarly, Riley and Shonchoy (2025) focused on multiple countries and heterogeneous entrepreneurial populations, limiting the contextual applicability of their findings to specific informal trading groups. Although Wachira (2023) examined Kenyan informal sector enterprises, the study concentrated on overall mobile money adoption and did not distinguish the unique contribution of mobile savings from other mobile financial services. Furthermore, most studies measured economic outcomes such as financial empowerment, consumption smoothing, or business sustainability, while giving limited attention to household resilience indicators such as the ability to maintain expenditures, respond to emergencies, and sustain livelihoods during shocks. Consequently, although the literature consistently reports positive outcomes associated with mobile savings, the mechanisms through which savings functionalities specifically influence household resilience remain insufficiently explored.

The reviewed studies therefore provide substantial evidence that mobile savings functionalities contribute to improved financial stability and economic security among low-income entrepreneurs. However, limited empirical research has isolated the independent effect of M-Pesa savings functionalities on household resilience among women vegetable vendors. Existing studies have

largely focused on broad entrepreneurial populations, aggregated mobile money services into a single construct, and paid inadequate attention to gender-specific experiences within informal urban markets. Furthermore, methodological differences across studies make comparison of findings difficult and limit the formulation of context-specific policy recommendations. This study addresses these conceptual, contextual, and methodological gaps by examining the direct effect of M-Pesa savings functionalities on household resilience among women vegetable vendors in Westlands Constituency, Nairobi County.

2.3.3 M-Pesa Digital Credit Access and Household Resilience

M-Pesa digital credit access has emerged as an important financial inclusion tool that enables low-income entrepreneurs to obtain short-term loans quickly and conveniently through mobile platforms. Digital credit products such as Fuliza and M-Shwari are designed to address liquidity constraints by providing immediate access to working capital and emergency funds without requiring collateral or lengthy approval procedures (Islam et al., 2025). Existing studies commonly operationalize digital credit access using indicators such as the number of loans accessed, average loan size, frequency of borrowing, and timeliness of repayment (Ngandi, 2024). These indicators are useful in assessing the extent to which digital credit contributes to business continuity, consumption smoothing, and household financial welfare. Although the literature generally recognizes digital credit as an important financial resource for low-income households, scholars differ regarding its effectiveness in promoting long-term household resilience due to concerns relating to indebtedness, repayment burdens, and sustainability of credit use.

A considerable body of empirical evidence suggests that digital credit enhances the resilience of small-scale entrepreneurs by addressing short-term liquidity challenges. Adah et al. (2025) found that mobile loans enabled traders in Nigeria to replenish stock, address cash-flow shortages, and respond to household emergencies more effectively. Similar findings were reported by Magale (2024), who established that M-Shwari and Fuliza have become important sources of working capital for urban traders in Kenya by providing quick and collateral-free access to credit. Likewise, Baraza et al. (2022) found that mobile credit services supported income smoothing and enabled entrepreneurs to meet urgent household and business expenses during periods of financial strain. These findings collectively suggest that digital credit serves as an important coping mechanism

that allows low-income entrepreneurs to maintain economic activities and household welfare during adverse conditions.

Despite the generally positive findings, the literature reveals notable methodological and conceptual weaknesses. Adah et al. (2025) focused on traders across different sectors and did not specifically examine women entrepreneurs or household resilience outcomes. Similarly, Magale (2024) assessed mobile credit utilization among diverse categories of urban traders, making it difficult to establish whether the observed benefits apply equally across different business groups. Although Baraza et al. (2022) examined urban markets within Kenya, the study treated digital credit as a standalone financial service without situating it within the broader mobile money ecosystem. Furthermore, Mensah (2024) found that mobile lending platforms reduced dependence on informal money lenders among micro-entrepreneurs in West Africa, but the study did not provide gender-disaggregated findings and therefore overlooked potential differences in how male and female entrepreneurs utilize and benefit from digital credit. In addition, most studies concentrated on business-related outcomes such as liquidity management, stock acquisition, and enterprise survival, while paying limited attention to broader household resilience indicators including the ability to maintain expenditures, absorb shocks, and sustain livelihoods over time. These methodological differences and variations in outcome measures make comparison of findings difficult and limit understanding of the specific contribution of digital credit to household resilience.

The reviewed literature therefore demonstrates broad agreement that digital credit access improves liquidity management and supports short-term financial stability among low-income entrepreneurs. However, limited empirical evidence exists regarding the independent effect of M-Pesa digital credit services on household resilience among women vegetable vendors. Existing studies have largely focused on mixed populations of entrepreneurs, paid inadequate attention to gender-specific experiences, and rarely isolated digital credit from other mobile financial services. Additionally, few studies have examined these relationships within urban informal markets such as Westlands Constituency, where women traders heavily rely on mobile financial services to sustain household welfare and business operations. This study addresses these conceptual, contextual, and methodological gaps by examining the direct effect of M-Pesa digital credit access

on household resilience among women vegetable vendors in Westlands Constituency, Nairobi County.

2.3.4 M-Pesa Group Contribution Platforms and Household Resilience

M-Pesa group contribution platforms have transformed traditional collective savings arrangements by enabling members of chamas and other informal financial groups to make contributions, access funds, and manage transactions digitally. These platforms facilitate financial collaboration among members while enhancing transparency, accountability, and convenience in group financial management (Tiony, 2024). Existing studies commonly operationalize mobile group contribution platforms using indicators such as the number of groups joined, frequency of contributions, regularity of participation, and average contribution amounts (Markus & Nan, 2020). Such indicators are useful in assessing the extent to which participation in digitally enabled collective finance mechanisms contributes to financial security and resilience. Although there is broad recognition that group contribution platforms strengthen social and financial support systems, scholars differ regarding the extent to which these platforms independently contribute to household resilience beyond the benefits provided by other mobile financial services.

A growing body of empirical evidence suggests that mobile-enabled group contribution platforms positively influence economic well-being and resilience among low-income entrepreneurs. Judijanto and Wahab (2024) found that mobile group savings systems enabled members to make small but regular contributions that subsequently provided access to larger lump-sum funds for business investment and emergency needs. Similarly, Limo (2024) established that mobile-based group contribution systems assisted entrepreneurs in managing income volatility and recovering from financial shocks by providing access to collectively mobilized resources. Comparable findings were reported by Moi (2025), who observed that mobile-enabled group contribution arrangements strengthened trust, accountability, and access to pooled capital that could be utilized to meet household expenses and finance business activities. These findings collectively suggest that group contribution platforms serve not only as financial mechanisms but also as sources of social capital that enhance the ability of households to cope with economic uncertainty.

Despite these positive findings, several conceptual and methodological limitations remain evident within the literature. Judijanto and Wahab (2024) focused primarily on the financial benefits of

collective savings schemes but paid limited attention to household resilience outcomes beyond access to lump-sum funds. Likewise, Limo (2024) concentrated on urban entrepreneurs generally, making it difficult to determine whether the reported benefits apply equally across different categories of informal traders. Although Moi (2025) highlighted the role of trust and accountability in group contribution systems, the study treated mobile money platforms broadly and did not isolate the specific contribution of digital group financing arrangements. Similarly, Udohaya (2025) documented the evolution of traditional savings circles into more efficient mobile-enabled platforms but focused primarily on institutional transformation rather than household-level resilience outcomes. Furthermore, most existing studies have employed broad samples of entrepreneurs and community groups, with limited gender-specific analysis and little attention to women operating within informal urban markets. As a result, it remains difficult to establish the precise role of mobile group contribution platforms in enhancing household resilience among women traders.

The reviewed literature therefore demonstrates considerable agreement that mobile-enabled group contribution platforms improve access to collective financial resources and strengthen social support networks among low-income populations. However, limited empirical evidence exists regarding the independent effect of M-Pesa group contribution platforms on household resilience among women vegetable vendors. Most previous studies have examined mobile money holistically, focused on mixed populations, or emphasized financial inclusion outcomes rather than household resilience indicators such as the ability to maintain expenditures, manage emergencies, and sustain livelihoods during shocks. Additionally, little research has been conducted within urban informal market settings such as Westlands Constituency, where women traders rely heavily on both social networks and mobile financial services. This study addresses these conceptual, contextual, and methodological gaps by examining the direct effect of M-Pesa group contribution platforms on household resilience among women vegetable vendors in Westlands Constituency, Nairobi County.

2.4 Research Gaps

In the empirical literature reviewed, it is apparent that while mobile money has distorted financial services access, research had not comprehensively analysed how its individual dimensions, such

as payments, savings, digital credit, and group contribution platforms, collectively influence household resilience, particularly among women vegetable vendors in urban informal markets. Existing research also lacks disaggregated gender analysis and contextual focus on constituencies such as Westlands in Nairobi County. Methodologically, most studies relied on general or mixed samples, offering limited quantitative evidence on variable-specific relationships.

To address these limitations, the present study integrates and isolates the four key dimensions of M-Pesa usage within a gender-sensitive, context-specific framework. Table 2.1 below presents a concise summary of the research, their findings, and the key knowledge gaps that the current study intends to address.

Table 2.1: Summary of Knowledge Gaps

Author/s	Focus of Study	Methodology	Findings	Research Gaps
Yao et al. (2023)	Effects of mobile money on micro-entrepreneurs' trading and payments	Empirical study (context: small businesses/micro-enterprises)	Mobile payments improved convenience, security, and transaction efficiency	Did not link payment use to household resilience outcomes or gendered analyses
Yadav & Kapoor (2024)	Metrics for assessing mobile payments in commerce	Conceptual/measurement-focused review	Proposed indicators (transaction counts/values; electronic share of sales) are useful for cash-flow insights.	Lacks empirical testing on women vendors or direct resilience linkages
Siddika & Sarwar (2024)	Role of routine mobile payments in SSA small business resilience	Systematic review	Mobile payments enable faster, traceable, safer transactions; reduce cash risks.	Limited gender-disaggregated evidence; weak connection to household resilience pathways
Wamukekhe (2024)	Mobile payments and economic stability in urban Kenyan households	Empirical survey (Nairobi & Mombasa)	Vendors who accept mobile payments better maintain spending during lean periods.	Broad micro-enterprise sample; vegetable vendors' specific effects not isolated
Abubakar (2024)	Mobile money use in informal markets (Ghana & Nigeria)	Empirical multi-site study	Mobile payments increased sales turnover and market reach; ancillary access to loans/savings.	Did not examine household resilience; no gender-segmented results.

Author/s	Focus of Study	Methodology	Findings	Research Gaps
Mwangi (2024)	Digital transactions and women-led micro-enterprises in Nairobi	Comprehensive market survey	Digital payments + other MM services supported savings, credit access, group finance; boosted household resilience.	Payment effects are not isolated from other MM dimensions.
Musembi (2024)	Mobile savings and micro-entrepreneurs' cash-flow management	Empirical commentary/field insight	Mobile savings improved convenience, planning, and cash flow	Lacked vendor-specific quantitative testing on resilience outcomes
Asongu et al. (2024)	Indicators/role of mobile savings for resilience	Analytical/indicator framing	Savings metrics (frequency, amounts, income share) capture stability and security.	Limited application to women vegetable vendors in urban Kenya
Seck-Sarr (2024)	Mobile savings and micro-entrepreneur resilience in SSA	Systematic review	Mobile savings strengthened discipline, reduced the costs of informal savings, and protected against shocks.	Few studies focus exclusively on women-led micro-enterprises
Nzilano & Magoti (2025)	Women entrepreneurs' use of mobile savings (Tanzania urban)	Empirical study	Mobile savings cushioned periodic expenses and supported restocking/consumption smoothing.	Did not isolate the savings feature as a distinct driver of household resilience
Riley & Shonchoy (2025)	Mobile savings and resilience (Ghana & Nigeria)	Empirical, multi-country	Bulk/regular mobile savings linked to stronger short- and long-term shock absorption.	No gender analysis; not specific to urban vegetable vendors
Wachira (2023)	Mobile savings and empowerment in Kenya's informal sector	Empirical study	Mobile savings improved discipline, minimized leakages, and enabled emergency lump sums.	Aggregated across micro-entrepreneurs, lacked focus on women vegetable vendors.
Islam et al. (2025)	Short-term mobile credit for liquidity gaps	Empirical analysis	Mobile loans provided a working capital safety net for low-income entrepreneurs.	Not vendor-segment specific; resilience outcomes not disaggregated by gender.

Author/s	Focus of Study	Methodology	Findings	Research Gaps
Ngandi (2024)	Metrics for mobile credit access and performance	Measurement/operationalization	Defined indicators (applications, average loan size, repayment timeliness)	Requires an application from women vendors with resilience as the outcome
Adah et al. (2025)	Mobile loans and resilience for small traders (Nigeria)	Empirical study	Mobile credit bridged cash-flow shortages, supported stock replenishment, and emergencies.	Sector-wide lens; did not focus on vegetable vending or women-only samples
Magale (2024)	M-Shwari/Fuliza use among urban traders in Kenya	Empirical survey	Easy, collateral-free credit minimized business disruptions	Did not isolate effects for women vegetable vendors; limited household resilience metrics
Baraza et al. (2022)	Mobile credit and resilience in Kenyan urban markets	Empirical survey	Mobile credit aided timely emergency response and income smoothing	Did not model credit within the wider MM bundle; hard to parse credit's standalone effect
Mensah (2024)	Mobile lending platforms and constraints in West Africa	Empirical multi-city study	Platforms eased capital constraints vs. informal lenders	No gender-segmented analysis; limited focus on household-level resilience
Markus & Nan (2020)	Mobile group contributions (chamas) via MM	Empirical/operational study	Group metrics (memberships, frequency, contribution size) capture pooled risk-sharing	Effects often subsumed under "mobile money" without isolating group platforms.
Tiony (2024)	Trust, joint responsibility, and risk-sharing in mobile chamas	Empirical work	Group platforms fostered trust, accountability, and joint coping during shocks.	Few vendor-specific, women-only quantitative designs with resilience outcomes
Judijanto & Wahab (2024)	Group savings' role in micro-enterprise finance	Empirical study	Small, regular contributions enabled access to larger lump sums	Limited urban-vegetable-market focus; resilience not directly modelled
Limo (2024)	Mobile group credit systems in	Empirical study	Helped manage income volatility and	Did not isolate women vegetable vendors; mixed

Author/s	Focus of Study	Methodology	Findings	Research Gaps
	Kenyan urban areas		aided recovery capacity	methods not tied to resilience indices
Moi (2025)	Mobile group contributions and household/business expenses	Empirical urban-market study	Enabled pooled capital for expenses and investments; strengthened accountability.	Holistic view of MM; lacked causal estimates for resilience outcomes.
Udohaya (2025)	Evolution from informal ROSCAs to mobile platforms	Empirical/longitudinal perspective	Increased inclusivity, transparency, and efficiency via MM proliferation	Effects on women vendors' household resilience are not isolated

Source: Researcher (2025)

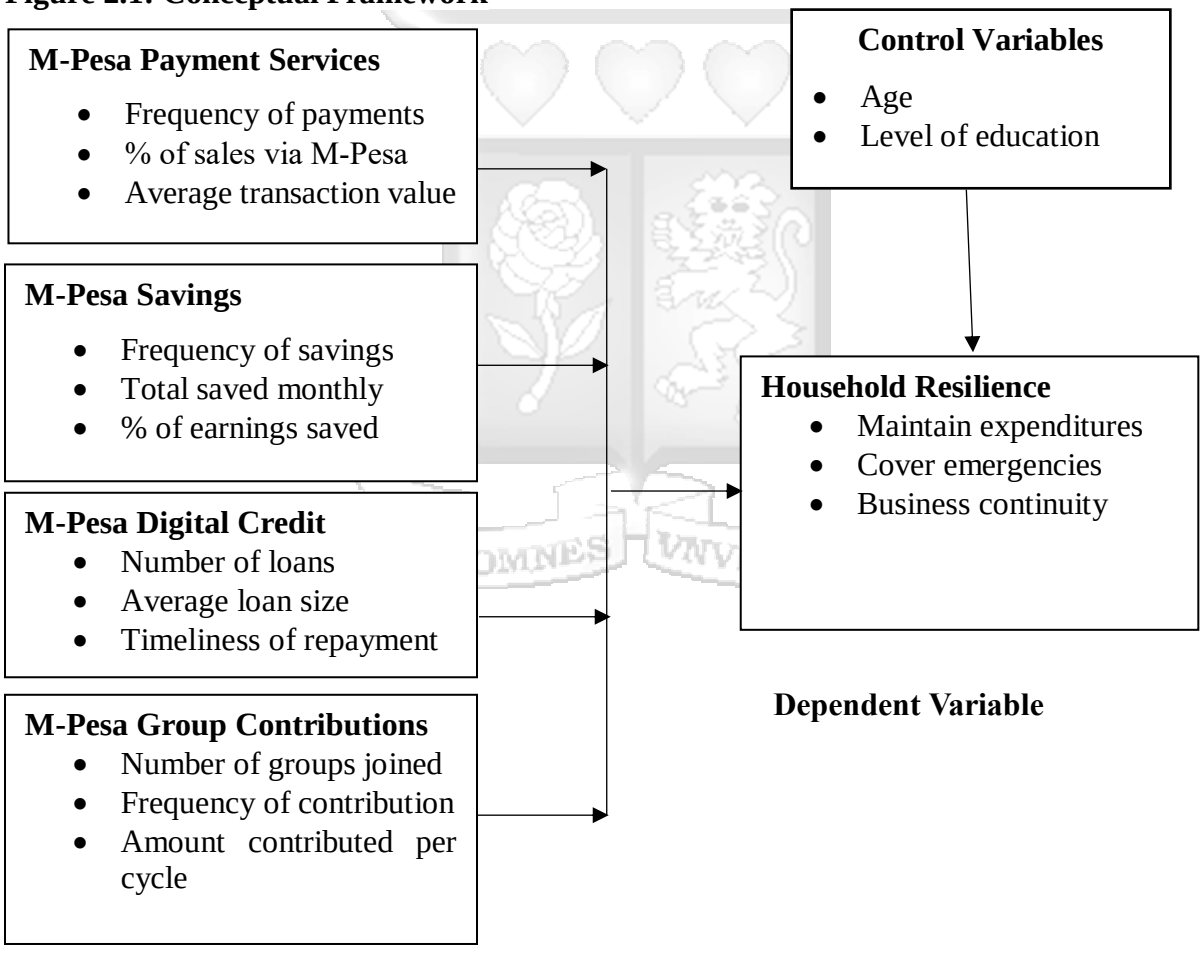
2.5 Conceptual Framework

The conceptual framework presents the hypothesized relationship between M-Pesa usage dimensions and household resilience among women vegetable vendors in Westlands Constituency, Nairobi County. The framework is informed by the Diffusion of Innovations Theory and the Resilience Theory, which collectively explain how adoption and utilization of digital financial services may enhance households' capacity to withstand, adapt to, and recover from economic shocks. Specifically, the framework proposes that M-Pesa payment services, savings functionalities, digital credit access, and group contribution platforms influence household resilience by strengthening financial management, improving access to emergency resources, and supporting business continuity.

The independent variables comprise four dimensions of M-Pesa usage, namely payment services, savings functionalities, digital credit access, and group contribution platforms. Although these constructs are conceptually represented through indicators such as payment frequency, proportion of sales transacted through M-Pesa, savings regularity, loan utilization, and participation in group contributions, data for these indicators were collected through respondents' perceptions and experiences using Likert-scale questionnaire items rather than actual transaction records. The dependent variable, household resilience, is reflected in the ability of households to maintain expenditures, respond to emergencies, and sustain business operations during periods of financial stress. The framework therefore assumes that increased utilization of M-Pesa services enhances the resilience capacity of women vegetable vendors and their households.

In addition to the study variables, household resilience may be influenced by certain demographic and socio-economic characteristics of the respondents. Consequently, age and level of education are incorporated into the conceptual framework as control variables because they may influence both the utilization of digital financial services and the capacity of households to respond to economic shocks. More educated vendors may be better positioned to utilize advanced M-Pesa functionalities, while age may influence financial experience, risk preferences, and coping strategies. Although these variables were not the primary focus of the study, their inclusion in the conceptual framework acknowledges the broader contextual factors that may shape the relationship between M-Pesa usage dimensions and household resilience.

Figure 2.1: Conceptual Framework



Source: Researcher (2025)

2.6 Operationalization of Study Variables

Table 2.2 shows the operationalization of the study variables

Table 2.2: Operationalization of Variables

Variables Type	Variable	Indicator	Measurement	Sources
Independent Variable	M-Pesa Payment Services	• Frequency of payments • Proportion of sales via M-Pesa • Average transaction value	5 -Point Likert Scale	Yao et al. (2023)
Independent Variable	M-Pesa Savings Functionalities	• Frequency of savings • Total saved monthly • Percentage of earnings saved	5 -Point Likert Scale	Judijanto and Wahab (2024)
Independent Variable	M-Pesa Digital Credit Access	• Number of loans • Average loan size • Timeliness of repayment	5 -Point Likert Scale	Mensah (2024)
Independent Variable	M-Pesa Group Contribution Platforms	• Number of groups joined • Frequency of contributions • Amount per cycle	5 -Point Likert Scale	Udohaya (2025)
Dependent Variable	Household Resilience	• Maintain expenditures • Cover emergencies • Business continuity	5 -Point Likert Scale	Zhang et al. (2024)

Source: Researcher (2025)

2.7 Chapter Summary

This chapter recognized the theoretical and empirical footing for the research by presenting the theoretical and empirical review of related work and identifying critical knowledge gaps. It examined how mobile money services, especially M-Pesa payments, savings, digital credit, and

group contribution platforms, have been linked to household resilience in prior studies, and highlighted the gaps that justify this research. The chapter also introduced the conceptual framework, outlining the associations between mobile money usage dimensions and household resilience, thereby setting a clear basis for the methodological approach to be presented in the next chapter.

Chapter Three: Research Methodology

3.1 Introduction

This chapter explains the approach the research took to investigate the research problem. It describes the research design, the target population, and the sampling strategy, and the procedures for collecting and analyzing data. It also encompasses measures that aided in ensuring the results were reliable and valid.

3.2 Research Philosophy

Positivist research philosophy, which places a great deal of importance on objectivity, empirical evidence, and measured analysis of societal phenomena, was adopted. Positivism is founded on the presumption that knowledge of the world is real and is separate from the knower and is capable of being verified or tested by rational and systematic procedure or empirical observation (Saunders et al., 2019). The correlation between the usage dimensions of M-Pesa payment services, savings services, access to digital credit, and group contribution platforms on household resilience can be reliably examined using quantitative data collected from women vegetable vendors, and gathering data through questionnaires with standardized measures and tacit answers using Likert type questions should be able to substantiate and statistically verify these relationships and therefore be as close to reach the aims and issues of the research.

The decision to opt for a positivist approach was motivated by the advantage it confers in terms of being able to generalise results with a valid empirical basis and to also empirically validate findings, two necessary rudiments for evaluating the role of mobile money services as they support household resilience. As Creswell and Creswell (2018) pointed out, positivism provides an organized method for verifying hypotheses, arriving at conclusions based on data, and generating evidence-based recommendations. In this study, this method helped to maintain rigour, reliability, and replicability in the results, so that the findings can inform mobile money service and policy design targeting women retailers in Westlands and similar urban markets elsewhere.

3.3 Research Design

This research adopted a descriptive cross-sectional survey design. The structure allowed for information to be collected from a sample of women vegetable vendors in Westlands Constituency on the affiliation amid the numerous extents of M-Pesa use and household resilience. For this study, the descriptive design was appropriate as the research intended to describe a phenomenon the way it exists and is more appropriate for research that summarizes and contrasts variables in a population (Sekaran & Bougie, 2020). Being at a single point in time also made this method economical and rapid, yet it still provided information that was directly relevant to the aims of the research.

The cross-sectional approach also enabled the collection of data on a subset of people, whose findings from the sample might be ascribed to the wider study population. According to Creswell and Creswell (2018), this design is especially appropriate when one looks at the association among variables at one point in time. This design provides an easily replicable means of gathering and assessing data on how women vegetable vendors use M-Pesa, as well as the impact of this use on household resilience, which is useful for understanding these phenomena at the time when this is done.

3.4 Target Population

This study focused on women vegetable vendors who engage in market vending in different markets in the Westlands Constituency of Nairobi County. Exact statistics on this group are not available. However, national and county-level data provide useful context. KNBS reports that the informal sector contributed 83.4% to total national employment according to National Employment 2021, and women constituted an estimated 50–60% of the workforce in the vending of food and fresh produce sector (KNBS, 2021). In Nairobi specifically, women constitute approximately 51% of vendors in open-air and street markets (Mitullah, 2019).

Although these figures highlight the scale and gendered nature of vegetable vending, there are no disaggregated ward-level statistics. This makes it difficult to determine the exact number of women vegetable vendors in Westlands Constituency. To address this limitation, the study treated

the population as large and unknown. This provided a sound basis for using Cochran's (1977) sample size formula, which is recommended when the total population is not precisely known.

3.5 Sample Size and Sampling Design

The study targeted women vegetable vendors operating within the five wards of Westlands Constituency, namely Kitisuru, Parklands/Highridge, Kangemi, Mountain View, and Karura. Owing to the informal nature of vegetable vending, no comprehensive or up-to-date sampling frame existed from which respondents could be randomly selected. Many vendors operated without formal registration, and their numbers fluctuated across market days and locations. Consequently, the study adopted a purposive sampling technique, which was considered appropriate for identifying respondents who possessed direct experience with M-Pesa services and could provide information relevant to the study objectives (Creswell & Creswell, 2018).

Respondents were identified through a combination of market visits, consultations with market leaders, and assistance from ward-level administrators familiar with trading activities within the constituency. During field visits, the researcher and trained research assistants screened potential respondents using predetermined inclusion criteria. To qualify for participation, a respondent had to be a woman actively engaged in vegetable vending within Westlands Constituency and a user of at least one M-Pesa service. Vendors who did not use M-Pesa or were not directly involved in vegetable trading were excluded from the study. This approach ensured that only information-rich respondents capable of providing meaningful insights regarding M-Pesa usage and household resilience were included.

The sample size was determined using Cochran's (1977) formula for large populations:

$$n_0 = (Z^2 \times p \times (1 - p)) / e^2$$

Where:

n_0 = required sample size

Z = Z-score corresponding to the desired confidence level (1.96 at 95% confidence level)

p = estimated proportion of the population possessing the characteristic of interest (0.5)

e = acceptable margin of error (0.05)

Substituting the values:

$n_0 = (1.96^2 \times 0.5 \times 0.5) / (0.05^2)$

$n_0 = 384.16$

The minimum recommended sample size was therefore 384 respondents. To account for potential nonresponse and incomplete questionnaires, the sample size was increased to 422 respondents. Although Cochran's formula is traditionally associated with probability sampling procedures, in this study it was used primarily to determine a sufficiently large sample size to generate reliable estimates and support robust statistical analysis. The researcher acknowledges that the use of purposive sampling limits the statistical generalizability of the findings beyond the study population because respondents were not selected through a random process. Nevertheless, purposive sampling was considered appropriate because the study sought information from a specific category of respondents possessing relevant experience with M-Pesa usage. The final sample was distributed across the five wards of Westlands Constituency to enhance coverage and capture variations in M-Pesa usage among women vegetable vendors operating within different market environments.

3.6 Data Collection Methods

This research relied on primary data gathered via structured questionnaires directed to women vegetable vendors in the five wards of Westlands Constituency. In this context, the application of questionnaires was appropriate because it allowed the collection of standardized data from a relatively large population, and it was an effective method for collecting quantitative information about mobile money and household resilience (Kothari, 2004). The questions were based on the study aims and were on a five-point Likert scale to enable statistical analysis and be consistent with survey best practice (Bryman, 2016). To promote accuracy and participant commitment, the tool was clear, straightforward, and culturally valid, enabling it to be easily comprehended and undertaken by the participant.

Pre-tests of the questionnaire among a group of vendors in a comparative context were conducted to ascertain its reliability, precision, and significance before the actual data collection commenced. This enabled the researcher to refine, if required, in a way that enhanced the tool's validity and

reliability. Pretesting was important so that any unclear wording and potential ambiguities that exist in questions can be addressed to develop clearer questions (Creswell & Creswell, 2018). By completing this stage, the questionnaires that were utilised were more closely aligned to the target group, resulting in the efficient collection of pertinent data.

Data was obtained via face-to-face interviews by trained interviewers who were fluent in English and Kiswahili for effective communication with all respondents. This facilitated service providers at varied levels of literacy and ensured that some amount of trust was in place between the enumerators and the respondents as per guidelines for survey studies (Kothari, 2020). The research officers were provided with extensive training on ethical research practice, including obtaining informed consent, confidentiality, and participants' right to withdraw interest at any point.

Respondents were made aware of the purpose and the research objectives before the questionnaire administration face-to-face in the selected markets. This not only secured a high response rate but also allowed for elaborating difficult-to-understand questions for the participants. Interviewers administering questionnaires tend to obtain greater rates of response and provide the most complete data (Bryman, 2016), a method that greatly supports a study with informal sector participants. Through this approach, the study hoped to capture credible, accurate, and trustworthy data on how M-Pesa is used and its contribution to the household resilience building of women vegetable vendors.

VT OMNES VNVM SINT

3.7 Research Quality

Instrument pre-test was undertaken prior to the main survey to ensure that the instrument was clear, feasible, and suitable for this study. Approximately 10 percent (42) of the target sample were selected from the Starehe Constituency, which was comparable to the final survey sample (Saunders et al., 2019). This pre-test permitted the investigator to investigate the sequence and intelligibility of the questions, predict how much time it would take to fill in the questionnaire, and ensure that no item was confusing or nonspecific. Feedback from this exercise informed revisions to the instrument that enabled it to be suitable for use with the target population and more closely linked to the goals of the study.

3.7.1 Reliability

Reliability denotes the steadiness and constancy of an instrument in measuring a construct across items and occasions (Creswell & Creswell, 2018). Cronbach's alpha for each multi-item assessed internal consistency. Following established practice, $\alpha \geq 0.70$ was considered acceptable, $\alpha \geq 0.80$ good, and $\alpha \geq 0.90$ excellent (Bryman, 2016). Where necessary, minor wording refinements or item trimming was undertaken to optimize internal consistency while preserving construct coverage. Reliability test results are exhibited in Table 3.1.

Table 3.1: Reliability Test Results

Variables	Items	Cronbach Alpha	Remark
M Pesa Payment Services	9	0.815	Reliable
M Pesa Savings Functionalities	9	0.810	Reliable
M Pesa Digital Credit Access	9	0.795	Reliable
M Pesa Group Contribution Platforms	9	0.820	Reliable
Household Resilience	9	0.790	Reliable

The results indicate that M-Pesa payment services ($\alpha = 0.815$), M-Pesa savings functionalities ($\alpha = 0.810$), M-Pesa digital credit access ($\alpha = 0.795$), M-Pesa group contribution platforms ($\alpha = 0.820$), and household resilience ($\alpha = 0.790$) all surpassed the suggested 0.70 threshold, approving that the instruments used were reliable. The relatively high alpha values suggest that constructs in every item were consistent in evaluating the intended concepts. This implies that the data collected were dependable and appropriate for supplementary statistical analysis, thereby enhancing the credibility of the study findings.

3.7.2 Validity

Validity denotes the extent to which a tool measures what it is intended to measure (Creswell & Creswell, 2018). Common forms encompass content, construct, criterion, and face validity. This study emphasized content and face validity. First, an expert review panel comprising the supervisor and knowledgeable colleagues in mobile money and resilience evaluated item relevance, representativeness, and clarity against the study objectives and operational definitions (Creswell & Creswell, 2018). Second, a pilot test of approximately 10% of the main sample (≈42 respondents out of 422) was conducted among eligible women vegetable vendors drawn from the five wards but excluded from the final survey. Cognitive probing was used to uncover ambiguity, double-

barreled wording, and response difficulties; subsequent revisions enhanced clarity and alignment with constructs. Construct validity was examined through factor-analytic checks (KMO > 0.60; significant Bartlett's test), ensuring items load appropriately on their intended dimensions (Bryman, 2016). Table 3.2 shows validity test results.

Table 3.2: Validity Test Results

Constructs	No. of Items	Content Validity Index	Congruency Percentage	Decision
M Pesa Payment Services	9	0.890	89.00%	Valid
M Pesa Savings Functionalities	9	0.880	88.00%	Valid
M Pesa Digital Credit Access	9	0.895	89.50%	Valid
M Pesa Group Contribution Platforms	9	0.900	90.00%	Valid
Household Resilience	9	0.885	88.50%	Valid
Entire Scale	**45**	**0.890**	**89.00%**	**Valid**

Table 3.2 presents the validity test results using the Content Validity Index (CVI) to assess the extent to which the measurement items adequately represent the constructs under study. The results indicate high CVI values for all variables: M-Pesa payment services (CVI = 0.890), M-Pesa savings functionalities (CVI = 0.880), M-Pesa digital credit access (CVI = 0.895), M-Pesa group contribution platforms (CVI = 0.900), and household resilience (CVI = 0.885). The overall scale recorded a CVI of 0.890, with all constructs achieving congruency percentages above 88%. Since all CVI figures surpass the recommended 0.70 threshold, the tools are considered valid. These findings imply the questionnaire items were appropriate, vibrant, and representative of the study constructs, thereby ensuring that the instrument accurately measured the envisioned constructs and enhancing the overall credibility of the study results.

3.8 Data Analysis Methods

After obtaining the questionnaires, data were evaluated for completeness, correctness, and consistency before they were entered into statistical software. Finally, the dataset was coded and cleaned to check for inconsistencies, inaccuracies, and outliers to make the data final and suitable for statistical testing (Kothari 2004). Data analysis was done with the help of SPSS, which was appropriate for descriptive and inferential statistics and facilitated expedited and accurate management of data collected through surveys (Bryman, 2016). The research variables and sample parameters were summarized using means, frequencies, percentages, and standard deviations, appropriately.

Inferential statistics were utilized to establish the affiliation between the four scopes of M-Pesa use and household resilience: dimension in payment services, savings functionalities, access to digital credit, and group contributions platforms. The affiliation between these independent and the dependent variables was tested via a multiple regression analysis (Creswell & Creswell, 2018) to determine the direction, strength, and significance of the connection. Results were reported in tables and narrative text that explained the statistical results and their practical implications in clear and meaningful terms that correspond with the results readers receive.

The multiple regression model employed was:

$Y = \beta_0 + \beta_1$Payment services + β_2Saving functionalities + β_3Digital credit access + β_4Group contribution platforms + ε

β_0 is the intercept.

$\beta_1, \beta_2, \beta_3, \beta_4$ – model coefficients.

ε_{it} is the error term.

3.9 Diagnostic Tests

Regression analysis assumptions of statistical modeling, such as normality, multicollinearity, and homoscedasticity, were tested to ensure the output validity. If these assumptions were discovered to be violated, suitable corrective measures were taken, like transforming variables or applying robust statistical techniques (Field, 2013).

3.9.1 Normality

Normality is the assumption that the data for each variable are distributed symmetrically around the mean, forming a bell-shaped curve. The validity of parametric studies like regression depends on this supposition (Field, 2013). Normality was tested using the Kolmogorov–Smirnov test. The use of parametric statistical techniques was supported by a significance value of $p > 0.05$, which showed that the data did not significantly deviate from a normal distribution.

3.9.2 Multicollinearity

When two or more independent variables are significantly associated, multicollinearity occurs, which may bias estimated coefficients and compromise a regression model's dependability (Field, 2013). The Variance Inflation Factor (VIF) and tolerance values produced by SPSS were used in this investigation to evaluate it. A VIF of less than 10 and a tolerance greater than 0.1 were taken as evidence that multicollinearity is not a major concern, allowing the effects of the independent variables to be estimated with confidence.

3.9.3 Heteroskedasticity

Heteroscedasticity occurs when the error terms' variability changes across different levels of the independent variables, which can yield inefficient estimates and potentially misleading statistical conclusions (Field, 2013). In this study, it was tested by inspecting scatterplots of the standardized residuals and through the Breusch-Pagan test in SPSS. A non-significant coefficient ($p>0.05$) indicated the error terms have constant variance, thereby confirming the assumption of homoscedasticity required for valid regression analyses.

3.10 Ethical Considerations

Ethical integrity was upheld during the entire research course to safeguard the rights, dignity, and welfare of all respondents. The research strictly adhered to the ethical ideologies of respect for respondents, beneficence, and justice as expressed in the Belmont Report and adhered to established research ethics procedures (Creswell & Creswell, 2018). Before data collection, ethical clearance was obtained from the Strathmore University Institutional Ethics Review Board, followed by a NACOSTI research permit. Approval letters from local administrative offices within Westlands Constituency were also sought to ensure community-level compliance and transparency.

Every participant received complete information about the research's goals, methods, possible risks and advantages, and their freedom to discontinue participation at any time without repercussions. Informed consent was obtained before administering questionnaires. To protect anonymity, respondents were not identified by name; instead, numeric codes were used on all instruments. Data were safely kept in files that required a password, whereas hard copies were kept in locked

cabinets accessible only to the researcher. Information obtained was used exclusively for academic purposes, ensuring confidentiality and non-disclosure to unauthorized parties. The study avoided coercion or deceptive practices and did not offer incentives that could unduly influence participation.

3.11 Dissemination of Findings

This research's results were disseminated through the submission of a master's thesis to Strathmore University in partial fulfillment of the requirements for the Master of Science in Development Finance. A summarized version of the findings may be shared with relevant stakeholders in the mobile money and financial inclusion ecosystem, including service providers such as Safaricom, in an aggregated and non-identifiable form to inform policy and product design. The results may also be presented in academic forums or submitted in peer-reviewed journal publications.

3.12 Chapter Summary

This chapter delineates the methodological approach guiding research, covering the research design, target population, sampling strategy, and procedures for data collection and analysis. It also justified the selection of the target population and sample size and described how questionnaires were administered and pre-tested to ensure both reliability and validity. The chapter also sets out the statistical methods applied, including diagnostic tests, and highlights the ethical considerations and approvals essential to conducting the research.

Chapter Four: Data Analysis and Findings

4.1 Introduction

This chapter contains the analysis and interpretation of the data collected in line with the study objectives, focusing on the effect of M-Pesa usage dimensions on household resilience among women vegetable vendors in Westlands Constituency. It offers response rate, demographic characteristics, descriptive statistics, diagnostic tests, and inferential analysis used to conclude the study findings.

4.2 Response Rate

Response rate refers to the proportion of questionnaires administered that are successfully filled and returned for analysis (Creswell & Creswell, 2018). As shown in Table 4.1, in relation to the 422 questionnaires issued, 378 were successfully returned, signifying an 89.6% response rate, whereas 44 questionnaires (10.4%) were not returned. This response rate is deemed sufficiently high for survey research and indicates that the data collected were adequate and reliable for analysis (Bryman, 2016). The high response rate also minimizes the likelihood of non-response bias, thereby enhancing the credibility of the study findings.

Table 4.1: Response Rate

Response Rate	Frequency	Percentage
Returned	378	89.6
Unreturned	44	10.4
Total	**422**	**100**

Source: Author (2026)

4.3 Demographic Analysis

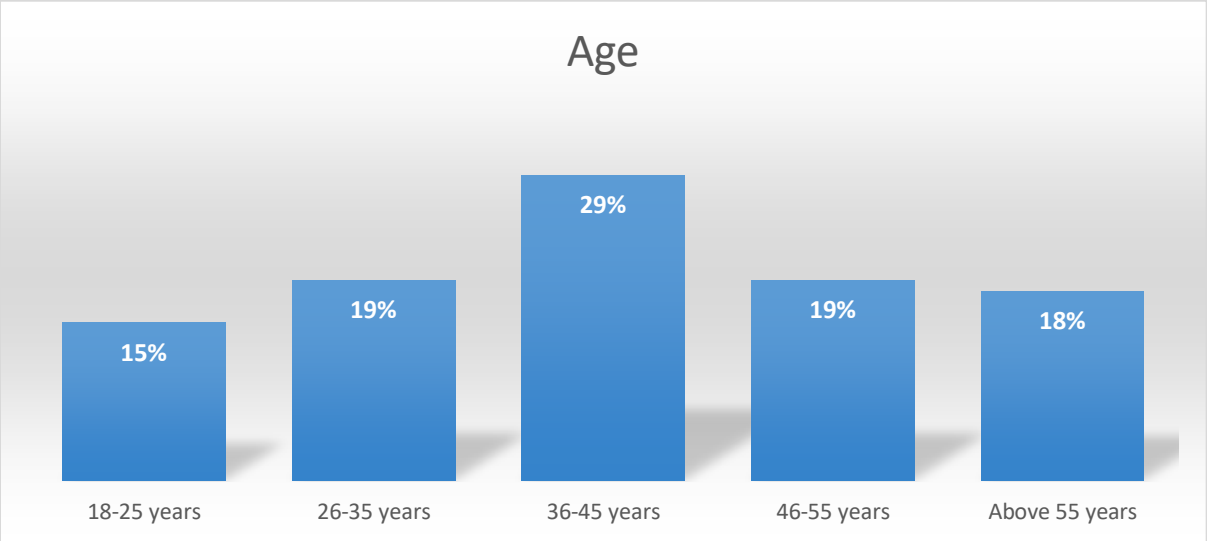
This segment offers the respondents' demographic characteristics to provide an improved consideration of the profile of women vegetable vendors included in the research. Specifically, it analyzes respondents' age, number of years in business, and level of education, which are important in contextualizing the study findings.

4.3.1 Respondents' Age

Figure 4.1 exhibits the respondents' age distribution, showing the largest proportion (29%) of women vegetable vendors falls within the 36–45 years age bracket, whereas those aged 26–35 years and 46–55 years are at 19% each, those above 55 years at 18%, and the youngest group (18–

25 years) at 15%. This designated majority of respondents were in the economically active and productive years, suggesting that vegetable vending is largely undertaken by mature individuals with significant household and business responsibilities. These findings imply that the respondents are likely to have substantial experience in managing both business operations and household financial needs, making them well positioned to meaningfully assess the role of M-Pesa usage in enhancing household resilience.

Figure 4.1: Respondents' Age

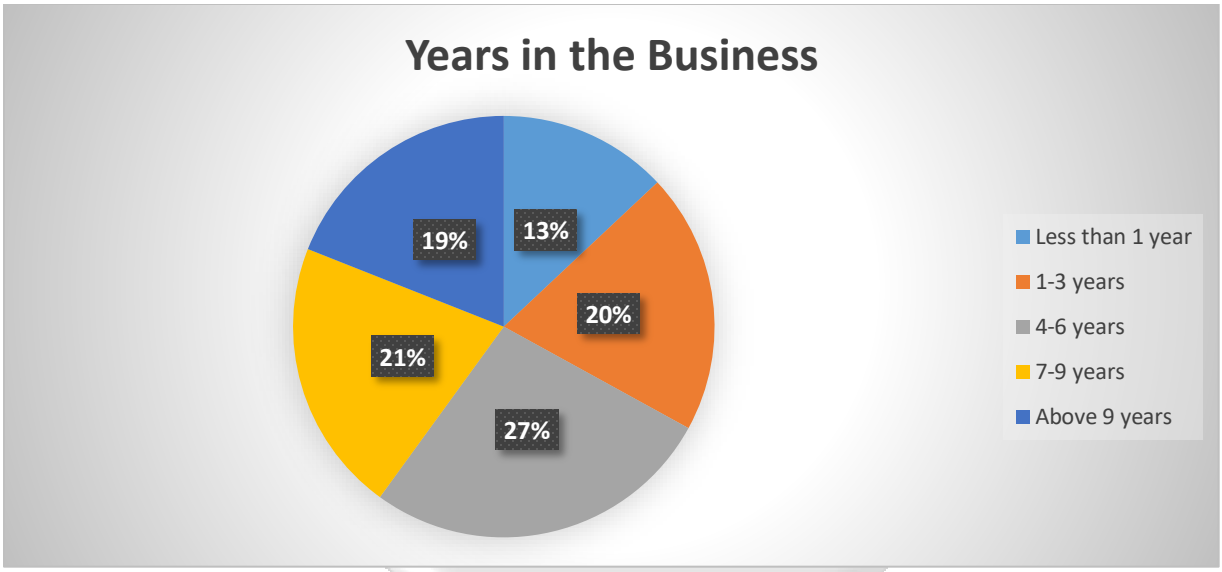


Source: Author (2026)

4.3.2 Number of Years with the Business

The distribution of respondents in relation to how long they had been in business is shown in Figure 4.2, indicating that the largest proportion (27%) have operated for 4–6 years, followed by those with 7–9 years (21%), 1–3 years (20%), above 9 years (19%), and less than 1 year (13%). This shows that most respondents have moderate to substantial experience in vegetable vending, with a significant number having stayed in business for more than four years. These findings imply that the respondents possess adequate practical experience and business exposure, which enhances the reliability of their responses regarding M-Pesa usage and household resilience, as they are likely to have encountered and adapted to various economic conditions over time.

Figure 4.2: Number of Years with the Business

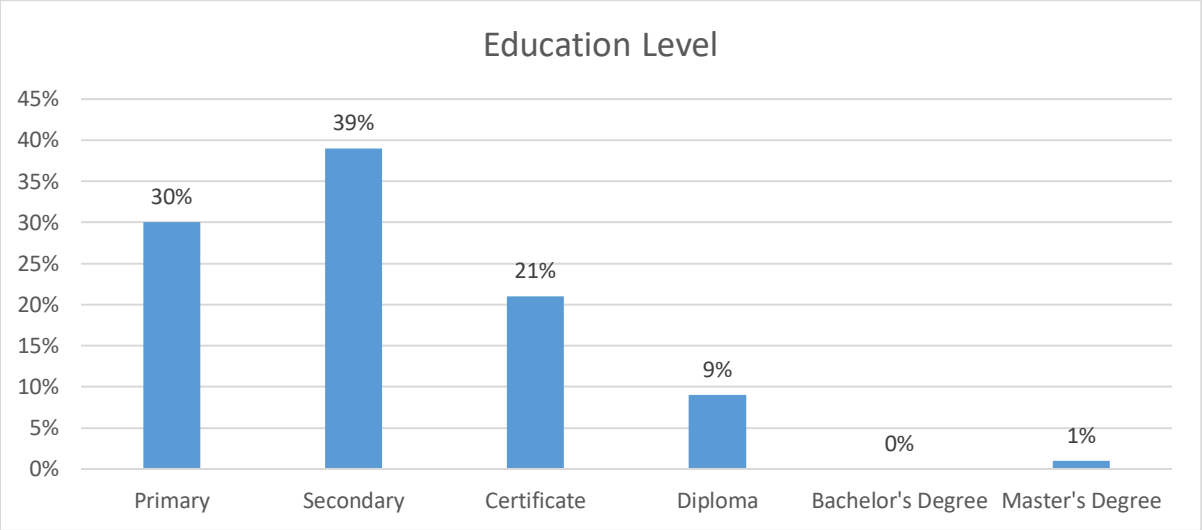


Source: Author (2026)

4.3.3 Level of Education

The distribution of respondents by educational level is seen in Figure 4.3, where the majority had completed secondary education (39%), after primary education (30%), certificates (21%), and diplomas (9%). Only 1% had master's degrees, and none had bachelor's degrees. This suggests that most women vegetable vendors possess basic to moderate levels of formal education, with very few having advanced academic qualifications. These findings imply that the respondents are likely to have sufficient literacy and numeracy skills to utilize M-Pesa effectively, although the relatively low levels of higher education may influence the extent to which they fully exploit advanced financial features, highlighting the importance of user-friendly financial technologies and targeted financial literacy initiatives.

Figure 4.3: Level of Education



Source: Author (2026)

4.4 Descriptive Analysis of Study Variables

This segment presents the descriptive analysis of the study variables, focusing on respondents' perceptions of the different dimensions of M-Pesa usage and household resilience. The analysis utilized mean and standard deviations to summarize the data and provide insights into the general trends and patterns across the study variables.

4.4.1 M-Pesa Payment Services

This segment presents M-Pesa payment services descriptive results, highlighting respondents' insights regarding the scope in which these services influence their business operations. The analysis is based on mean scores and standard deviations, where higher mean values indicate robust consensus and lower standard deviations indicate consistency in responses. Overall, the outcomes exhibit a high pact across all items, with a 4.36 composite mean and 0.65 relatively low standard deviation, suggesting that respondents consistently perceive M-Pesa payment services as beneficial in their daily business activities.

The results indicate that respondents agreed that they frequently use M-Pesa to receive payments from customers (Mean = 4.39, Std. Dev = 0.83) and that M-Pesa payments make it convenient to sell vegetables (Mean = 4.40, Std. Dev = 0.75). Additionally, respondents agreed that M-Pesa payments improve the reliability of receiving payments (Mean = 4.37, Std. Dev = 0.84) and

strengthen trust with customers (Mean = 4.38, Std. Dev = 0.86). The relatively low standard deviations across these statements indicate that these views are widely shared among respondents, reinforcing the central role of M-Pesa in facilitating efficient and trustworthy transactions.

Further, respondents agreed that M-Pesa payments reduce the risk of handling cash (Mean = 4.33, Std. Dev = 0.86), save time in conducting daily transactions (Mean = 4.35, Std. Dev = 0.78), and allow for easy tracking of sales (Mean = 4.35, Std. Dev = 0.91). These findings demonstrate that M-Pesa enhances operational efficiency by minimizing transaction risks, improving speed, and enabling better financial monitoring. The moderate standard deviations suggest slight variations in experiences, but overall consistency in agreement regarding these benefits.

Finally, the highest-rated statement was that M-Pesa payments help in managing cash flow effectively (Mean = 4.53, Std. Dev = 0.72), indicating strong consensus on its importance in financial management. Although the statement on increased sales recorded a slightly lower mean (Mean = 4.19, Std. Dev = 0.96), the moderate standard deviation indicates varied experiences among respondents regarding its impact on sales. These findings imply that while M-Pesa may not uniformly increase sales, it significantly enhances efficiency, reliability, and financial control, which are critical for improving business performance and strengthening household resilience.

Table 4.2: Descriptive Statistics for M-Pesa Payment Services

Statements	N	Mean	Std. Dev
I frequently use M-Pesa to receive payments from customers.	378	4.39	0.83
M-Pesa payments make it convenient to sell vegetables.	378	4.40	0.75
M-Pesa payments reduce the risk of handling cash.	378	4.33	0.86
M-Pesa payments save time in conducting daily transactions.	378	4.35	0.78
The use of M-Pesa payments has increased my sales.	378	4.19	0.96
M-Pesa payments have improved the reliability of receiving payments.	378	4.37	0.84
M-Pesa payments have strengthened trust with my customers.	378	4.38	0.86
I can easily track sales through M-Pesa payments.	378	4.35	0.91
M-Pesa payments help me manage my cash flow effectively.	378	4.53	0.72
Overall	**378**	**4.36**	**0.65**

Source: Author (2026)

4.4.2 M-Pesa Savings Functionalities

This section presents the descriptive statistics for M-Pesa savings functionalities, focusing on respondents' perceptions of how these services influence their saving behavior and household financial outcomes. The analysis uses mean scores and standard deviations, where higher mean values indicate profound agreement and lower standard deviations reflect consistency in responses. Overall, the results indicate a high level of agreement, with a composite mean of 4.12 and a standard deviation of 0.78, suggesting that respondents generally view M-Pesa savings functionalities as beneficial, although with slightly more variation in responses compared to payment services.

The conclusions exhibit consensus of regularly save a portion of their earnings using M-Pesa (Mean = 4.22, Std. Dev = 0.99) and that M-Pesa savings encourage them to save more money (Mean = 4.16, Std. Dev = 0.93). Additionally, respondents indicated that they can easily access their savings when needed (Mean = 4.21, Std. Dev = 0.98) and that the security of M-Pesa motivates them to save (Mean = 4.11, Std. Dev = 0.99). These outcomes suggest that M-Pesa provides a convenient, accessible, and secure platform that promotes saving behavior among women vegetable vendors, with relatively moderate standard deviations indicating general agreement across respondents.

Further, respondents agreed that M-Pesa savings help them plan for future needs (Mean = 4.26, Std. Dev = 0.98) and that they consider it an important part of their financial routine (Mean = 4.28, Std. Dev = 1.02). They also acknowledged that M-Pesa savings assist in covering unexpected household expenses (Mean = 4.01, Std. Dev = 1.07). The findings pinpoint M-Pesa savings in enriching financial preparedness and supporting short and long-run financial planning. However, the somewhat large standard deviations suggest some variability in how respondents felt these benefits.

Finally, the statements on improved household financial stability (Mean = 3.92, Std. Dev = 1.13) and satisfaction with interest earned (Mean = 3.94, Std. Dev = 1.14) recorded comparatively lower means and higher standard deviations. This implies that while respondents largely agree on the usefulness of M-Pesa savings, there is less consensus regarding its impact on long-term financial steadiness and returns. These findings imply that M-Pesa savings functionalities are effective in

promoting saving habits and financial planning, but their contribution to broader financial outcomes such as wealth accumulation and stability may vary among users, pointing to the need for enhanced savings products and financial literacy support.

Table 4.3: Descriptive Statistics for M Pesa Savings Functionalities

Statements	N	Mean	Std. Dev
I regularly save a portion of my earnings using M-Pesa.	378	4.22	0.99
M-Pesa savings help me cover unexpected household expenses.	378	4.01	1.07
The M-Pesa savings option encourages me to save more money.	378	4.16	0.93
I can easily access my savings on M-Pesa when needed.	378	4.21	0.98
The security of M-Pesa encourages me to save more.	378	4.11	0.99
Saving with M-Pesa enhanced my household's financial steadiness.	378	3.92	1.13
I am satisfied with the interest earned (if applicable) through M-Pesa savings.	378	3.94	1.14
M-Pesa savings help me plan for future needs.	378	4.26	0.98
I consider M-Pesa savings as an important part of my financial routine.	378	4.28	1.02
Overall mean Score	**378**	**4.12**	**0.78**

Source: Author (2026)

4.4.3 M-Pesa Digital Credit Access

This section presents the descriptive statistics for M-Pesa digital credit access, focusing on respondents' perceptions of the use and effectiveness of mobile-based loan services in supporting their business and household needs. The analysis is based on descriptive statistics, where bigger mean values indicate stronger agreement and higher standard deviations reflect greater inconsistency in replies. Overall, the results exhibited a restrained level of agreement, with a composite mean of 3.69 and a relatively higher 1.08 SD, suggesting that respondents have mixed experiences with M-Pesa digital credit services.

The results infer moderately approved they used M-Pesa digital loans such as M-Shwari and Fuliza for their business (Mean = 3.95, Std. Dev = 1.15) and that the loan application process is easy and convenient (Mean = 3.91, Std. Dev = 1.13). Additionally, respondents expressed moderate satisfaction with the reliability and accessibility of digital credit services (Mean = 3.78, Std. Dev = 1.28). These results suggest that while digital credit is relatively accessible and user-friendly, the variation in standard deviations indicates differing levels of experience and satisfaction among respondents.

Further, respondents indicated moderate agreement that accessing M-Pesa digital credit has helped maintain cash flow (Mean = 3.64, Std. Dev = 1.29), enabled them to respond quickly to emergencies (Mean = 3.68, Std. Dev = 1.26), and improved their ability to restock or expand their business (Mean = 3.69, Std. Dev = 1.31). These findings highlight the functional role of digital credit in addressing short-term financial needs and supporting business continuity. Nevertheless, the comparatively large SDs suggest that the benefits were not uniformly experienced across all respondents.

Finally, the lowest-rated statements relate to the adequacy of loan amounts (Mean = 3.48, Std. Dev = 1.36), ability to repay within the required period (Mean = 3.53, Std. Dev = 1.34), and affordability of loan costs (Mean = 3.60, Std. Dev = 1.39). The higher variability in these responses indicates concerns among respondents regarding loan sufficiency, repayment pressure, and associated costs. These findings imply that while M-Pesa digital credit provides important financial support for liquidity and emergencies, limitations related to loan size, cost, and repayment conditions may constrain its effectiveness in enhancing business growth and household resilience.

Table 4.4: Descriptive Statistics for M-Pesa Digital Credit Access

Statements	N	Mean	Std. Dev
I have used M-Pesa digital loans (e.g., M-Shwari, Fuliza) for my business.	378	3.95	1.15
The loan application process via M-Pesa is easy and convenient.	378	3.91	1.13
The loan amounts available through M-Pesa are adequate for my needs.	378	3.48	1.36
I can repay M-Pesa loans within the required period.	378	3.53	1.34
Accessing M-Pesa digital credit has helped me maintain my cash flow.	378	3.64	1.29
M-Pesa digital credit has enabled me to respond quickly to emergencies.	378	3.68	1.26
The cost of M-Pesa digital loans (e.g., interest, fees) is affordable for me.	378	3.60	1.39
The availability of digital credit through M-Pesa improves my ability to restock or expand my business.	378	3.69	1.31
I am satisfied with the reliability and accessibility of M-Pesa digital credit services.	378	3.78	1.28
Overall	**378**	**3.69**	**1.08**

Source: Author (2026)

4.4.4 M-Pesa Group Contribution Platforms

This section presents the descriptive statistics for M-Pesa group contribution platforms, focusing on respondents' perceptions of how digital group savings and contribution mechanisms influence their financial behavior and household resilience. The analysis is based on descriptive statistics, where bigger mean values indicate stronger agreement and higher standard deviations reflect greater inconsistency in replies. Overall, the results indicate a high level of agreement, with 4.28 composite mean and a standard deviation of 0.78, suggesting consensus that respondents widely perceive M-Pesa group contribution platforms as beneficial and reliable.

The findings display robust consensus that they participate in group contribution platforms such as chamas via M-Pesa (Mean = 4.31, Std. Dev = 0.89) and that these platforms make it convenient to save with others (Mean = 4.26, Std. Dev = 0.89). Additionally, respondents agreed that group payments through M-Pesa are secure and trustworthy (Mean = 4.33, Std. Dev = 0.86) and that contributing via M-Pesa improves accountability within the group (Mean = 4.31, Std. Dev = 0.88). The relatively low standard deviations indicate strong consensus among respondents, highlighting M-Pesa's mandate in boosting trust, transparency, and convenience in group-based financial activities.

Further, respondents agreed that participation in M-Pesa groups allows them to access larger sums when needed (Mean = 4.15, Std. Dev = 0.98) and helps manage unexpected expenses (Mean = 4.14, Std. Dev = 0.97). They also indicated that group contributions strengthen social and financial support networks (Mean = 4.29, Std. Dev = 0.93) and improve household resilience (Mean = 4.24, Std. Dev = 0.96). These findings demonstrate that M-Pesa group platforms not only facilitate financial pooling but also enhance collective support mechanisms that are critical in coping with economic shocks, with moderate standard deviations suggesting generally consistent experiences.

Finally, the highest-rated statement was satisfaction with the ease of making group contributions using M-Pesa (Mean = 4.44, Std. Dev = 0.90), indicating strong approval of the platform's usability. These findings imply that M-Pesa group contribution platforms serve as a substantial protagonist in strengthening financial capacity and social capital among women vegetable vendors, thereby enhancing their ability to manage risks, access funds, and improve overall household resilience.

Table 4.5: Descriptive Statistics for M Pesa Group Contribution Platforms

Statements	N	Mean	Std. Dev
I participate in group contribution platforms (e.g., chamas) via M-Pesa.	378	4.31	0.89
M-Pesa group contributions make it convenient to save with others.	378	4.26	0.89
Participation in M-Pesa groups allows me to access larger sums when needed.	378	4.15	0.98
Group contribution platforms via M-Pesa help me manage unexpected expenses.	378	4.14	0.97
Group payments through M-Pesa are secure and trustworthy.	378	4.33	0.86
Contributing via M-Pesa improves accountability within the group.	378	4.31	0.88
The ability to save as a group on M-Pesa improves my household resilience.	378	4.24	0.96
Group contributions via M-Pesa have strengthened my social and financial support networks.	378	4.29	0.93
I am satisfied with the ease of making group contributions using M-Pesa.	378	4.44	0.90
Overall	**378**	4.28	0.78

Source: Author (2026)

4.4.5 Household Resilience

This section presents the descriptive statistics for household resilience, focusing on respondents' perceptions of the capability to endure, acclimate to, and recuperate from financial shocks. The analysis is based on descriptive statistics, where large mean values indicate robust consensus and higher SDs reflect variability in responses. Overall, the outcomes exhibit a moderate to great consensus level, with a composite 3.90 mean and a 0.89 SD, suggesting that though respondents generally perceive their households as resilient, there is noticeable variation in experiences across different aspects of resilience.

The findings indicate that respondents moderately agreed that their household can maintain expenditures despite income fluctuations (Mean = 3.81, Std. Dev = 1.18), recover quickly from financial setbacks (Mean = 3.77, Std. Dev = 1.18), and sustain daily needs during challenging times (Mean = 3.91, Std. Dev = 1.12). Similarly, respondents agreed that they can cover unexpected medical expenses (Mean = 3.84, Std. Dev = 1.14) and access financial support when needed (Mean = 3.88, Std. Dev = 1.16). These results indicate that households possess some level of coping capacity, though the relatively large standard deviations suggest differing levels of resilience among respondents.

Further, respondents agreed that income from vegetable vending supports their household reliably (Mean = 3.99, Std. Dev = 1.05) and that they were confident in their ability to save for emergencies (Mean = 3.95, Std. Dev = 1.09). They also indicated that their households could continue running the business despite external shocks (Mean = 3.84, Std. Dev = 1.15). The discoveries highpoint the central mandate of vegetable vending as a source of livelihood and the importance of financial preparedness in sustaining household welfare. However, the variation in responses suggests that not all households experience the same level of financial stability and preparedness.

Finally, the highest-rated statement was confidence in long-term economic stability (Mean = 4.12, Std. Dev = 1.14), indicating a generally positive outlook among respondents regarding their future financial well-being. These findings imply that while women vegetable vendors demonstrate a reasonable level of household resilience, there remain gaps in their ability to consistently manage shocks and uncertainties. This underscores the importance of supportive financial mechanisms, such as M-Pesa services, in strengthening resilience by enhancing income stability, access to emergency funds, and long-term financial security.

Table 4.6: Descriptive Statistics for Household Resilience

Statements	N	Mean	Std. Dev
My household can maintain expenditures despite income fluctuations.	378	3.81	1.18
I can cover unexpected medical expenses when needed.	378	3.84	1.14
My household can recover quickly from financial setbacks.	378	3.77	1.18
The income from my vegetable vending business supports my household reliably.	378	3.99	1.05
I am confident in my household's ability to save for emergencies.	378	3.95	1.09
My household can sustain daily needs during challenging times.	378	3.91	1.12
I have access to financial support when needed.	378	3.88	1.16
My household can continue running the vegetable vending business despite external shocks.	378	3.84	1.15
I am confident about my household's long-term economic stability.	378	4.12	1.14
Overall	**378**	3.90	0.89

Source: Author (2026)

4.5 Diagnostic Tests

This section presents the tests conducted to guarantee the validity and reliability of the regression analysis results. Specifically, the study tested normality, multicollinearity, and homoscedasticity to confirm that the data met the key assumptions vital in precise and unbiased statistical inference.

4.5.1 Normality Test

This segment offers the normality test undertaken via the Kolmogorov-Smirnov statistic to determine whether the study variables follow a normal distribution, which is a vital supposition in regression analysis (Bryman, 2016). The results indicate all variables had p-values greater than the 0.05 level of significance, with M-Pesa Payment Services ($p = 0.075$), M-Pesa Savings Functionalities ($p = 0.065$), M-Pesa Digital Credit Access ($p = 0.060$), M-Pesa Group Contribution Platforms ($p = 0.055$), and Household Resilience ($p = 0.070$). Since all p-values exceed 0.05, the null hypothesis of normality cannot be rejected, implying that the data for all variables are approximately normally distributed (Creswell & Creswell, 2018).

These findings imply that the dataset satisfies the normality postulation essential for parametric statistical techniques like correlation and multiple regression analysis. This enhances the reliability and validity of subsequent inferential analysis, as normally distributed data reduces the risk of biased estimates and incorrect conclusions. Therefore, the study can proceed with regression analysis with confidence that the results will be statistically sound and generalizable to the target population.

Table 4.7: Test for Normality

Variable	Kolmogorov-Smirnov Statistic	p-value (Sig.)
M Pesa Payment Services	.975	.075
M Pesa Savings Functionalities	.988	.065
M Pesa Digital Credit Access	.991	.060
M Pesa Group Contribution Platforms	.985	.055
Household Resilience	.993	.070

Source: Author (2026)

4.5.2 Multicollinearity Test

To ascertain whether there is a strong connection between the independent variables, the multicollinearity test employing the VIF and tolerance values (1/VIF) is presented in this part.

Multicollinearity can alter regression estimates and affect the reliability of the model coefficients if present (Bryman, 2016). The results show that M-Pesa Payment Services (VIF = 1.704), M-Pesa Savings Functionalities (VIF = 1.279), M-Pesa Digital Credit Access (VIF = 1.869), and M-Pesa Group Contribution Platforms (VIF = 1.664) all have VIF values below the acknowledged threshold of 10. Similarly, the tolerance values range between 0.535 and 0.782, which are all above the minimum acceptable level of 0.1, indicating no serious multicollinearity concerns (Creswell & Creswell, 2018).

These findings imply that the independent variables encompassed in the study are not highly allied to one another and can therefore be reliably used in the regression model without causing instability in the coefficient estimates. This enhances the accuracy and interpretability of the regression results, as each variable can independently explain its contribution to household resilience. Consequently, the study can proceed with multiple regression analysis with confidence that multicollinearity will not compromise the validity of the findings.

Table 4.8: Multicollinearity

Variable	VIF	1/VIF
M Pesa Payment Services	1.704	0.587
M Pesa Savings Functionalities	1.279	0.782
M Pesa Digital Credit Access	1.869	0.535
M Pesa Group Contribution Platforms	1.664	0.601
Mean	1.629	

Source: Author (2026)

4.5.3 Heteroskedasticity Test

This section offers the heteroskedasticity test output conducted to determine whether the variance of the error terms is constant across observations, which is a key assumption in regression analysis (Bryman, 2016). The test yielded a 7.94 statistic with a 0.0611 p-value. Since the p-value is greater than 0.05, the null hypothesis of constant variance (homoscedasticity) cannot be rejected (Creswell & Creswell, 2018). This suggests that the model does not exhibit heteroskedasticity.

The implication of these findings' regression model satisfies the homoscedasticity convention, meaning that the residuals have constant variance in all independent variables. This enhances the reliability of the regression estimates, as the standard errors are not biased, thereby ensuring valid

hypothesis testing and confidence intervals. Consequently, the study can proceed with regression analysis with confidence that the results will be robust and statistically reliable.

Table 4.9: Heteroskedasticity Results

Test Statistic	P-Value
7.94	0.0611
H_o: Constant Variance	

Source: Author (2026)

4.6 Inferential Statistics

This segment offers the inferential analysis of the study, focusing on correlation and regression results to examine the associations between M-Pesa usage dimensions and household resilience. It offers insights into the strength, direction, and significance of these relationships, and the overall effect of the predictor variables on the dependent variable.

4.6.1 Correlation Analysis

The findings of the Pearson correlation analysis, which was done to determine the direction and intensity of the association between household resilience and M-Pesa usage aspects, are shown in this section. The correlation coefficients range between -1 and +1, where values closer to +1 indicate a strong positive relationship, and the significance values (p-values) indicate whether the relationships are statistically significant (Bryman, 2016). Table 4.10 exhibit all relationships are positive and statistically significant at the 0.01 level, signifying strong associations between the study variables.

The results indicate a substantial and positive affiliation between M-Pesa payment services and household resilience ($r = 0.830$, $p < 0.01$). This suggests that augmented use of M-Pesa payment services is allied to advanced levels of household resilience among women vegetable vendors. The strength of this correlation implies that payment services serve an imperative mandate in enhancing financial stability by cultivating transaction efficiency, reliability, and cash flow management.

Similarly, M-Pesa savings functionalities show a substantial positive correlation with household resilience ($r = 0.836$, $p < 0.01$), which is the strongest among all independent variables. This indicates that increased use of savings features is highly associated with improved household

resilience. The finding suggests that the ability to save, plan, and access funds when needed significantly enhances households' capacity to endure and recuperate from financial shocks.

The results additionally reveal a strong and positive association between M-Pesa digital credit access and household resilience ($r = 0.705$, $p < 0.01$). This implies that access to digital credit contributes positively to household resilience by enabling respondents to address short-term financial needs, maintain business operations, and respond to emergencies. Although the relationship is slightly weaker than that of payment services and savings functionalities, it remains substantial and statistically significant.

Finally, M-Pesa group contribution platforms exhibit a moderate but positive and significant connection to household resilience ($r = 0.552$, $p < 0.01$). This suggests participation in group-based financial platforms contributes to improved household resilience, although to a lesser extent than the other variables. The implication is that while social and collective financial mechanisms are important, their impact may be complementary to individual financial tools.

Table 4.10: Correlation Results

		Household Resilience	M-Pesa Payment Services	M-Pesa Savings Functionalities	M-Pesa Digital Credit Access	M-Pesa Group Contribution Platforms
Household Resilience	Pearson Correlation	1				
	Sig. (2-tailed)					
M-Pesa Payment Services	Pearson Correlation	.830**	1			
	Sig. (2-tailed)	.000				
M-Pesa Savings Functionalities	Pearson Correlation	.836**	.567**	1		
	Sig. (2-tailed)	.000	.000			
M-Pesa Digital Credit Access	Pearson Correlation	.705**	.629**	.693**	1	
	Sig. (2-tailed)	.000	.000	.000		
M-Pesa Group Contribution Platforms	Pearson Correlation	.552**	.549**	.449**	.410**	1
	Sig. (2-tailed)	.000	.000	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).
b. Listwise N=378

Source: Author (2026)

4.6.2 Regression Analysis

The regression results in Tables 4.11, 4.12, and 4.13 present the relationship between M-Pesa usage dimensions and household resilience among women vegetable vendors in Westlands Constituency. The model summary results show that the independent variables had a strong relationship with household resilience, as indicated by an R value of 0.883. The R Square value of 0.781 indicates that M-Pesa payment services, M-Pesa savings functionalities, M-Pesa digital credit access, and M-Pesa group contribution platforms jointly explained 78.1% of the variation in household resilience. The adjusted R Square value of 0.778 further shows that the model retained strong explanatory power after adjusting for the number of predictors. However, since an R Square of 0.781 is relatively high for social science research, the finding should be interpreted with caution. The high explanatory power may suggest that the four M-Pesa usage dimensions are strongly related to household resilience, but it may also reflect possible common method variance because data for both independent and dependent variables were collected from the same respondents using the same questionnaire. The possibility of model overfitting was minimized by using theoretically grounded variables and conducting diagnostic tests, but the interpretation of the model remains limited to the study context.

Table 4.11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.883[a]	.781	.778	.202825724709424

a. Predictors: (Constant), M-Pesa Group Contribution Platforms, M-Pesa Digital Credit Access, M-Pesa Payment Services, M-Pesa Savings Functionalities

Source: Author (2026)

Table 4.12 shows that the overall regression model was statistically significant, as indicated by an F-statistic of 331.702 and a p-value of 0.000, which was below the 0.05 significance level. This implies that the four M-Pesa usage dimensions had a significant effect on household resilience. The regression sum of squares was greater than the residual sum of squares, indicating that the model explained a substantial portion of the variation in household resilience. Therefore, the model was suitable for assessing the relationship between M-Pesa usage dimensions and household resilience among women vegetable vendors in Westlands Constituency.

Table 4.12: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	54.583	4	13.646	331.702	.000[b]
	Residual	15.345	373	.041		
	Total	69.927	377			

a. Dependent Variable: Household Resilience

b. Predictors: (Constant), M-Pesa Group Contribution Platforms, M-Pesa Digital Credit Access, M-Pesa Payment Services, M-Pesa Savings Functionalities

Source: Author (2026)

The regression coefficients in Table 4.13 show that all four independent variables had positive and statistically significant effects on household resilience. Based on the unstandardized coefficients, M-Pesa payment services had a positive effect on household resilience (B = 0.224, p = 0.000), implying that a one-unit increase in M-Pesa payment services was associated with a 0.224-unit increase in household resilience, holding other variables constant. M-Pesa savings functionalities also had a positive effect on household resilience (B = 0.367, p = 0.000), meaning that a one-unit increase in savings functionalities was associated with a 0.367-unit increase in household resilience. Similarly, M-Pesa digital credit access had a positive effect on household resilience (B = 0.355, p = 0.000), while M-Pesa group contribution platforms also had a positive effect (B = 0.373, p = 0.000). These results indicate that increased use of each M-Pesa dimension was associated with improved household resilience among women vegetable vendors.

To compare the relative strength of the predictors, the standardized beta coefficients were used rather than the unstandardized coefficients. The standardized coefficients show that M-Pesa savings functionalities had the strongest influence on household resilience (β = 0.367), followed by M-Pesa payment services (β = 0.313), M-Pesa digital credit access (β = 0.200), and M-Pesa group contribution platforms (β = 0.133). This means that, although group contribution platforms had the largest unstandardized coefficient, they had the weakest relative influence when all variables were placed on the same standardized scale. Therefore, the findings show that savings functionalities were the most influential predictor of household resilience, while group contribution platforms had the weakest relative influence among the four predictors.

Table 4.13: Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-1.156	.323		-3.584	.000
	M-Pesa Payment Services	.224	.037	.313	5.993	.000
	M-Pesa Savings Functionalities	.367	.053	.367	6.917	.000
	M-Pesa Digital Credit Access	.355	.060	.200	5.874	.000
	M-Pesa Group Contribution Platforms	.373	.082	.133	4.542	.000

a. Dependent Variable: Household Resilience

Source: Author (2026)

Using the unstandardized coefficients, the regression model was specified as follows:

$Y = -1.156 + 0.224X_1 + 0.367X_2 + 0.355X_3 + 0.373X_4$

Where:

Y = Household Resilience

X_1 = M-Pesa Payment Services

X_2 = M-Pesa Savings Functionalities

X_3 = M-Pesa Digital Credit Access

X_4 = M-Pesa Group Contribution Platforms

The model indicates that, holding all other variables constant, household resilience would increase by 0.224 units for every one-unit increase in M-Pesa payment services, 0.367 units for every one-unit increase in M-Pesa savings functionalities, 0.355 units for every one-unit increase in M-Pesa digital credit access, and 0.373 units for every one-unit increase in M-Pesa group contribution platforms. The negative constant implies that when all M-Pesa usage dimensions are held at zero, the predicted household resilience score would be negative; however, this value should not be interpreted substantively because the variables were measured using Likert-scale responses where a zero value was outside the observed measurement scale.

4.7 Chapter Summary

This chapter offered the data analysis and results of the research, beginning with the response rate and demographic characteristics of the respondents to provide context for the analysis. It then examined the descriptive statistics of the study variables, followed by diagnostic tests which established data met the conventions required for regression. Further, correlation and regression analyses were conducted, revealing significant positive relationships between M-Pesa usage dimensions and household resilience, with all variables contributing meaningfully to the model. Overall, the findings demonstrate that M-Pesa services play a significant role in enhancing household resilience among women vegetable vendors in Westlands Constituency.

Chapter Five: Summary, Discussion, Conclusion and Recommendations

5.1 Introduction

The research's summary, discussion, conclusion, and suggestions based on the results from Chapter Four are presented in this chapter. It interprets the results in relation to the study objectives and existing literature, draws key conclusions, and provides practical and policy recommendations and further research suggestions.

5.2 Summary of Findings

The research was conducted to establish the effect of M-Pesa usage dimensions on household resilience among women vegetable vendors in Westlands Constituency, Nairobi County. Specifically, it examined the influence of M-Pesa payment services, savings functionalities, digital credit access, and group contribution platforms on household resilience. The research was steered by the Diffusion of Innovations Theory and the Resilience Theory, which provided a foundation for understanding the adoption and impact of mobile financial services on economic stability. In terms of methodology, the research used a descriptive cross-sectional survey design and a positivist research philosophy. Structured questionnaires were used to gather primary data from 378 respondents, and SPSS was used to analyze the data via multiple regression analysis, correlation, and descriptive statistics.

The descriptive outcomes indicated that respondents generally had positive perceptions of all M-Pesa usage dimensions. M-Pesa payment services recorded the highest level of agreement, with respondents highlighting their role in improving transaction convenience, enhancing cash flow management, and reducing risks associated with handling cash. M-Pesa group contribution platforms also recorded high mean scores, demonstrating their importance in promoting collective savings, strengthening social networks, and improving financial support systems. M-Pesa savings functionalities were similarly rated positively, particularly in encouraging saving behavior and supporting financial planning, although respondents expressed some reservations regarding their impact on long-term financial stability. In contrast, M-Pesa digital credit access recorded relatively lower mean scores, with concerns raised regarding loan adequacy, repayment conditions, and affordability, indicating mixed experiences among respondents.

The correlation matrix discovered strong, positive, and statistically substantial associations between all M-Pesa usage scopes and household resilience. M-Pesa savings functionalities exhibited the strongest correlation with household resilience, followed closely by M-Pesa payment services, indicating their critical role in enhancing financial stability and resilience. M-Pesa digital credit access also showed a strong positive relationship, suggesting its importance in addressing short-term liquidity needs and emergencies. Meanwhile, M-Pesa group contribution platforms demonstrated a moderate but significant positive relationship with household resilience, highlighting the role of collective financial mechanisms in supporting households during periods of economic stress.

The regression results further confirmed that all four M-Pesa usage dimensions had positive and statistically significant effects on household resilience. The model explained a substantial proportion of the variation in household resilience, indicating a strong predictive capacity. Among the variables, M-Pesa savings functionalities arose as the most influential predictor, then M-Pesa payment services, digital credit access, and group contribution platforms. These findings imply that while all dimensions contribute to household resilience, savings and payment functionalities play a more prominent role in enhancing financial stability and the aptitude of households to deal with economic turmoil.

5.3 Discussion of Findings

This segment offers a discussion of the study results in relation to the research objectives and existing empirical and theoretical literature. It interprets the results to provide deeper insights into how M-Pesa usage dimensions influence household resilience among women vegetable vendors.

5.3.1 M-Pesa Payment Services and Household Resilience

The study established that M-Pesa payment services had a positive and statistically significant effect on household resilience among women vegetable vendors in Westlands Constituency. The findings suggest that mobile payment services enhance resilience by improving the efficiency, security, and reliability of financial transactions. Women vendors who frequently utilized M-Pesa payment services were better able to receive customer payments, make supplier payments, and manage cash flows without the risks associated with handling physical cash. These benefits are particularly important within informal markets where daily business transactions directly influence

household welfare and the ability to meet essential expenditures. Consequently, improved transaction efficiency appears to strengthen household resilience by ensuring continuity of income and reducing disruptions arising from delayed or insecure payments.

The findings support the Diffusion of Innovations Theory, which posits that innovations are adopted when users perceive them as offering relative advantage, compatibility, and ease of use (Rogers, 1962). The widespread utilization of M-Pesa payment services among women vegetable vendors may be explained by their ability to provide faster, safer, and more convenient transactions than traditional cash-based systems. The findings further support the Resilience Theory, which emphasizes the capacity of households to withstand and recover from shocks through access to resources and adaptive mechanisms (Holling, 1973). By facilitating uninterrupted financial transactions and enhancing liquidity management, M-Pesa payment services appear to strengthen the ability of households to maintain consumption and business operations during periods of economic uncertainty.

The findings are consistent with those of Yao et al. (2023), who found that mobile money platforms improve transaction convenience and security among small-scale entrepreneurs. They also support the observations of Siddika and Sarwar (2024), who reported that mobile payments reduce dependence on cash transactions while enhancing transaction traceability and efficiency. Similarly, Wamukekhe (2024) established that mobile payment adoption strengthened relationships between traders, customers, and suppliers while reducing the effects of income volatility. The consistency of these findings across different contexts suggests that transaction efficiency and improved cash-flow management constitute important pathways through which mobile payment services enhance economic stability among informal sector operators.

However, the present study extends existing literature in several ways. Whereas previous studies largely focused on business outcomes such as sales growth, transaction efficiency, and market expansion, the current study examined household resilience as the outcome variable. The findings therefore demonstrate that the benefits of mobile payment services extend beyond business performance to influence the ability of households to manage emergencies, sustain expenditures, and maintain livelihood activities. Furthermore, unlike studies such as Abubakar (2024) and Mwangi (2024), which examined mobile money as a broad construct, the present study isolated

payment services from other M-Pesa functionalities. This approach provides clearer evidence regarding the specific contribution of payment services to household resilience and highlights their importance as a foundational mechanism through which digital financial inclusion can improve the welfare of women operating within the informal economy.

The findings also have important policy and practical implications. They suggest that efforts aimed at strengthening household resilience among women traders should not focus solely on savings and credit products but should also prioritize expanding access to efficient and reliable digital payment systems. Enhancing network reliability, reducing transaction costs, and promoting merchant payment solutions may further increase the ability of women vegetable vendors to utilize M-Pesa payment services effectively, thereby strengthening both business continuity and household resilience.

5.3.2 M-Pesa Savings Functionalities and Household Resilience

The study established that M-Pesa savings functionalities had a positive and statistically significant effect on household resilience among women vegetable vendors in Westlands Constituency. Furthermore, savings functionalities emerged as the strongest predictor of household resilience among all the M-Pesa usage dimensions examined. This finding suggests that the ability to save regularly through mobile platforms plays a critical role in enhancing the financial security of women traders. Unlike payment services, which primarily facilitate transactions, savings functionalities enable users to accumulate financial reserves that can be utilized during emergencies, business downturns, or periods of income instability. Consequently, women vendors who actively utilized M-Pesa savings products were better positioned to smooth consumption, meet household obligations, and maintain business operations when faced with financial shocks.

The findings support the Diffusion of Innovations Theory, which argues that innovations are more likely to be adopted when they are perceived as useful, convenient, and compatible with users' needs and daily practices (Rogers, 1962). The widespread utilization of M-Pesa savings functionalities among women vegetable vendors may be attributed to their accessibility, flexibility, and ability to facilitate saving without the procedural requirements associated with conventional banking institutions. The findings also support the Resilience Theory, which emphasizes the importance of accumulating resources that enable households to absorb, adapt to, and recover from

adverse events (Holling, 1973). By providing an accessible mechanism for building precautionary financial reserves, M-Pesa savings functionalities strengthen the capacity of households to cope with unexpected expenditures and maintain financial stability during periods of uncertainty.

The findings are consistent with those of Musembi (2024), who found that mobile savings platforms provide women entrepreneurs with convenient mechanisms for accumulating funds and improving future financial planning. Similarly, Asongu et al. (2024) reported that regular saving behaviour contributes significantly to both short-term financial stability and long-term economic security. The findings also support Seck-Sarr (2024), who established that mobile savings enhance financial discipline and reduce dependence on informal saving arrangements that may be insecure or unreliable. Likewise, Nzilano and Magoti (2025) found that mobile savings enabled women entrepreneurs to manage household emergencies, smooth consumption, and sustain business activities during periods of financial stress. The consistency of these findings across different contexts suggests that mobile savings constitute a critical pathway through which digital financial services contribute to household resilience.

Nevertheless, the current study makes an important contribution to the literature by demonstrating that savings functionalities exert a stronger influence on household resilience than other M-Pesa usage dimensions. While previous studies generally reported positive effects of mobile savings on financial well-being, few explicitly compared the relative contribution of savings, payments, digital credit, and group contribution platforms within a single model. The finding that savings functionalities emerged as the strongest predictor suggests that resilience is strengthened not only through access to financial services but also through the accumulation of financial buffers that can be drawn upon during times of need. This observation may explain why households that regularly save are often better able to withstand shocks than those that rely primarily on transactional services or external borrowing.

The findings also have important practical and policy implications. They suggest that initiatives aimed at improving household resilience among women traders should place greater emphasis on promoting saving behaviour through accessible and affordable digital savings products. Financial service providers may therefore achieve greater resilience outcomes by enhancing savings features, offering incentives for regular saving, and integrating financial literacy programs that

encourage long-term saving habits. The findings further imply that policies designed to strengthen financial inclusion should move beyond access to digital financial services and focus on encouraging meaningful utilization of savings products capable of generating sustainable resilience benefits among women operating in the informal sector.

5.3.3 M Pesa Digital Credit Access and Household Resilience

The study established that M-Pesa digital credit access had a positive and statistically significant effect on household resilience among women vegetable vendors in Westlands Constituency. However, compared to the other M-Pesa usage dimensions, digital credit exhibited a relatively weaker influence on household resilience. This finding suggests that although access to digital credit provides an important source of short-term financial support, its contribution to resilience may be constrained by factors such as loan size, borrowing costs, repayment obligations, and the temporary nature of credit financing. The descriptive findings showed that respondents generally appreciated the convenience and accessibility of digital credit services but expressed reservations regarding loan adequacy and repayment pressures. These concerns may explain why digital credit contributed positively to resilience but did not exert as strong an influence as savings functionalities or payment services.

The findings support the Diffusion of Innovations Theory, which argues that the adoption and continued use of innovations are influenced not only by their perceived benefits but also by the costs and challenges associated with their use (Rogers, 1962). While digital credit products such as M-Shwari and Fuliza provide rapid access to funds and require minimal procedural requirements, users may be discouraged by interest charges, overdraft fees, and repayment obligations. Consequently, although the innovation offers a clear relative advantage in addressing immediate liquidity needs, the perceived costs may limit its long-term usefulness. The findings also support the Resilience Theory, which emphasizes the importance of resources that enable households to absorb and recover from shocks (Holling, 1973). Digital credit appears to strengthen resilience by providing immediate financial resources during emergencies and periods of income instability, thereby enabling households to sustain essential expenditures and business operations when faced with financial difficulties.

The findings are consistent with Islam et al. (2025), who observed that low-income entrepreneurs frequently rely on short-term credit as a coping mechanism during periods of economic hardship. Similarly, Adah et al. (2025) found that mobile loans assisted traders in addressing cash-flow shortages, replenishing stock, and responding to household emergencies. The findings also support Magale (2024), who established that digital credit products such as M-Shwari and Fuliza had become important sources of working capital among urban traders in Kenya. Likewise, Baraza et al. (2022) reported that mobile credit services supported income smoothing and enabled entrepreneurs to meet urgent household and business expenses. The consistency of these findings suggests that digital credit plays a significant role in enhancing households' ability to respond to immediate financial needs and maintain economic activities during periods of uncertainty.

However, the present study also reveals a more nuanced perspective than that reported in much of the existing literature. While previous studies largely emphasized the benefits of digital credit, the respondents in the current study expressed concerns regarding the adequacy of loan amounts, the cost of borrowing, and the pressure associated with repayment obligations. These findings suggest that although digital credit enhances short-term coping capacity, it may not necessarily strengthen long-term resilience to the same extent as savings-based mechanisms. This observation may explain why digital credit emerged as a weaker predictor of household resilience than savings functionalities and payment services. It also suggests that resilience generated through borrowing may differ fundamentally from resilience generated through accumulated savings because borrowed resources create future repayment obligations that may themselves become a source of financial strain.

The findings contribute to the literature by providing gender-specific evidence regarding the role of digital credit among women vegetable vendors operating within informal urban markets. Unlike previous studies that examined broad populations of micro-entrepreneurs, the present study demonstrates that the effectiveness of digital credit is shaped by the unique financial realities of women traders, who often operate with narrow profit margins and highly variable incomes. The findings therefore indicate that digital credit should be viewed as a complementary rather than primary resilience mechanism. From a policy perspective, the results suggest the need for mobile financial service providers to develop more affordable and flexible digital credit products with repayment structures aligned to the income patterns of informal traders. Such improvements may

enhance the capacity of digital credit services to contribute not only to short-term coping but also to sustainable household resilience among women vegetable vendors.

5.3.4 M Pesa Group Contribution Platforms and Household Resilience

The study established that M-Pesa group contribution platforms had a positive and statistically significant effect on household resilience among women vegetable vendors in Westlands Constituency. However, among the four M-Pesa usage dimensions examined, group contribution platforms exerted the weakest relative influence on household resilience. This finding suggests that while digitally enabled group financial arrangements contribute positively to resilience, their effects may be less immediate than those derived from individual financial mechanisms such as savings and payment services. Nevertheless, the high levels of agreement regarding participation in chamas, trust among members, accountability, and ease of contribution indicate that these platforms remain important financial and social resources for women traders. The findings imply that group contribution platforms strengthen resilience primarily through collective support mechanisms rather than through direct enhancement of individual financial capacity.

The findings support the Diffusion of Innovations Theory, which posits that innovations are more likely to be adopted when they are compatible with existing social practices and cultural norms (Rogers, 1962). The popularity of M-Pesa-enabled group contribution platforms among women vegetable vendors may therefore be explained by their ability to modernize traditional chama structures without fundamentally altering their underlying principles of mutual support, trust, and collective responsibility. The findings also support the Resilience Theory, which emphasizes the importance of social and financial networks in strengthening the ability of households to cope with shocks and uncertainties (Holling, 1973). By enabling members to access pooled resources, receive financial support during emergencies, and mobilize collective assistance when faced with difficulties, group contribution platforms enhance households' capacity to withstand financial disruptions and maintain economic stability.

The findings are consistent with those of Tiony (2024), who found that mobile-enabled chamas strengthen trust, shared responsibility, and collective risk management among members. Similarly, Markus and Nan (2020) argued that regular contributions and active participation in group-based financial arrangements enhance the ability of households to cope with economic shocks. The

findings also support Judijanto and Wahab (2024), who established that group contribution systems enable individuals to mobilize small savings into larger lump-sum amounts that can be utilized for business investment or emergency needs. Likewise, Limo (2024) found that mobile-based collective finance systems assisted entrepreneurs in managing income volatility, while Moi (2025) observed that such platforms improved access to capital and enhanced accountability among participants. The consistency of these findings suggests that group contribution platforms remain valuable mechanisms for promoting both financial inclusion and social support within low-income communities.

However, an important finding emerging from the current study is that group contribution platforms exerted a weaker influence on household resilience than savings functionalities, payment services, and digital credit access. This finding warrants careful consideration because existing literature often emphasizes the importance of social capital and collective financial arrangements in strengthening resilience. One possible explanation is that benefits derived from group contribution platforms are often periodic and contingent upon participation by other members, whereas savings and payment services provide more immediate and individual control over financial resources. Furthermore, access to pooled funds may depend on group rules, contribution schedules, and eligibility conditions, which may limit the speed with which members can respond to urgent household needs. These factors may explain why group contribution platforms, although valuable, contribute less directly to resilience than financial mechanisms that provide immediate liquidity or facilitate daily financial management.

The study contributes to existing literature by demonstrating that the resilience benefits of group contribution platforms extend beyond financial support to include social cohesion, trust-building, and mutual assistance among women traders. Unlike previous studies that examined mobile money services collectively, the present study isolated the specific effect of group contribution platforms and assessed their contribution within a gender-specific informal market context. The findings suggest that policymakers and mobile financial service providers should continue supporting digital group-based financial systems because they complement individual financial services and strengthen social safety nets. Although their direct influence on household resilience may be weaker than that of savings and payment services, their contribution to social capital formation

and collective financial security remains important for sustaining livelihoods among women vegetable vendors in the informal sector.

5.4 Conclusion of the Study

The study concludes that M-Pesa usage dimensions significantly contribute to household resilience among women vegetable vendors in Westlands Constituency. The findings demonstrate that digital financial services play an important role in strengthening the capacity of households to withstand, adapt to, and recover from financial shocks by improving access to financial resources, enhancing transaction efficiency, and supporting business continuity. Collectively, M-Pesa payment services, savings functionalities, digital credit access, and group contribution platforms were found to positively influence household resilience, confirming the importance of mobile financial services in promoting economic stability among women operating within the informal sector.

The study further concludes that M-Pesa savings functionalities constitute the most influential determinant of household resilience. The ability to accumulate savings conveniently through mobile platforms enables women vegetable vendors to build precautionary financial buffers, manage emergencies, smooth consumption, and sustain business activities during periods of income instability. The findings suggest that resilience is strengthened not merely through access to financial services but through the accumulation of financial reserves that enhance households' capacity to respond effectively to adverse events.

The study also concludes that M-Pesa payment services play a critical role in promoting household resilience by facilitating secure, reliable, and efficient financial transactions. By improving cash-flow management and reducing the risks associated with cash handling, payment services contribute to business continuity and income stability. Similarly, M-Pesa digital credit access enhances resilience by providing immediate liquidity for business and household needs, although its contribution appears more pronounced in supporting short-term coping mechanisms than long-term financial stability due to concerns relating to borrowing costs and repayment obligations.

Finally, the study concludes that M-Pesa group contribution platforms strengthen household resilience by enhancing access to collective financial resources and reinforcing social support networks among women traders. Although their relative influence was lower than that of savings functionalities and payment services, group contribution platforms provide an important

complementary mechanism through which households can access financial assistance, share risks, and mobilize resources during periods of economic difficulty. Overall, the study establishes that household resilience among women vegetable vendors is enhanced through a combination of individual financial capabilities and collective financial support systems facilitated by M-Pesa services. The findings therefore affirm the important role of digital financial inclusion in improving the welfare and economic security of women operating within Kenya's informal economy.

5.5 Recommendations of the Study

This section presents recommendations derived from the study findings. The recommendations are organized into policy, practice, and theoretical perspectives and are directly linked to the empirical evidence regarding the influence of M-Pesa payment services, savings functionalities, digital credit access, and group contribution platforms on household resilience among women vegetable vendors.

5.5.1 Policy Recommendations

The study established that M-Pesa savings functionalities exerted the strongest influence on household resilience. Consequently, the National Treasury, the Central Bank of Kenya, and other financial sector regulators should promote policies that encourage the development and uptake of affordable mobile-based savings products among women operating in the informal sector. Such policies may include incentives for low-balance savings accounts, reduced transaction charges on savings deposits, and integration of savings promotion programs within financial inclusion initiatives. Strengthening digital savings adoption is likely to enhance households' ability to build precautionary financial buffers and improve resilience to future economic shocks.

The findings further revealed that M-Pesa payment services significantly enhanced household resilience by improving transaction efficiency and supporting business continuity. Therefore, policymakers should continue investing in digital infrastructure and regulatory frameworks that support reliable and affordable digital payment ecosystems. Particular attention should be given to improving network reliability within informal trading centres and reducing transaction costs for small-value transactions frequently undertaken by women traders. These measures would

encourage greater utilization of digital payment services and strengthen their contribution to household resilience.

The study also found that digital credit positively influenced household resilience but that its effectiveness was constrained by concerns relating to loan adequacy, borrowing costs, and repayment conditions. Policymakers should therefore strengthen consumer protection regulations governing digital lending platforms to ensure responsible lending practices. Regulations should encourage transparent pricing, fair repayment terms, and affordable credit products tailored to the income patterns of informal sector entrepreneurs. Such interventions would enhance the capacity of digital credit to support resilience without exposing borrowers to excessive financial strain.

Finally, given the positive contribution of group contribution platforms, county governments and financial sector regulators should support the digitization and strengthening of informal savings groups and chamas. This can be achieved through partnerships between mobile financial service providers and community-based organizations to improve the security, transparency, and accessibility of digital group savings platforms. Strengthening these collective financial mechanisms would enhance social support networks and improve the ability of households to manage financial shocks.

5.5.2 Practical Recommendations

Safaricom and other mobile financial service providers should prioritize the enhancement of M-Pesa savings functionalities because they were found to have the strongest effect on household resilience. Providers should introduce features that encourage regular saving, including goal-based savings options, automated saving mechanisms, and financial planning tools tailored to the needs of informal traders. Such innovations would strengthen users' saving behaviour and improve their preparedness for financial emergencies.

The study further established that digital credit contributes to household resilience but is limited by repayment concerns and borrowing costs. Mobile financial service providers should therefore redesign digital credit products to better align with the cash-flow patterns of women vegetable vendors. This may include flexible repayment schedules, lower transaction charges, and loan limits

that progressively increase based on responsible borrowing behaviour. Such improvements would enhance the effectiveness of digital credit as a resilience-building tool.

Non-governmental organizations, women's empowerment programs, and development partners should implement targeted financial literacy interventions focusing on digital savings, credit management, and responsible utilization of mobile financial services. The findings suggest that resilience is strengthened not merely through access to financial products but through effective utilization of those products. Training programs should therefore focus on helping women traders develop practical financial management skills that support long-term economic stability.

Women vegetable vendors should be encouraged to utilize multiple M-Pesa functionalities rather than relying solely on payment services. The findings indicate that households derive greater resilience benefits when they combine digital payments with savings, responsible credit use, and participation in group contribution platforms. A diversified utilization approach would strengthen financial preparedness, reduce vulnerability to shocks, and enhance overall household welfare.

5.5.3 Theoretical Recommendations

The findings of this study support the complementary application of Diffusion of Innovations Theory and Resilience Theory in explaining the relationship between mobile financial services and household resilience. Future theoretical research should develop integrated frameworks that explicitly explain the pathways through which adoption of digital financial innovations translates into resilience outcomes. Such frameworks should move beyond explaining technology adoption and incorporate mechanisms linking digital financial behaviour to financial security, shock absorption, and household welfare.

The study also demonstrated that different dimensions of M-Pesa usage contribute to household resilience at varying levels, with savings functionalities exerting a stronger influence than digital credit and group contribution platforms. Future theoretical developments should therefore recognize that digital financial services are multidimensional rather than homogeneous constructs. Theories of digital financial inclusion should explicitly account for the differential effects of payment services, savings, credit, and collective financial mechanisms on household outcomes.

Finally, future theoretical work should place greater emphasis on gender-sensitive explanations of digital financial inclusion and resilience. The findings indicate that women operating within informal markets utilize mobile financial services not only for business transactions but also as mechanisms for managing household welfare and responding to financial shocks. Future theories should therefore incorporate contextual factors such as gender roles, informal market dynamics, social capital, and financial vulnerability to better explain the relationship between mobile financial services and household resilience among women entrepreneurs.

5.6 Limitations of the Study

One limitation of this study relates to the adoption of a descriptive cross-sectional research design, which involved collecting data at a single point in time. Although this design was appropriate for examining the relationship between M-Pesa usage dimensions and household resilience, it did not permit the observation of changes over time. Consequently, the study could not establish causal relationships or determine whether sustained utilization of M-Pesa services leads to long-term improvements in household resilience. The findings should therefore be interpreted as demonstrating associations rather than causality.

A second limitation concerns the use of self-reported data collected through structured questionnaires. Both the independent variables and the dependent variable were measured using information obtained from the same respondents at the same time. This may have introduced common method variance, whereby respondents' perceptions influence responses across multiple variables and potentially inflate observed relationships. Although measures such as questionnaire standardization and respondent confidentiality were employed to minimize response bias, the possibility of overreporting positive experiences with M-Pesa services cannot be entirely ruled out.

The study also utilized purposive sampling because a comprehensive sampling frame of women vegetable vendors within Westlands Constituency was unavailable due to the informal nature of the sector. While this approach enabled the researcher to target respondents with direct experience in using M-Pesa services, it limited the statistical generalizability of the findings. Consequently, the results should be generalized with caution beyond women vegetable vendors operating within similar informal market environments. Furthermore, although Cochran's formula was used to

determine an adequate sample size, the non-probability nature of the sampling approach limits the extent to which the findings can be considered representative of all women vegetable vendors in Kenya.

Another limitation relates to the measurement of M-Pesa usage dimensions. The study assessed respondents' reported utilization and experiences regarding payment services, savings functionalities, digital credit access, and group contribution platforms rather than actual transaction records obtained from mobile service providers. As a result, the study was unable to distinguish fully between mere access to M-Pesa services and the intensity or effectiveness of their utilization. Differences in actual usage behaviour may therefore not have been captured with complete precision.

Finally, the study focused exclusively on four dimensions of M-Pesa usage, namely payment services, savings functionalities, digital credit access, and group contribution platforms. While these variables explained a substantial proportion of the variation in household resilience, other factors may also influence resilience outcomes. Variables such as financial literacy, household income levels, business experience, social support networks, macroeconomic conditions, and access to alternative financial services were not explicitly incorporated into the analytical model. Consequently, the findings should be interpreted within the context of the variables examined, recognizing that household resilience is a multidimensional phenomenon influenced by a broader range of socio-economic factors.

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5.7 Suggestions for Further Research

The present study employed a descriptive cross-sectional design, which limited the ability to establish causal relationships between M-Pesa usage dimensions and household resilience. Future studies should therefore adopt longitudinal research designs to examine how changes in the utilization of M-Pesa payment services, savings functionalities, digital credit access, and group contribution platforms influence household resilience over extended periods. Such studies would provide stronger evidence regarding the sustainability of resilience outcomes and the long-term effects of digital financial service utilization among women operating in the informal sector.

The study focused exclusively on women vegetable vendors within Westlands Constituency, Nairobi County. Future research should replicate the study in other urban and rural settings across Kenya to establish whether the observed relationships remain consistent under different socio-economic and market conditions. Comparative studies involving different categories of informal sector traders, such as fruit vendors, fish traders, and small-scale retailers, would further enhance understanding of the contextual factors influencing the relationship between mobile financial services and household resilience.

The findings revealed that M-Pesa savings functionalities exerted the strongest influence on household resilience, while group contribution platforms had the weakest relative effect. Future studies should therefore investigate the mechanisms through which digital savings products generate stronger resilience outcomes than other mobile financial services. In addition, qualitative studies could explore why group contribution platforms contribute less strongly to resilience despite their recognized role in strengthening social capital and collective financial support systems.

Future research should also incorporate additional explanatory variables that were not examined in the present study. Variables such as financial literacy, education level, household income, business experience, social support networks, and alternative sources of financial services may influence both M-Pesa utilization and household resilience. Researchers should particularly examine the moderating and mediating roles of these factors in order to develop a more comprehensive understanding of the pathways through which mobile financial services influence resilience outcomes.

The relatively high explanatory power of the regression model suggests the need for further investigation into the possibility of common method effects and other contextual influences. Future studies should therefore utilize mixed-method approaches that combine survey data with objective transaction records from mobile service providers where feasible. Such approaches would enable researchers to distinguish between access to M-Pesa services and the intensity of actual usage while providing deeper insights into how specific patterns of utilization contribute to household resilience among women entrepreneurs.

Finally, future theoretical research should focus on developing integrated frameworks that explain not only the adoption of digital financial services but also the mechanisms through which different digital financial products contribute to resilience outcomes. Such frameworks would help explain why certain dimensions of mobile financial services, particularly savings functionalities, generate stronger resilience benefits than others and would contribute to the advancement of theory in the fields of digital financial inclusion and household resilience.

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Appendices

Appendix I: Introduction Letter

Dear Respondent,

Ref: Participation in Data Collection

I am Hellen Ndung'u**,** a master's student at Strathmore University. Currently undertaking research entitled:

"Effect of M-Pesa Usage Dimensions on Household Resilience among Women Vegetable Vendors in Westlands Constituency, Nairobi County"

The purpose of this research is to examine how diverse mobile money services, including payments, savings, digital credit, and group contribution platforms, contribute to the household resilience of women vegetable vendors. The conclusions will be applied exclusively for academic purposes, though they may also offer practical insights for stakeholders and organizations working to support women vendors in the region.

I humbly seek your support and cooperation in participating in this data collection exercise. All information you offer will be treated with a high confidentiality level and will be used only for the academic purposes outlined in this research. Your involvement in the study is completely optional, and you can leave at any time without facing any repercussions.

Thank you in advance for your valuable contribution. Feel free to get in touch with me if you need more information or have any inquiries at hellenwangari48@gmail.com or +254 720 341566.

Yours faithfully,

Ndung'u Hellen

Postgraduate Student, Strathmore University

Appendix II: Research Questionnaire

This questionnaire is premeditated to gather information for a research on the effect of M-Pesa usage dimensions on household resilience among women vegetable vendors in Westlands Constituency, Nairobi County. The questions focus on your experience with M-Pesa payments, savings, digital credit, and group contribution platforms, and how these relate to your household's ability to cope with economic and social challenges. Your truthful and precise answers will be kept completely private and used only for scholarly motive.

Instructions

Pick only a response (box) for every question.

Part A: Respondent Profile

1. Age:

18-25 [ ]

26-35 [ ]

36-45 [ ]

46-55 [ ]

56 and above [ ]

2. Number of Years with Business:

Less than 1 year [ ]

1-3 years [ ]

4-6 years [ ]

7-9 years [ ]

10 years and above [ ]

3. Level of Education:

Primary [ ]

Secondary [ ]

Certificate [ ]

Diploma [ ]

Bachelor's Degree [ ]

Master's Degree [ ]

Doctorate [ ]

Part B: M-Pesa Payment Services

4. Please rate your level of affirmation or disapproval with the following items. Please utilize the scale: "1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly agree."

	1	2	3	4	5
1. I frequently use M-Pesa to receive payments from customers.					
2. M-Pesa payments make it convenient to sell vegetables.					
3. M-Pesa payments reduce the risk of handling cash.					
4. M-Pesa payments save time in conducting daily transactions.					
5. The use of M-Pesa payments has increased my sales.					
6. M-Pesa payments have improved the reliability of receiving payments.					
7. M-Pesa payments have strengthened trust with my customers.					
8. I can easily track sales through M-Pesa payments.					
9. M-Pesa payments help me manage my cash flow effectively.					

Part C: M-Pesa Savings Functionalities

5. Please rate your level of affirmation or disapproval with the following items. Please utilize the scale: "1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly agree."

	1	2	3	4	5
1. I regularly save a portion of my earnings using M-Pesa.					
2. M-Pesa savings help me cover unexpected household expenses.					
3. The M-Pesa savings option encourages me to save more money.					

4. I can easily access my savings on M-Pesa when needed.					
5. The security of M-Pesa encourages me to save more.					
6. Saving with M-Pesa has improved my household's financial stability.					
7. I am satisfied with the interest earned (if applicable) through M-Pesa savings.					
8. M-Pesa savings help me plan for future needs.					
9. I consider M-Pesa savings as an important part of my financial routine.					

Part D: M-Pesa Digital Credit Access

6. Please rate your level of affirmation or disapproval with the following items. Please utilize the scale: "1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly agree."

	1	2	3	4	5
1. I have used M-Pesa digital loans (e.g., M-Shwari, Fuliza) for my business.					
2. The loan application process via M-Pesa is easy and convenient.					
3. The loan amounts available through M-Pesa are adequate for my needs.					
4. I can repay M-Pesa loans within the required period.					
5. Accessing M-Pesa digital credit has helped me maintain my cash flow.					
6. M-Pesa digital credit has enabled me to respond quickly to emergencies.					
7. The cost of M-Pesa digital loans (e.g., interest, fees) is affordable for me.					
8. The availability of digital credit through M-Pesa improves my ability to restock or expand my business.					
9. I am satisfied with the reliability and accessibility of M-Pesa digital credit services.					

Part E: M-Pesa Group Contribution Platforms

13. Please rate your level of affirmation or disapproval with the following items. Please utilize the scale: "1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly agree."

	1	2	3	4	5
1. I participate in group contribution platforms (e.g., chamas) via M-Pesa.					
2. M-Pesa group contributions make it convenient to save with others.					

3. Participation in M-Pesa groups allows me to access larger sums when needed.					
4. Group contribution platforms via M-Pesa help me manage unexpected expenses.					
5. Group payments through M-Pesa are secure and trustworthy.					
6. Contributing via M-Pesa improves accountability within the group.					
7. The ability to save as a group on M-Pesa improves my household resilience.					
8. Group contributions via M-Pesa have strengthened my social and financial support networks.					
9. I am satisfied with the ease of making group contributions using M-Pesa.					

Part F: Household Resilience

15. Please rate your level of affirmation or disapproval with the following items. Please utilize the scale: "1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly agree."

	1	2	3	4	5
1. My household can maintain expenditures despite income fluctuations.					
2. I can cover unexpected medical expenses when needed.					
3. My household can recover quickly from financial setbacks.					
4. The income from my vegetable vending business supports my household reliably.					
5. I am confident in my household's ability to save for emergencies.					
6. My household can sustain daily needs during challenging times.					
7. I have access to financial support when needed.					
8. My household can continue running the vegetable vending business despite external shocks.					
9. I am confident about my household's long-term economic stability.					

THANK YOU

Appendix III: SU-ISERC Approval

16th January 2026

Ms Ndung'u Hellen,
hellen.ndung'u@strathmore.edu

Dear Ms Ndung'u,

RE: Effect of M-Pesa Usage Dimensions on Household Resilience Among Women Vegetable Vendors in Westlands Constituency, Nairobi County

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** research proposal. Your application reference number is **SU-ISERC3162/25.** The approval period is from **16th January 2026 to 15th January 2027.**

This approval is subject to compliance with the following requirements:

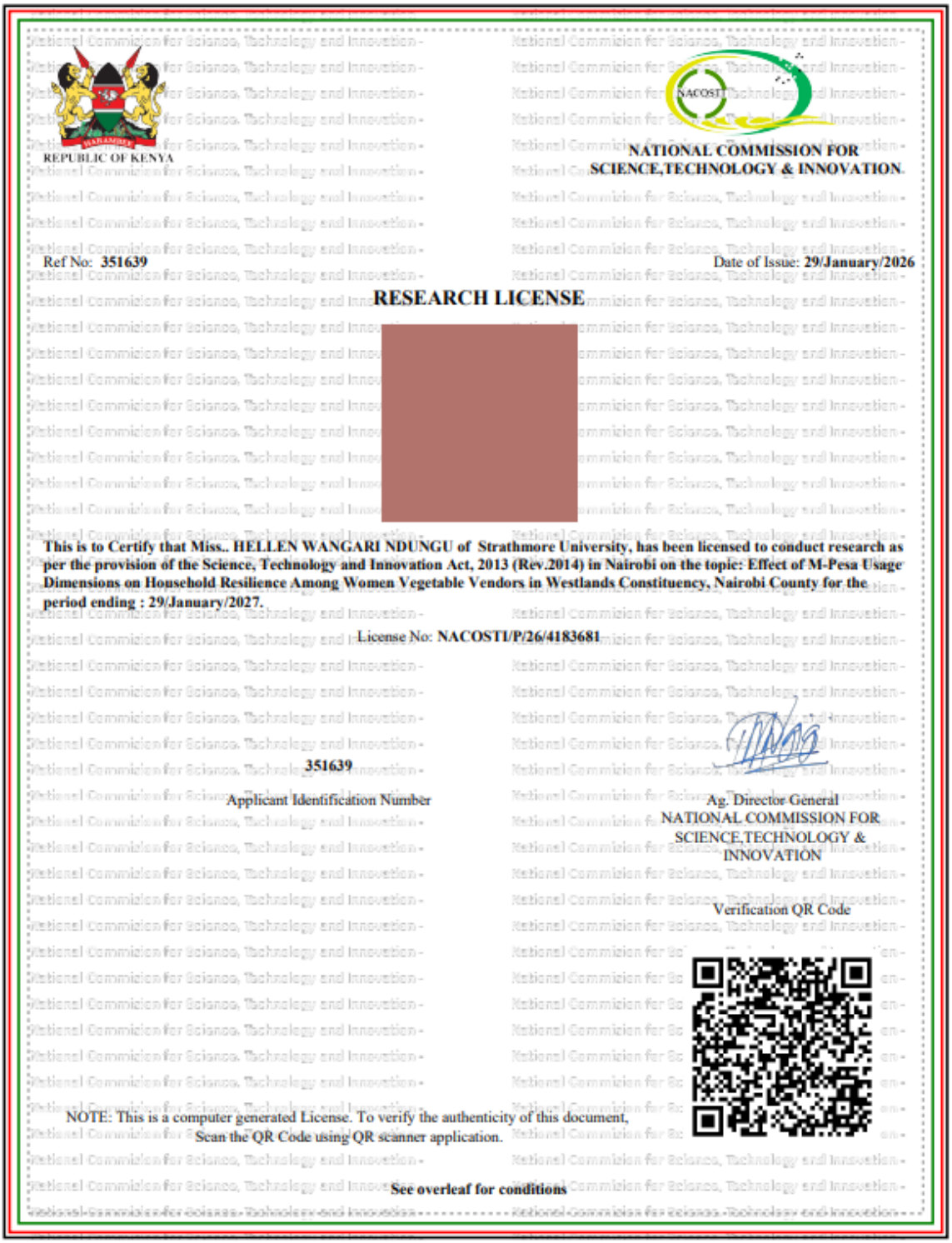
i. Only approved documents including (informed consents, study instruments, and MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification
iv. Any changes, anticipated or otherwise, that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours
v. Clearance for the export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC

Appendix IV: NACOSTI Research Permit



REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **351639**

Date of Issue: **29/January/2026**

RESEARCH LICENSE

This is to Certify that Miss.. HELLEN WANGARI NDUNGU of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: Effect of M-Pesa Usage Dimensions on Household Resilience Among Women Vegetable Vendors in Westlands Constituency, Nairobi County for the period ending : 29/January/2027.

License No: **NACOSTI/P/26/4183681**

351639

Applicant Identification Number

Ag. Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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