DIGITAL BANKING SERVICES AND INVESTMENT DECISIONS OF FEMALE-OWNED SMALL AND MEDIUM ENTERPRISES IN NAIROBI CITY COUNTY

BY

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24/00360

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN COMMERCE (FINANCE AND INVESTMENT) IN THE SCHOOL OF BUSINESS AT KCA UNIVERSITY.

OCTOBER 2025

DECLARATION

This Dissertation is my original work and has not been presented to any University or any institution of higher learning for any reason whatsoever. Other researches and documentation used in the preparation of this project have been duly credited through means of citations and list of references.

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This research proposal has been submitted for examination with my approval as the University supervisor.

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DEDICATION

This proposal is first and foremost dedicated to the almighty God and to my family, an educationist par excellence. Your love and faith in my ability has been ever my source of strength and inspiration throughout my academic pursuit. I therefore dedicate this success to both of us.

ACKNOWLEDGEMENT

Personally, I thank all individuals who helped and mentored me during this research undertaking. I thank Dr. Ibrahim Tirimba with gratitude for guidance and support. His academic work shaped this study and made it a success. I greatly appreciate his patience and time in steering my work. I truly thank KCA University for the opportunity and support granted to me to get this degree. The academic environment and guidance from the teachers have been instrumental in my growth as a researcher. I want to thank my friends and family for their encouragement. Their support has always motivated me. My sincere thanks to my family for his boundless love, support and patience for this academic journey. Their encouragement and empathy have been my greatest support. Most of all I thank God almighty for life, knowledge, opportunity and for the strength to accomplish my objectives. Thank you all for your support and collaboration. Without your assistance this project would have been unattainable.

ABSTRACT

This study investigates how digital banking services affect the investment decisions of female-owned small and medium enterprises (SMEs) in Nairobi City County. It specifically evaluates the effect of digital credit, digital savings, insurance technology (insurtech), and robo-advisory services on the investment behavior of these businesses. The research is anchored on four theories; Credit Rationing Theory, Pecking Order Theory, Risk Management Theory, and Modern Portfolio Theory which together provide a foundation for examining the link between digital financial innovations and investment decision-making. An explanatory research design was employed, using primary data collected through structured questionnaires. The study targeted 39,440 female-owned SMEs registered in Nairobi City County, from which a representative sample of 396 respondents was drawn using the Yamane formula. Simple random sampling will be utilized to ensure fair representation of various business categories. Data will be analyzed using SPSS version 29, with multiple regression analysis applied to test the hypotheses. Findings will be presented through tables and figures for better interpretation. The results revealed that insurtech services exert the greatest influence on investment decisions among female SME owners by offering accessible and affordable risk management options that boost business confidence and encourage growth-oriented investments. Additionally, robo-advisory services significantly improve investment decision quality by providing personalized, data-driven, and cost-efficient financial guidance. Overall, the study concludes that the adoption and effective use of digital banking services significantly enhance investment behavior and business performance among female-owned SMEs. Consequently, improving access, affordability, and awareness of these services is vital for promoting sustainable investment growth and empowering women entrepreneurs in Nairobi City County.

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ACRONYMS AND ABBREVIATIONS

INSURETECH	:	Insurance Technology
LCH	**:**	Life-Cycle Hypothesis
MPT	:	Modern Portfolio Theory
SME	:	Small and Medium-sized Enterprises
SMES	**:**	Small and Medium Enterprises
VIF	:	Variance Inflation Factor

TERMS AND DEFINITIONS

Digital Credit	Loans that are taken, applied for, disbursed, and recovered online through channels like cell phones and web platforms, as opposed to traveling to physical banks. The defining features comprise immediate approval processes, the use of alternative data for credit scoring, small loan sizes, and access from remote locations (FSD Kenya, 2020).
Insurance Technology:	Strategies and tools used to protect information systems and networks from cyber threats and unauthorized access. Important parts include keeping data safe and monitoring for threats (Hubbard, 2023).
Insurtech	This service includes digital solutions for marketing, distribution, underwriting, and claims settlement, making insurance more efficient, cost-effective, and available to consumers and carriers (Deloitte, 2021).
Robo-Advisory Services	These are automated, algorithm-driven digital platforms that provide personalized investment management and financial advice with minimal human intervention (OECD, 2021).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The access to banking services has been transformed by the incorporation of digital technology into financial services, especially for small and medium-sized businesses (SMEs). Businesses may now function more effectively and competitively in an increasingly digital market thanks to these developments, which provide affordable, data-driven alternatives to traditional banking (Klapper& Singer, 2021).

Globally, digital banking services, such as digital credit, savings platforms, robo-advisory tools, and insurtech, are transforming how SMEs plan investments, manage money, and reduce risks in both developed and emerging economies (World Bank, 2020; OECD, 2022). In particular, the emergence of digital financial services has benefited female entrepreneurs, who play a critical role in inclusive economic growth. Long-standing gender-specific barriers like financial literacy, high transaction costs, and a lack of collateral are addressed by digital platforms (UN Female, 2021). Female-owned SMEs are increasingly acquiring the resources they need to make better investment decisions and enhance business sustainability through mobile-based lending facilities, automated financial advising, and micro insurance products (Findexable, 2023; AfDB, 2022).

In the African region, due to fintech innovation and the extensive use of mobile phones, digital banking has grown rapidly. Currently, female in informal markets have much easier access to finance as a result of platforms like M-Pesa, M-Shwari, Tala, and Fuliza (Demirgüç-Kunt et al., 2018; CBK, 2020). Although they are still in their early stages, robo-advisory and insurtech services are starting to offer customized financial advice and risk management solutions, assisting business owners in making difficult financial decisions (Ndung'u et al., 2024; Ndede et al., 2025).

Locally, as a result of the government's support for financial innovation and a progressive regulatory framework, digital banking usage has accelerated across the country (Government of Kenya, 2020). Female-owned SMEs in Nairobi City County are increasingly adopting digital credit and savings services to reinvest in their enterprises and meet working capital needs (Kamau & Nduta, 2021; Gitonga & Njeru, 2023). Dependence on traditional and discriminatory banking models has decreased, leading to enhanced financial discipline and resilience.

Challenges still exist despite these developments. Limited access to specialized investment tools, low trust in digital platforms, and inadequate financial education are just a few of the obstacles that many female entrepreneurs face (Mwobobia, 2012; UN Female, 2021). The use of advanced digital financial services for strategic investment planning, especially robo-advisory and insurtech, is still low among female-owned SMEs, despite the broad acceptance of mobile money (Kamau, 2021; Ndung'u et al., 2024). Consequently, there is still limited empirical data regarding the specific influence of these digital banking services on investment decisions, particularly in Kenyan cities. Therefore, this study seeks to explore the influence of digital banking services on the investment decisions of female-owned SMEs in Nairobi City County. Specifically, it focuses on four key services: digital credit, digital savings, insurtech, and robo-advisory platforms, to assess their impact on investment decisions of female-owned small and medium enterprises in Nairobi City, County.

1.1.1 Digital Banking Services

Digital credit refers to the short-term, small-ticket loans delivered via mobile or app. It has, in the recent present, become a mainstream financing channel for micro and small enterprises globally. Studies show robo-scored, instant credit can ease liquidity constraints and smooth cash flows, but can also elevate risks around transparency, multiple borrowing and repayment stress if safeguards are weak (OECD, 2021; World Bank, 2024; FinRegLab, 2024). Evidence

from recent global and crisis contexts indicates overdraft-style mobile credit surged during shocks, supporting working capital but also increasing defaults where pricing and collections were opaque (World Bank, 2022; FinRegLab, 2024). For female entrepreneurs, access benefits can be meaningful where collateral barriers persist, yet gender gaps in loan size and product suitability often remain (OECD, 2021; Data2X, 2022).

Across Sub-Saharan Africa, mobile-enabled credit has scaled on top of mobile money rails. Regional market reviews document rapid volume growth and widespread short-duration lending, with concerns about consumer protection and repeat borrowing (GSMA, 2024; CAK & IPA, 2021). In East Africa, overdraft products attached to mobile wallets became dominant by 2020–2021, outpacing stand-alone lending apps and shaping micro-enterprise cash management cycles (CAK & IPA, 2021; McKinsey, 2022).

Kenya is a bellwether: at least six million adults had taken a digital loan by 2019, with strong uptake among traders and micro-enterprise owners for inventory and bill smoothing (FSD Kenya, 2019; FSD Kenya, 2024). Fuliza-type overdrafts expanded sharply from 2019, leading regulators to introduce the CBK (Amendment) Act, 2021, and the 2022 Digital Credit Providers Regulations to license and supervise providers (CAK & IPA, 2021; FinRegLab, 2024). FinAccess (2021) confirms widespread digital borrowing with mixed welfare outcomes, highlighting the need for transparent pricing and responsible collections, issues that particularly affect female-owned SMEs juggling household and business obligations.

1.1.2 Digital Saving Services

Globally, digital savings (mobile wallets, lock-savings, goal-based apps) have broadened formal saving, especially for first-time users and micro-entrepreneurs who value low fees, liquidity control, and automated nudges (Global Findex, 2022; OECD, 2021). Randomized and

quasi-experimental evidence suggests that digital saving tools help users accumulate buffers and fund productive investment, although persistence depends on design features like goal framing and soft commitment (IPA, 2020).

Regionally, Africa's mobile money ecosystems support simple and goal-based savings functionalities embedded in wallets and super-apps. Sector reports document rising stored-value balances and increasing use of savings features by micro-merchants and self-employed female, aided by behavioral prompts and group-based digitalization (GSMA, 2024; UNCDF, 2020; Global Communities, 2020). Digitizing savings groups has improved record-keeping, security, and linkage to formal accounts, with positive spillovers on female's investment decisions in their enterprises (Global Communities, 2020; UNCDF, 2020).

In Kenya, products like M-Shwari and KCB M-Pesa combine savings and instant credit, enabling goal-based "lock savings" and on-demand liquidity (Safaricom/NCBA, 2022; Safaricom, 2024). FinAccess 2021 shows high usage of mobile-based savings, though female's savings balances were hit during COVID-19 and recovered unevenly (CBK et al., 2021; Data2X, 2022). FSD Kenya documents county-level and project evidence of female reviving savings groups and adopting digital tools, strengthening working capital buffers, and enabling small capital expenditures—key antecedents to investment among female-owned SMEs (FSD Kenya, 2021; FSD Kenya, 2020).

1.1.3 Insurtech Services

Internationally, insurtech refers to a digital distribution, parametric products, usage-based cover. Insurtech has lowered acquisition costs and enabled micro-priced policies for small firms and self-employed female (OECD, 2023; GSMA, 2021). Evidence from agricultural and health microinsurance shows improved resilience and reduced income volatility, with business

continuity benefits when shocks hit inventory, health, or weather-exposed operations (GSMA, 2021; Pula, 2022).

Across Africa, mobile-enabled microinsurance has grown via partnerships with MNOs, banks, and platforms, bundling cover with payments or credit (GSMA, 2021; AKI, 2023). Studies of digitally distributed health and life products indicate higher take-up when premiums are bite-sized and claims are fast, both salient for female-run SMEs balancing household and enterprise risk (GSMA, 2021; AKI, 2023).

Kenya's market has seen active insurtech models (e.g., Turaco, Pula) and rising digital channels. The Insurance Regulatory Authority reports expanding microinsurance reach, with digital distribution improving affordability and claim turnaround (IRA, 2023; AKI, 2023). Impact evaluations around agriculture risk products show stabilized cash flows and enhanced investment capacity among smallholders and micro-traders—mechanisms relevant to female-owned SMEs in Nairobi facing health and income shocks (Pula, 2022; GSMA, 2021). Local implementations by Turaco and partners illustrate premium collection via mobile money and embedded cover for MSME workers, reducing the downside risk that deters business reinvestment (AKI, 2023; IRA, 2023).

1.1.4 Robo-Advisory Services

Globally, robo-advisors offer automated portfolio construction, rebalancing, and goal-based planning at lower costs, which can lower barriers to entry for underserved investors, including female entrepreneurs (OECD, 2021; Better Finance, 2021). Experimental and quasi-experimental studies find that access to robo-advice can increase invested amounts, improve diversification, and mitigate some behavioral biases—though effects vary with interface design and risk-profiling quality (Brière et al., 2021; Jung et al., 2023; POMS, 2023). Recent reviews

emphasize that robo-advisors complement rather than fully replace human advice, and outcomes depend on financial literacy and trust (Frontiers, 2024; ScienceDirect SLR, 2024).

Regionally, African wealthtech is emerging, with regulators using sandboxes and guidance to test digital advisory models (FSCA/OECD, 2021; EU/OECD dialogues, 2023). While penetration remains modest relative to payments and credit, policy interest centers on widening retail market access, fee transparency, and suitability for first-time investors, including SME owners (OECD, 2021; Eurofi, 2023).

In Kenya, the Capital Markets Authority's regulatory sandbox has admitted robo-advisory and wealthtech models, and firms like Ndovu have exited the sandbox to offer regulated robo-advisory and unit trust solutions (CMA, 2022; Business Daily via Ndovu Media, 2022). Such tools can translate surplus cash from digital sales into diversified, goal-based portfolios, potentially professionalizing investment decisions among female-owned SMEs that previously held idle balances in mobile wallets (CMA, 2022; OECD, 2021). As local platforms mature, key questions for Nairobi's female entrepreneurs include fee structures, risk-profiling accuracy, and integration with mobile payments to automate small, frequent investments (OECD, 2021).

1.1.2 Investment Decisions

The process by which people or businesses commit financial resources to profitable endeavors or assets in the hope of earning returns later on is referred to as investment decisions. Globally, access to digital tools, advisory services, and real-time financial information is having an increasing impact on investment decisions. These resources enhance the promptness and quality of decision-making (OECD, 2022). Digital investment platforms and robo-advisory tools have democratized the process of making investment decisions in industrialized nations, allowing female and other small-scale businesses to engage in financial markets and make data-

driven investment decisions (Klapper & Singer, 2021). According to the World Bank (2020), these digital advances have improved risk assessment, increased portfolio diversification, and drastically reduced entry barriers.

Regionally, Small and medium-sized businesses' (SMEs') decision to invest is still heavily impacted by several factors, including perceived risk, market knowledge, financial literacy, and access to financing (AfDB, 2022). Due to limited credit accessibility, gendered financial constraints, and insufficient advisory support, female entrepreneurs in Sub-Saharan Africa frequently encounter particular difficulties when it comes to making well-informed investment decisions (UN Female, 2021). However, the increasing use of digital banking services in Africa, such as digital savings, mobile credit, and fintech-based investment platforms, is progressively enhancing female-owned businesses' ability to make investments (Findexable, 2023). These technologies boost confidence and strategic planning in investment decisions by offering real-time insights and alternative funding options (Demirgüç-Kunt et al., 2018).

Locally in Kenya, female-owned SMEs' decision-making about investments has drawn attention as a major factor in the expansion of their businesses and the empowerment of their economies. However, rather than using organized and data-driven methodologies, many female entrepreneurs in Nairobi City County still base their investment decisions on gut feelings, unofficial counsel, or immediate necessities (Gitonga & Njeru, 2023). Systemic gender inequalities in the loan market, a lack of financial education, and inadequate access to formal financial services are frequently the causes of this tendency (Kamau & Nduta, 2021).

By providing easily available and customized financial tools that facilitate more informed investment decisions, the growing availability of digital banking services like mobile credit, robo-advisors, and insurtech has started to alter these trends (Ndung'u et al., 2024). For example, digital platforms such as M-Shwari, Jumo, and digital financial dashboards from local

financial technology firms now aid female entrepreneurs to assess investment risks, track cash flows, and make strategic plans. Notwithstanding these positive advancements, there is a significant knowledge gap regarding how digital banking services impact the investment decisions of Kenyan female entrepreneurs, especially in Nairobi City County. In order to promote inclusive economic growth, lessen gender gaps in financial decision-making, and assist the sustainability of female-led SMEs, a greater comprehension of this relationship is essential.

1.1.3 Digital Banking Services and Investment Decisions

At the global level, digital banking services have evolved beyond simple online transactions to include all-inclusive financial solutions, including integrated savings tools, mobile lending platforms, automated advising services, and insurtech products (OECD, 2022). By providing real-time access to financial data, forecasting and budgeting tools, and automated investment planning platforms, these services have helped people and businesses, particularly small businesses run by female, make more strategic and data-driven investment decisions (Klapper & Singer, 2021; World Bank, 2020). In addition to increasing convenience, digital banking lowers transaction costs and increases financial accessibility, which are the two enablers for prudent investing decisions.

Regionally, digital banking has been a driving force behind financial inclusion and the empowerment of entrepreneurs. Since mobile money platforms and fintech services have become so popular, more female-led SMEs are able to access previously unattainable lending, savings, and insurance products (AfDB, 2022). These resources have been especially crucial in enabling female to plan for long-term growth, reduce business risks, and make wiser financial choices. Accessible channels for managing capital, executing commercial transactions, and assessing investment prospects are offered via platforms like EcoCash in Zimbabwe and M-Pesa in Kenya (Demirgüç-Kunt et al., 2018; Findexable, 2023). Additionally,

new insurtech technologies and digital advisory services are progressively being adapted to the demands of marginalized groups, such as female entrepreneurs, enabling investment support and individualized financial planning.

Locally in Kenya, digital banking services have significantly influenced the investment decisions made by female-owned SMEs. Thanks to innovations like M-Shwari, KCB M-Pesa, Tala, and Equity's EazzyBiz, female entrepreneurs have been using mobile and digital financial platforms more frequently, especially in Nairobi City County (CBK, 2020; Ndung'u et al., 2024). These platforms help female better plan and carry out business investments by offering them fast credit, savings alternatives, insurance products, and financial management tools. The availability of digital financial services in Nairobi has enhanced cash flow management, promoted reinvestment, and boosted the confidence of female entrepreneurs in making long-term business decisions, according to research by Gitonga and Njeru (2023). However, the complete optimization of these services is currently hampered by obstacles, including low digital literacy, high mobile loan interest rates, and underdeveloped robo-advisory ecosystems (UN Female, 2021; Ndede et al., 2025).

Notwithstanding these obstacles, the relationship between digital banking and investment decisions made by female-owned SMEs is becoming more widely acknowledged as a crucial topic for policy and study. In order to influence inclusive financial policies and advance fair economic development, it is essential to comprehend how digital tools impact the type, quality, timing, and magnitude of investments made by female entrepreneurs. Evaluating the relationship between digital financial services and investment behavior in female-led businesses is both pertinent and essential as Kenya continues to focus on digital transformation through programs like Vision 2030 and the Digital Economy Blueprint (Government of Kenya, 2020).

1.1.4 Female-Owned SMEs in Nairobi City County.

Small and Medium Enterprises (SMEs) are enterprises with their assets, revenues, or employees at a certain level below. Institutions and nations often define SMEs differently. The World Bank (2020) explains that SMEs are firms that employ fewer than 300 workers, have an annual turnover of less than USD 15 million, and total assets of less than USD 15 million. Small enterprises in Kenya, as defined by the Micro and Small Enterprises Act (2012), are those employing 10-49 individuals and earning between KES 500,000 and KES 5 million in annual revenue, whereas medium-sized enterprises employ 50-99 individuals and earn between KES 5 million and KES 800 million in annual revenue.

Particularly in emerging nations, SMEs are acknowledged as essential engines of economic expansion, job creation, and poverty reduction (OECD, 2020). They are important players in both urban and rural development because of their adaptability, inventiveness, and GDP contribution (KNBS, 2022). Small and medium-sized businesses, or SMEs, are widely recognized as key drivers of innovation, employment, and economic progress. In particular, SMEs run by female are crucial for enhancing household incomes, reducing poverty, and promoting inclusive development (OECD, 2022). With the help of focused regulations, venture financing, and growing digital infrastructure, female entrepreneurs are becoming more dominant in industrialized nations in industries including technology, professional services, and retail (World Bank, 2020). Female-led SMEs still confront structural obstacles, such as limited access to markets, finances, and business support services, despite their increasing numbers (Klapper & Singer, 2021).

Female-led companies operating in industries such as trade, services, hospitality, and agri-processing are highly concentrated in Nairobi City County (Gitonga & Njeru, 2023). These businesses are essential to community growth, household welfare, and job generation. However, Nairobi's female entrepreneurs frequently encounter particular obstacles, like as

limited access to funding, insufficient collateral, gender norms, and digital marginalization (Kamau & Nduta, 2021). The introduction of digital banking services and mobile money has enhanced financial inclusion for female, but access to strategic financial tools for business expansion and investment planning is still restricted (Ndung'u et al., 2024).

To improve female's access to finances, digital tools, and business training, the Kenyan government and private sector have recently launched programs such as the Female Enterprise Fund (WEF), Ajira Digital Program, and fintech collaborations (Government of Kenya, 2020). However, more research is needed to understand the ways in which digital banking services affect the investment decisions made by Nairobi's female SME owners. Supporting and growing female-owned SMEs continues to be a strategic focus as Kenya strives to achieve economic empowerment and gender equality in line with Vision 2030 and the Sustainable Development Goals (SDGs) (Ndede et al., 2025).

1.2 Statement of the Problem

Small and Medium Enterprises (SMEs) play a critical role in promoting inclusive economic growth and employment creation. In Kenya, female-owned SMEs form an essential part of this entrepreneurial ecosystem. However, despite the rapid growth of digital banking in Kenya, evidence suggests that adoption among female-owned SMEs remains relatively low and uneven. The 2023 FinAccess Household Survey reported that only 36% of female-owned SMEs in Nairobi City County actively used digital financial services beyond basic mobile money transactions (KNBS, 2023). Moreover, less than 25% reported using advanced tools such as insurtech and robo-advisory platforms (FSD Kenya, 2023). This limited utilization contrasts sharply with the national mobile money penetration rate of over 84% among adults (CBK et al., 2021), revealing a persistent gender and functional gap in digital banking use. While mobile money platforms have enhanced transactional access, the transition from basic

usage to investment-oriented engagement among female entrepreneurs remains slow, indicating structural and behavioral barriers to full adoption.

Several contextual factors contribute to this underutilization. Female entrepreneurs continue to face challenges such as limited digital literacy, low awareness of available digital investment products, perceived security risks, and inadequate trust in automated financial technologies (UN Women, 2021; AfDB, 2022). Many people still rely on informal financial practices, such as rotating savings groups (chamas) or traditional savings mechanisms, which, although socially embedded, restrict access to structured, data-driven tools that can enhance financial decision-making. Consequently, despite government and private sector initiatives promoting digital inclusion, the effective use of digital banking services for strategic investment purposes among female-owned SMEs remains significantly constrained.

Existing empirical literature in Kenya also highlights a thematic gap. Most studies have broadly examined digital finance and SME performance without isolating how specific digital banking components, namely digital credit, digital savings, insurtech, and robo-advisory services, influence investment decisions among female entrepreneurs (Ndung'u, 2022; Okeyo & Gichuki, 2023; Musa & Njeru, 2023). Even where these relationships have been explored, findings are often mixed and lack gender-disaggregated analysis. Therefore, while substantial progress has been made in expanding access to digital finance, there remains a measurable underutilization of advanced digital banking tools and limited empirical evidence on their impact on investment decision-making among female-owned SMEs in Nairobi City County. This study aims to bridge the gap by empirically examining the impact of digital banking services on the investment decisions of female entrepreneurs, thereby contributing to inclusive financial development and women's economic empowerment.

1.3 Objectives of the Study

1.3.1 Main Objective of the Study

The overall objective was to determine the effect of digital banking services on investment decisions of female-owned small and medium-sized businesses in Nairobi City County.

1.3.2 Specific Study Objectives

The study was guided by the following specific objectives:

1. To assess the effect of digital credit service on investment decisions of female-owned small and medium-sized businesses in Nairobi City County, Kenya
2. To evaluate the effect of digital savings service on the investment decisions of female-owned small and medium enterprises in Nairobi City County, Kenya
3. To establish the effect of insuretech service on the investment decisions of female-owned small and medium enterprises in Nairobi City County, Kenya
4. To establish the effect of robo-advisory service on the investment decisions of female-owned small and medium enterprises in Nairobi City County, Kenya.

1.4 Research Hypotheses

1. H_{01}Digital credit service has no significant effect on the investment decisions of female-owned small and medium enterprises in Nairobi City County, Kenya.
2. $H_{02.}$Digital savings service has no significant effect on the investment decisions of female-owned small and medium enterprises in Nairobi City County, Kenya.
3. H_{03}Insurtech service has no significant effect on the investment decisions of female-owned small and medium enterprises in Nairobi City County, Kenya.
4. H_{04} Robo-advisory service has no significant effect on the investment decisions of female-owned small and medium enterprises in Nairobi City County, Kenya.

1.5 Significance of the study

This research is important because it sheds light on how digital banking services affect the investment choices of female-owned SMEs in Nairobi City County. As digital banking solutions become more widely used in Kenya, there is a growing need to understand how tools like digital credit, digital savings, insurtech, and robo-advisory services affect the choices made by female entrepreneurs. On the other hand, the study is beneficial to the following people and organizations as follows:

1.5.1 Female-Owned Enterprises.

The findings are particularly valuable to female entrepreneurs as they identified the most effective digital financial services that supported sound investment decisions, sustainable business growth, and long-term viability. These insights enable business owners to make more informed choices regarding the selection and adoption of digital platforms best suited to their operational needs. Consequently, this empowers them to strengthen their competitive advantage, enhance financial management, and optimize the utilization of available capital for improved business performance.

1.5.2 Digital banking services providers.

The research is offering evidence-based recommendations to FinTech firms, commercial banks, and microfinance institutions regarding the types of financial products and digital technologies that best meet the needs of female-led enterprises. By doing so, it is helping these financial institutions to design and refine inclusive, customer-oriented banking solutions that continuously enhance women's access to finance and foster their active participation in the broader entrepreneurial ecosystem.

1.5.3 Policy makers and government agencies

The research would be utilized by government agencies and policymakers, such as the Ministry of Public Service, Gender, and Affirmative Action, to inform the formulation of strategic plans and initiatives focused on strengthening the economic empowerment of female entrepreneurs. Aligned with Kenya's Vision 2030 and Sustainable Development Goal 5 (SDG 5) on achieving gender equality, the study's findings provided valuable insights for developing gender-responsive financial policies. These policies are aimed at enhancing women's access to financial resources, promoting inclusive economic growth, and fostering sustainable development through equitable participation of women in the business and financial sectors.

1.5.4 Academic community

This study is contributing significantly to the expanding body of academic literature on digital banking and women entrepreneurship within the sub-Saharan African context. By providing empirical insights into how digital financial services influence the investment behavior of female-owned SMEs, it enriched scholarly understanding of the intersection between technology and enterprise growth. The contextual evidence generated from this research also creates a foundation for further academic inquiry and stimulates deeper scholarly debates on issues related to digital inclusion, entrepreneurial finance, and women's economic empowerment. Consequently, the study is paving the way for future research that could explore emerging trends, policy implications, and innovative strategies to enhance the participation of women entrepreneurs in the digital financial ecosystem.

1.6 Scope of the Study

This study was designed to investigate how digital banking services affected the investment decisions of female-owned small and medium-sized enterprises (SMEs) in Nairobi City County, Kenya. The geographical focus was confined to Nairobi, the nation's capital and principal commercial hub, owing to its high concentration of female entrepreneurs and the widespread adoption of digital financial technologies. The research examined four primary digital banking services as independent variables: digital credit services, digital savings services, insurance technology (insurtech) services, and robo-advisory services. The dependent variable, investment decisions of female SME owners, was evaluated through several indicators, including business expansion, reinvestment of profits, product innovation, product diversification, and asset acquisition.

The study targeted registered female entrepreneurs managing SMEs within Nairobi City County. Both formal and informal enterprises were included, provided they met the Micro and Small Enterprises Authority (MSEA) criteria for SMEs. The scope deliberately excluded male-owned businesses, large-scale enterprises, and SMEs operating outside Nairobi City County to ensure focus and contextual relevance. By narrowing its coverage, the study provided a more precise understanding of how digital banking innovations specifically shape investment behavior and growth dynamics among female entrepreneurs in Nairobi's competitive business environment.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a comprehensive summary of the theoretical foundations underpinning the study, highlighting the key theories that explain the relationship between digital banking services and investment decision-making among female-owned SMEs. It also provides an in-depth review of empirical studies conducted by other scholars, thereby situating the current research within the broader academic discourse. Through the synthesis of previous research findings, the chapter establishes gaps in existing knowledge that this study sought to address. Additionally, it introduces the conceptual framework that guided the research, illustrating the interconnections among the independent and dependent variables. The chapter concludes with a concise summary of the reviewed literature, emphasizing the major insights, inconsistencies, and areas for further investigation that informed the development of the study's hypotheses and research design.

2.2 Theoretical Review

The theoretical foundations underpinning the adoption and utilization of digital banking services, as well as the investment decision-making processes of female-owned SMEs, are anchored in four key theories: Credit Rationing Theory, Pecking Order Theory, Risk Management Theory, and Modern Portfolio Theory. Each of these theories provide a distinct yet complementary perspective for understanding how entrepreneurs access, manage, and allocate financial resources in a digitalized financial environment. The Credit Rationing Theory explains the constraints faced by small enterprises in obtaining credit and how digital financial innovations may ease such barriers. The Pecking Order Theory sheds light on how business owners prioritize funding sources when making investment decisions. Risk Management

Theory provides insights into how digital financial tools, such as insurtech, help mitigate business uncertainties, while Modern Portfolio Theory guides rational investment diversification for optimal returns. A detailed discussion of each theory and its relevance to this study is presented in the subsequent sections.

2.2.1 Pecking Order Theory (POT)

Myers and Majluf (1984) introduced the Pecking Order Theory (POT), which explains that firms follow a hierarchical order when selecting sources of finance. According to this theory, businesses first utilize internal funds such as retained earnings, then resort to borrowing, and only issue new equity as a last option. This preference order arises mainly from information asymmetry between firm managers and external investors, where the use of internal financing helps to minimize the costs and risks associated with external capital sourcing.

In the Kenyan context, empirical evidence on the validity of the Pecking Order Theory has produced mixed results. Some studies have shown that firms listed on the Nairobi Securities Exchange generally adhere to the theoretical hierarchy, using debt financing primarily to supplement internal resources once they are depleted. Other research, however, suggests that factors such as firm size, profitability, and market conditions significantly shape capital structure choices, leading to partial alignment with the theory. Moreover, structural and contextual challenges, such as limited access to credit markets and institutional inefficiencies, have been observed to weaken the direct link between financing deficits and debt uptake, thereby challenging the strict applicability of the model.

The relevance of the Pecking Order Theory extends meaningfully to the financing behavior of female-owned SMEs in Nairobi City County. These enterprises frequently operate in environments characterized by limited access to collateral, stringent lending requirements, and restricted interaction with conventional financial institutions. Consequently, female

entrepreneurs tend to prioritize personal savings and reinvested earnings before turning to external financing options. In line with the principles of POT, many of these entrepreneurs turn to digital lending platforms, such as M-Shwari and 4G Capital, only after exhausting their internal funds. These platforms offer easily accessible and flexible credit solutions that help bridge short-term liquidity gaps and support business continuity. Thus, even though the universality of the Pecking Order Theory remains debatable, the financial behavior of female-owned SMEs in Nairobi City County reflects its core tenets, particularly in resource-constrained and digitally transforming business environments.

2.2.2 Credit Rationing Theory

Stiglitz and Weiss (1981) developed the Credit Rationing Theory, which posits that imperfections in credit markets arise not from a lack of financial resources but from problems of information asymmetry, adverse selection, and moral hazard between lenders and borrowers. According to this theory, financial institutions often restrict lending to small and medium-sized enterprises (SMEs) and other perceived high-risk clients due to uncertainties about their ability to repay. This cautious approach leads to widespread financial exclusion, particularly among smaller and informal businesses that typically lack adequate collateral, formal documentation, or established credit histories.

In recent years, digital lending platforms have emerged as innovative alternatives designed to address these market inefficiencies by leveraging alternative data sources, such as mobile phone usage, digital payment histories, and social network activity, to assess creditworthiness. However, scholars and policymakers have raised concerns that these platforms also introduce new forms of risk and inequality. For instance, issues such as algorithmic bias, excessive interest rates, and borrower over-indebtedness have become increasingly prevalent (Ozili, 2020; KIPPRA, 2023). FinRegLab (2024) further observes that

despite technological progress in credit analytics, many small-scale borrowers, especially women entrepreneurs, still struggle to access fair, sufficient, and affordable credit, underscoring persistent gender and structural disparities in digital finance.

The Credit Rationing Theory remains highly relevant to this study as it provides a theoretical lens for understanding how digital credit innovations can address traditional financial access barriers faced by female-owned SMEs in Nairobi City County. Through the integration of mobile money data and algorithm-based credit scoring, digital lenders attempt to bridge information gaps that previously limited women's access to credit. For many female entrepreneurs, these platforms represent a vital alternative to conventional banking systems by enabling them to obtain financing without relying on physical collateral. Consequently, the theory aligns closely with the study's objective of examining how digital credit services influence investment behavior and promote financial inclusion among female-owned enterprises in Nairobi's dynamic entrepreneurial ecosystem.

2.2.3 Risk Management Theory

Arrow (1963) developed the Risk Management Theory, which emphasizes that individuals and firms that are risk-averse seek to reduce uncertainty by transferring potential financial losses to insurers in return for a premium payment. This strategic behavior allows them to maintain stability in their income streams and protect themselves from severe financial shocks that could otherwise threaten business continuity. The theory highlights the essential function of insurance as a tool for enhancing economic stability and resilience, ensuring that businesses and individuals can continue productive activities even when faced with unforeseen adverse events. In a broader sense, the Risk Management Theory illustrates how insurance mechanisms contribute to long-term financial sustainability by spreading and mitigating risk across a wider economic system. By securing protection against unpredictable losses, such as accidents,

market fluctuations, or operational disruptions, economic agents are better positioned to plan, invest, and innovate with greater confidence. Thus, the theory underscores that effective risk management is not merely a defensive practice but a vital enabler of sustained economic growth and development.

However, in developing economies, the practical application of risk management mechanisms remains limited due to challenges such as low trust in insurers, high premiums, and the complexity of insurance products (Churchill & Matul, 2012). While the digitalization of insurance delivery has helped reduce transaction costs and extend reach, scholars have noted that it may also lead to product oversimplification, leaving policyholders with insufficient coverage (GSMA, 2021). These contextual constraints suggest that the benefits of risk transfer are not fully realized among micro and small enterprises operating in low-resource environments.

The Risk Management Theory is directly relevant to this study as it provides a conceptual foundation for examining how digital insurance innovations (insurtech) influence the investment behavior of female-owned SMEs in Nairobi City County. By leveraging mobile platforms to offer affordable and accessible microinsurance products, insurtech solutions help female entrepreneurs mitigate risks associated with illness, theft, or other business shocks. Consequently, such coverage enhances financial security, instills confidence, and enables female entrepreneurs to reinvest more decisively in their enterprises, thus promoting business continuity and growth within an uncertain economic landscape.

2.2.4 Modern Portfolio Theory

Markowitz Markowitz (1952) introduced the Modern Portfolio Theory (MPT), which proposes that investors can maximize their expected returns for a given level of risk by strategically diversifying their investment portfolios. The central premise of the theory is that by combining

assets with varying levels of risk and return, and particularly with low or negative correlations, investors can reduce the overall volatility of their portfolios without necessarily sacrificing profitability. This approach enables them to achieve an optimal balance between risk exposure and expected returns, reflecting rational and informed investment behavior. Modern Portfolio Theory has become a foundational framework in contemporary investment and financial management, shaping how investors, fund managers, and institutions make decisions regarding asset allocation and portfolio diversification. By emphasizing the importance of statistical relationships among assets, rather than the individual risk of each security, the theory provides a quantitative basis for constructing efficient portfolios that align with an investor's risk tolerance and financial objectives. In practice, MPT guides investors to spread their capital across multiple asset classes, such as equities, bonds, and alternative investments, thereby minimizing unsystematic risk and enhancing long-term portfolio performance.

Nonetheless, critics contend that the theory's underlying assumptions of investor rationality and efficient markets are often unrealistic in practice. Behavioral tendencies such as overconfidence, loss aversion, and heuristic biases can significantly distort investment decisions (Kahneman & Tversky, 1979). Furthermore, while technological innovations such as robo-advisory platforms operationalize MPT principles to promote diversification and automate portfolio management, their effectiveness largely depends on users' levels of financial literacy, technological competence, and trust in digital financial systems (Jung et al., 2023). These behavioral and contextual limitations suggest that the applicability of MPT in real-world settings may vary across investor groups and financial environments.

The Modern Portfolio Theory is particularly relevant to this study as it provides the conceptual foundation for understanding how digital financial tools—specifically robo-advisors—facilitate investment decision-making among female-owned SMEs in Nairobi City County. By employing MPT-based algorithms, robo-advisory services enable entrepreneurs to

allocate surplus funds efficiently across diversified investment portfolios, balancing risk and return in alignment with business goals. For female entrepreneurs, these digital platforms not only support prudent investment planning but also enhance financial sustainability, resilience, and long-term enterprise growth in an increasingly digitalized financial landscape.

2.3 Empirical Review

The empirical literature review serves as a critical lens through which the researcher examines and evaluates previous scholarly studies related to the research topic. It provides an opportunity to analyze existing findings, identify areas of convergence and divergence, and assess the methodological rigor and relevance of prior research within the same thematic domain. Through this analytical process, the researcher identifies key inconsistencies, methodological shortcomings, and both theoretical and conceptual gaps that the present study aims to address. Moreover, the review helps to highlight contextual limitations in earlier studies, such as differences in geographical scope, population characteristics, or economic environments, that justify the need for the current investigation. By systematically organizing and discussing the reviewed literature according to the study variables, this chapter establishes a logical framework that connects past empirical evidence with the present research objectives. Ultimately, the empirical review not only situates the study within existing academic discourse but also provides a strong foundation for refining the research hypotheses and guiding the overall analytical approach.

2.3.1 Digital Credit Services and Investment Decisions of Female-Owned SMEs

Recent research has increasingly underscored the importance of digital credit in shaping investment decisions among small and medium enterprises (SMEs). At the global level, Chen et al. (2021), in their study titled “Digital Lending Platforms and SME Growth: Global Perspectives,” conducted a cross-country quantitative analysis using secondary data drawn

from World Bank enterprise surveys and fintech industry reports. Employing regression analysis, the study examined the relationship between digital lending and SME performance. The findings revealed that digital lending platforms substantially improved access to working capital, enabling SMEs to reinvest in inventory and pursue business expansion, which in turn enhanced profitability and growth prospects.

At the regional level, Oketch and Njeru (2022) explored the nexus between digital credit and female's financial inclusion in their study "Digital Credit and Female's Financial Inclusion in Sub-Saharan Africa." Using a mixed-methods approach that integrated household surveys with key informant interviews, the authors investigated how mobile-based credit supports female entrepreneurs. The study found that digital credit helped female overcome traditional collateral constraints, thereby broadening their access to finance. Improved financial inclusion empowered female to make more informed and timely investment decisions, fostering enterprise expansion and resilience across Sub-Saharan Africa.

In the Kenyan context, Akinyi et al. (2023) conducted a study titled "Mobile-Based Credit Services and Investment Decisions of Female-Owned SMEs in Nairobi City County." The researchers adopted a descriptive research design and collected primary data from female SME owners through structured questionnaires. Correlation and regression analyses were used to assess the relationship between access to mobile credit and investment outcomes. The findings indicated that female entrepreneurs in Nairobi increasingly relied on mobile-based credit facilities for short-term financing. This form of digital credit enabled them to acquire productive assets and sustain reinvestment activities, though the high risk of default remained a notable concern.

While these studies position digital credit as a key driver of enterprise growth, other scholars have highlighted its potential downsides. Mwangi (2020), in the study "High-Cost

Borrowing and the Financial Sustainability of SMEs in Kenya," employed a case study design that utilized interviews and financial record analysis. The findings revealed that high interest rates charged by digital lenders often eroded profitability and increased over-indebtedness, ultimately undermining the long-term sustainability of SMEs. Similarly, Ochieng and Wanjiru (2024), in their longitudinal study "Over-Indebtedness and the Dual Role of Digital Credit in Female Entrepreneurship in Nairobi," examined borrowing and investment behaviors among female-owned SMEs over three years. Using panel data analysis, they found that while digital credit provided flexibility in financing and supported productive investment, excessive borrowing and high repayment costs exposed female entrepreneurs to financial distress. The study concluded that digital credit functions as a double-edged financial instrument, facilitating investment on one hand, while increasing vulnerability to financial instability on the other.

The above studies have revealed the dual nature of digital credit in influencing investment decisions among female-owned SMEs. On one side, digital credit promotes financial inclusion, liquidity management, and asset acquisition, enabling business growth and innovation. On the other hand, high borrowing costs and the risk of over-indebtedness pose significant challenges to long-term sustainability. This paradox highlights the need for balanced credit management practices and enhanced financial literacy among female entrepreneurs in Nairobi City County to ensure that they fully benefit from digital credit innovations while mitigating associated risks.

2.3.2 Digital Savings Services and Investment Decisions of Female-Owned SMEs

In line with digital saving services and investment decisions, empirical evidence increasingly demonstrates that digital savings and broader financial technologies play a pivotal role in influencing the financial and investment behaviors of entrepreneurs, particularly among female. Koomson et al. (2023), in their study titled "Does Mobile Money Adoption Promote

Entrepreneurship in Sub-Saharan Africa?", employed nationally representative survey data from Kenya, Tanzania, and Uganda. Using quasi-experimental microeconometric techniques, specifically instrumental variables (IV), Lewbel 2SLS, and propensity score matching, the researchers found that mobile money adoption increased the probability of entrepreneurship by 24.4 percentage points. Digital savings and digital credit were identified as critical mediating mechanisms, with the effects being more pronounced among female and rural populations. These findings underscore the gender-sensitive benefits of digital financial services in fostering entrepreneurial participation and financial empowerment.

At the local level, Wachira and Kihara (2023) investigated the impact of digital credit on the financial well-being of young borrowers in Nairobi City County. Adopting a correlational survey design and employing regression analysis on data from 399 respondents in Kibera, the study established that digital loans accessed through mobile network operators, fintech firms, and commercial banks had a positive and significant influence on financial health. This improved financial stability, in turn, enhanced borrowers' capacity for sustained investment and long-term economic planning. Also, Muchiri and Juma (2023) examined the influence of financial technology applications on the performance of microfinance institutions (MFIs) in Nairobi. Utilizing multiple linear regression analysis, they discovered that mobile banking, security technologies, and insurance technologies were positively associated with institutional performance, whereas investment technology exhibited a negative relationship. These results imply that while certain fintech innovations enhance institutional efficiency and indirectly support small enterprise growth, others necessitate careful implementation to mitigate potential negative impacts.

Kamau and Aduda (2024) further reinforced the significance of digital technologies in advancing financial inclusion in Kenya. Through a quantitative research design and regression

analysis, they found that fintech adoption significantly enhanced financial inclusion, particularly among individuals with higher levels of education and income. The study also linked digital financial inclusion to improved savings behavior, thereby promoting better investment planning and capital accumulation.

At the regional level, Botha, Mwenda, and Tuyisenge (2024), using nationally representative FinScope survey data from Rwanda and employing instrumental variable and control function approaches, explored the connection between digital financial services and female's empowerment. Their findings revealed that access to mobile money increased female's decision-making power regarding household income and expanded their access to credit. The study concluded that digital savings and credit services not only enhance female's economic empowerment but also strengthen entrepreneurial resilience and long-term investment capacity.

These studies consistently illustrate that digital financial services, particularly mobile-based savings and credit platforms, enhance financial discipline, broaden access to capital, and facilitate sustainable investment planning among entrepreneurs. However, the evidence also highlights that the advantages of digital finance are not universally experienced across all technological innovations, emphasizing the need for cautious and context-sensitive adoption to ensure equitable and sustainable outcomes.

2.3.3 Insurtech Services and Investment Decisions of Female-Owned SMEs

Insurance technology, commonly referred to as insurtech, has increasingly become a vital component of risk management for small and medium enterprises (SMEs), offering mechanisms to safeguard investments and support entrepreneurial decision-making. At the global level, Brown and Lee (2020), in their study titled "Technology-Driven Insurance Solutions and SME Risk Management," analyzed survey and financial data from SMEs across

multiple regions. Using regression modeling, they established that access to digital insurance products significantly reduced exposure to risks such as theft, fire, and market shocks. With enhanced security, entrepreneurs demonstrated greater willingness to allocate resources toward long-term investments, including business expansion and diversification. These findings underscore the critical role of insurtech in promoting stability and fostering sustainable enterprise growth.

At the regional level, Mutua et al. (2021), in their study "Mobile Microinsurance and Female Entrepreneurship in East Africa," investigated the effects of mobile-enabled microinsurance on female entrepreneurs. Employing a mixed-methods approach that integrated structured questionnaires and focus group discussions, the study found that microinsurance improved female's confidence to reinvest profits and expand their ventures. The assurance of financial protection against unforeseen shocks provided a sense of security that facilitated informed and strategic investment decisions, contributing to greater entrepreneurial resilience across East Africa.

In the Kenyan context, several empirical studies have examined the influence of digital insurance services on SMEs. Odenyo (2018), in "Factors Affecting Microinsurance Penetration in Kenya," utilized a descriptive research design to survey 32 insurance companies and explore both supply- and demand-side determinants of microinsurance adoption. The findings revealed that limited awareness, relatively high premium costs, and poorly tailored product designs constrained uptake, suggesting that many SMEs—including female-owned enterprises—had not yet realized the full benefits of insurtech innovations.

Still on the local context, Kamara (2017), in a study on the determinants of insurance uptake among SMEs in Nairobi, surveyed 100 small businesses using structured questionnaires and analyzed the data using SPSS. The results indicated that access to finance and availability

of business information were significant predictors of insurance adoption. While some SMEs financed insurance premiums through personal savings or business capital, barriers such as inadequate information and limited financial resources hindered broader utilization of insurance services.

The studies highlight the potential of insurtech to strengthen investment decisions among female-owned SMEs by mitigating financial losses resulting from unexpected events and offering risk protection that fosters reinvestment. For female entrepreneurs in Nairobi City County, insurtech represents both a promising instrument for sustainable business growth and an emerging sector where targeted interventions, such as enhanced financial literacy, tailored insurance solutions, and policy support, are essential to fully unlock its benefits.

2.3.4 Robo-Advisory Services and Investment Decisions of Female-Owned SMEs

Robo-advisory services, which use algorithms to provide automated financial guidance, have increasingly influenced investment decision-making among entrepreneurs. Globally, Singh and Patel (2021), in their study "The Promises and Pitfalls of Robo-Advising," conducted an empirical analysis to examine how robo-advisors impact portfolio diversification and investment outcomes. Their findings revealed that robo-advisors improved portfolio diversification and reduced volatility for investors holding smaller, less diversified portfolios, demonstrating the potential of these tools to mitigate behavioral biases and enhance decision-making.

At the regional level, Njoroge and Abdi (2022) explored the adoption and impact of robo-advisory platforms among female entrepreneurs in Africa in their study "Assessing the Role of Robo-Advisory Platforms for Sustainable Growth in Africa." Using a qualitative methodology, including interviews and case studies, they found that these platforms provided personalized financial insights that helped female entrepreneurs align investment strategies

with their business growth objectives. This alignment contributed to improved confidence and more structured investment decisions.

Locally, Otieno et al. (2024) conducted a mixed-methods study titled “Digital Transformation in Mutual Fund Distribution: Assessing the Role of Robo-Advisory Platforms for Sustainable Growth in Kenya.” The researchers surveyed and interviewed 150 female entrepreneurs in Nairobi, examining the effects of robo-advisory services on investment decisions. They found that 68% of participants who used robo-advisory platforms reported better investment outcomes, largely due to the tailored guidance and data-driven insights provided by the services.

Despite the benefits, several studies highlighted barriers to adoption among female entrepreneurs. Kiptoo (2020), in “Robo-Advisory Acceptance among Female Entrepreneurs in Nairobi,” conducted a survey-based study and identified key obstacles, including limited trust in automated systems, gaps in digital literacy, and insufficient localization of services. Similarly, Mwikali and Karanja (2023), in their qualitative study “Challenges in Adopting Robo-Advisory Services among Female Entrepreneurs in Nairobi,” used focus groups and interviews to explore adoption challenges, revealing that low awareness, affordability, and lack of tailored solutions significantly hindered effective uptake.

Together, these studies suggest that robo-advisory services have the potential to democratize access to professional investment advice, enabling female-owned SMEs to make more structured and evidence-based investment decisions. However, for these benefits to be fully realized, it is essential to address adoption barriers through improved digital literacy, localized solutions, and building trust in automated advisory systems.

2.4 Conceptual Framework

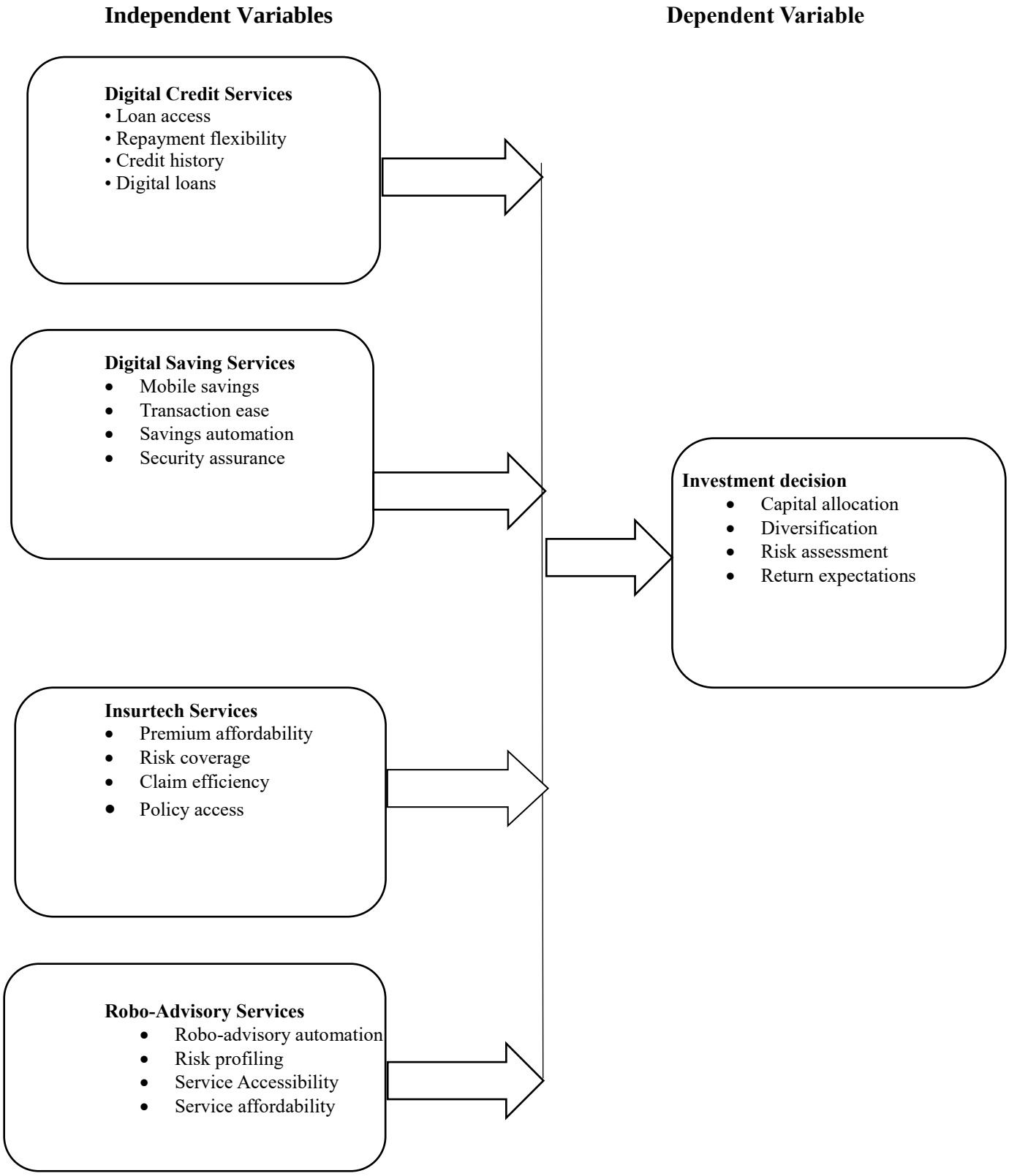


Figure 2.1: Conceptual Framework

2.5 Operationalization of Research Variables

TABLE 2.1:

Operationalization of Research Variables

Variable	Indicators	Measurement
Digital Credit	• Loan access • Repayment flexibility • Credit history • Digital loans	5-point Likert
Digital Savings	• Mobile savings • Transaction ease • Savings automation • Security assurance	5-point Likert
InsureTech	• Premium affordability • Risk coverage • Claim efficiency • Policy access	5-point Likert
Robo-Advisory	• Robo-advisory automation • Risk profiling • Service Accessibility • Service affordability	5-point Likert
Investment Decisions	• Capital allocation • Diversification • Risk assessment • Return expectations	5-point Likert

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents a comprehensive outline of the research methodology adopted for the study. It elaborates on the overall research design, the characteristics of the target population, the sampling techniques employed, and the procedures used to determine the appropriate sample size. In addition, the chapter provides a detailed explanation of the methods and tools used for data collection, the systematic procedures followed during fieldwork, and the techniques applied in data processing, coding, and statistical analysis. Beyond the technical aspects, the chapter also highlights the ethical considerations that guided the conduct of the research, ensuring that the study adhered to accepted academic and professional standards. These ethical principles include obtaining informed consent, maintaining confidentiality, ensuring data integrity, and upholding honesty and transparency throughout the research process. Overall, this chapter establishes the methodological framework that underpins the credibility, reliability, and validity of the study's findings.

3.2 Research Design

The study adopted an explanatory research design to guide its investigation and analysis. According to Saunders, Lewis, and Thornhill (2019), an explanatory research design is appropriate when the objective is to examine relationships between variables and determine the underlying causes of observed phenomena. This design enables researchers to establish cause-and-effect linkages by using statistical techniques to test hypotheses derived from theoretical frameworks. This approach allows researchers to capture an accurate and comprehensive picture of existing conditions, behaviours, or relationships among variables. In this study, an explanatory design was particularly well-suited for examining the association

between the independent variables, digital credit, digital savings, insurtech, and robo-advisory services, and the dependent variable, which was the investment decisions of female-owned SMEs. Through this design, the research aimed to describe and analyze how digital banking innovations influence investment behavior within real business contexts. It also enabled the researcher to collect quantifiable data that could be statistically analyzed to identify patterns, correlations, and trends. Overall, the use of an explanatory research design provided a clear and systematic framework for understanding the dynamics of digital financial service adoption and its impact on the investment choices of female entrepreneurs in Nairobi City County.

3.3 Target Population

The study focused on females who own registered small and medium-sized enterprises (SMEs) in Nairobi City County. This study used a target population of 39,440 female-owned SMEs registered in Nairobi City County. As supported by Musili and Musembi (2025), there are approximately a total of thirty-nine thousand, four hundred and forty (39440) female-owned SMEs that are registered in Nairobi City County, and this translates to approximately a total target population of 39,440 female-owned SMEs in Nairobi City County. These enterprises were ideal for the study because they operate in a fast-changing digital finance landscape and often rely on digital banking tools for their daily operations and growth. This group was specifically chosen as it closely aligned with the research objectives and offered a strong potential for collecting rich, high-quality data.

3.4 Sampling Technique and Sample Size Estimation

To provide adequate representation throughout Nairobi's numerous sectors and sub-counties, a simple random sampling technique was employed. By ensuring that each SME in the target population had an equal and independent chance of being included in the sample, this strategy

was chosen to improve representativeness and reduce selection bias. The best conditions for simple random sampling, according to Kothari (2014), are when the population is reasonably homogeneous and the researcher wants to get objective estimates that can be applied to the whole population. Given that the SMEs in Nairobi County had comparable attributes with regard to ownership structure, operational environment, and firm size, this methodology was appropriate for the study. The Yamane formula was used to determine the sample size as illustrated below.

$$n = N / (1 + N * e^2)$$

Where:

n = sample size

N = population size

e = margin of error (0.05)

n=39440/(1+39440*0.05ˆ2)

n=395.98

Therefore, a sample size of 396 respondents will be targeted for the study.

3.5 Data Collection Instruments and Procedure

Self-administered structured questionnaires were used to gather data from the sampled respondents in Nairobi City County's various sub-counties. Depending on the accessibility and preferences of the respondents, the questionnaires were administered physically. Participants were given enough time to respond, and follow-up efforts were made to gather additional feedback where necessary.

3.6 Pilot Test

A pilot data test was conducted with about 10% of the sample size, approximately 39 respondents. This is in line with Goodman et al. (2020), who recommended that the pilot size should be within the range of 10-30%. The pilot testing helped in testing the clarity of the instruments, improved the reliability of the questionnaires and addressed any unclear questions. Necessary revisions were made based on the feedback received (Saunders et al., 2019).

3.6.1 Validity of the Study

Validity of the study was crucial in its ability to properly capture the effect of digital banking services on investment decisions of female-owned small and medium-sized businesses in Nairobi City County, Kenya. Validity is used in the sense that the research tools will be measuring what they are supposed to (FitzPatrick, 2019). The research used a well-crafted and structured questionnaire following careful reading of applicable literature and taking opinion of research advisors and recommendations for the sake of revision. This guaranteed questions covered all significant areas. Pilot testing was conducted using a small sample who were not supposed to be part of sample size. This method was used in determining unclear or biased questions in an effort to enhance the tool before the primary study (FitzPatrick, 2019).

3.6.2 Reliability of the Study Instrument

Reliability, or the consistency and stability of the measuring tool, was obtained through the application of Cronbach's Alpha. Cronbach's Alpha is a universal statistical indicator used to calculate internal consistency on the basis of the average correlation of items in a test (Moon, 2019). The presence of a mean Cronbach's Alpha of 0.70 or more is an assurance that the question items are consistently measuring a construct. Reliability was established at the pilot

study phase. High reliability increases the validity of findings and guarantees reproducibility under similar conditions (Moon, 2019).

3.7 Data Analysis and Processing

Data analysis and processing formed the backbone of turning data collected into information that informs one on whether digital banking products have an influence on the investment decisions of Nairobi city county, medium and small-sized female-owned businesses in Kenya. Data processing begun with cleaning, filling in missing or inconsistent values, leading to complete and dependable data. Following cleaning, it was coded and keyed into statistical packages for data analysis. This study used Statistical Package for the Social Sciences (SPSS) version 29 because it has strong analysis capabilities and is user-friendly (Yu et al., 2020).

Upon collection, the data was cleaned, coded, and analyzed using Statistical Package for the Social Sciences (SPSS), Version 29. Descriptive statistics such as frequencies, percentages, means, and standard deviations will be used in summarizing demographic information and overall trends of respondents' usage of digital banking services.

To investigate the relationship between independent variables (robo-advisory services, insurtech, savings, and digital credit) and the dependent variable (investment decisions), the study employed multiple linear regression analysis. The regression model can be applied in assessing how each of the digital banking services affects investment decisions after controlling for other variables (Kothari, 2020).

The general regression model was specified as:

$$Y=\beta 0+\beta 1X1+\beta 2X2+\beta 3X3+\beta 4X4+\epsilon$$

Where:

Y =Investment decisions (dependent variable)

X_1=Digital credit services

X_2 = Digital savings services

X_3 = Insuretech services

X_4 = Robo-advisory services

β_0 =Constant

β_1 to β_4 = Coefficients of independent variables

ε = Error term

The significance of relationships will be tested at the 95% confidence level ($p < 0.05$).

3.8 Diagnostic Tests

Ensuring the quality and accuracy of statistical analysis was crucial in empirical research. Diagnostic tests helped evaluate assumptions in regression models and other methods. These tests identified issues like multicollinearity (highly correlated variables), normality (data distribution), heteroscedasticity (unequal data spread), autocorrelation (related errors over time), model errors (incorrect specifications), and non-linearity. Addressing these problems strengthened the study's results. The goal will be to understand how digital banking services affect investment decisions of female-owned small and medium enterprises in Nairobi City County, Kenya.

3.8.1 Multicollinearity test

In the context of this study, it will be essential to ensure that the independent variables, digital banking services, entail digital credit service, digital savings service, insuretech service, and robo-advisory service, do not exhibit high levels of correlation with each other. Multicollinearity (Mohammadi, 2022) can distort regression coefficient estimates and reduce

the precision of relationships between variables. The researcher used the Variance Inflation Factor (VIF) to detect it. A VIF value over 10 usually indicated significant multicollinearity. High multicollinearity will require corrective measures, consideration such as variable transformation, combining correlated variables, or dropping one correlated variable to ensure robust regression analysis.

3.8.2 Normality Test

Assessing the normality of the data distribution was crucial for the validity of parametric statistical tests used in this study. Normality tests were checked to ascertain if the regression model residuals followed a normal distribution. This was key in regression analysis. The researcher used the Shapiro-Wilk test and graphical methods like Q-Q plots and histograms (Gupta et al., 2019). If data greatly deviates from normality, transformations such as logarithmic or square root will be done to achieve normality and improve statistical results.

3.8.3 Heteroscedasticity test

Heteroscedasticity (Uyanto, 2022) means having non-steady residual variance across different levels of an independent variable. This can cause inefficient estimates and invalid hypothesis tests. To spot heteroscedasticity, the Breusch-Pagan test will be run. This test helped find any patterns in residuals that showed a changing variance. If heteroscedasticity is found, robust standard errors are used to fix biases in error estimates to ensure reliable results.

3.8.4 Linearity Test

It's crucial to assume a linear (Schmidt & Finan, 2018) relationship between independent and dependent variables in linear regression. Ignoring non-linearity can bias estimates and lead to wrong conclusions. Scatter plots checked this linearity for the variables. ANOVA and the Box-Cox transformation method were used to find the right power transformation (Schmidt &

Finan, 2018). If the researcher spots significant non-linearity, there will be a need to add polynomial or interaction terms to better reflect the actual relationship.

3.9 Ethical Consideration

Ethical approval was obtained from the appropriate authorities before beginning data collection. Every participant was asked to give informed consent either in writing confirming that they are taking part voluntarily. They were reassured that their information will remain strictly confidential and anonymous, as the questionnaire did not include any personal identifiers.

The participants were advised that they can withdraw from the study at their convenience, without any negative consequences. All the information collected will be used solely for academic purposes and stored privately in password-protected electronic files, accessed only by the research team. The study was conducted in line with the National Commission for Science, Technology and Innovation (NACOSTI) ethical guidelines and followed internationally accepted standards of responsible conduct of research (NACOSTI, 2022).

CHAPTER FOUR

RESULTS AND FINDINGS

4.1 Introduction

The chapter reflects the analysis, interpretation, and discussion of the data that the authors gathered on female-owned small and medium-size businesses (SMEs) in the Nairobi City County and how digital banking services impact their investment choices. It analyzes four major digital banking services, namely, digital credit, digital savings, insurtech, and robo-advisory, and their connection to investment behavior among female entrepreneurs. The data acquired using structured questionnaires were analyzed using descriptive and inferential statistics, which includes means, standard deviations, correlation analysis, and multiple regression analysis. The results are discussed in tables and figures to make them clear and are discussed in the context of the study objectives, hypotheses, and theoretical and empirical literature.

4.1.1 Response Rate

The study targeted a sample of 396 respondents focused on female who own registered small and medium-sized enterprises (SMEs) in Nairobi City County. Out of the questionnaires distributed, 346 were completed and returned, while 50 were not returned. This represents a response rate of 87.5 percent, as shown in Table 4.1.

TABLE 4.1:

Response Rate

Response Status	Frequency	Percent
Returned	346	87.5
Unreturned	50	12.4
Total	396	100

Source: Researcher (2025)

The results highlight the study's high response rate of 87.5%, which is far beyond the 70% threshold that is widely recognized as sufficient in survey research. The high turnout rate shows that the respondents are engaged and interested in the study, which increases the reliability, validity, and generalizability of results

4.1.2 Reliability analysis

To guarantee internal consistency of the study constructs, reliability analysis was carried out using Cronbach's Alpha. A coefficient of 0.7 or higher was considered acceptable for social science research. The results are summarized in Table 4.2.

TABLE 4.2:

Reliability Test Results

Variables	Number of items	Reliability Cronbach's Alpha	Comments
Digital Credit Services	5	0.709	Accepted
Digital Savings Services	5	0.712	Accepted
Insurance Technology Services	5	0.827	Accepted
Robo-Advisory Services	5	0.736	Accepted
Investment Decisions	5	0.735	Accepted

Source: Researcher (2025)

The results revealed that all the constructs achieved Cronbach's Alpha coefficients exceeding the recommended threshold of 0.7, confirming a high level of reliability in the measurement instruments. Among the variables, Insurance Technology Services recorded the highest reliability score ($\alpha = 0.827$), indicating a strong internal consistency among the items used to measure this construct. Conversely, Digital Credit Services exhibited the lowest reliability value ($\alpha = 0.709$), which, despite being the lowest, remained above the acceptable benchmark, demonstrating adequacy for further analysis. Overall, these findings affirm that the instruments used in the study were both consistent and dependable, making them suitable for subsequent statistical testing and interpretation.

4.2 Background Information

This section provides the background information of the respondents to give a context to the study findings. It highlights the main demographic and business traits including age, the level of education, the number of years in business, the field of business, and the utilization of online banking services. This data will aid in the comprehension of the profile of the female SME owners in the Nairobi City County and the way the features can be connected with the research hypotheses on the role of digital banking services in investment decisions.

4.2.1 Distribution of Respondents by Age

Table 4.3 presents the age distribution of respondents, providing insights into the age composition of female SME owners in Nairobi City County.

TABLE 4.3

Age of Respondents

		Frequency	Percent
	Below 25 years	38	11
	25–34 years	218	63
	35–44 years	71	20.5
	45–54 years	19	5.5
	Total	**346**	**100**

Source: Researcher (2025)

The results reveal that most of the respondents (63%) were between the ages of 25 and 34 years, and this implies that most of the female-owned SMEs in Nairobi City County are run by young and economically active women. The 35 to 44-year group had the largest proportion of 20.5 with 11% under 25 proportion and 5.5% between 45-54 years. This distribution is indicative of the fact that younger women are becoming more active in the entrepreneurial sphere, and they are embracing digital banking products to assist in their business investment choices.

4.2.2 Distribution of Respondents by Level of Education

The research aimed to identify the level of education of the respondents in order to determine their aptitude to comprehend and use digital banking services. Table 4.4 presents the distribution of respondents by their highest level of education.

TABLE 4.4

Level of Education

	Frequency	Percent
Primary	65	18.8
Secondary	118	34.1
Diploma/Certificate	98	28.3
Bachelor’s Degree	43	12.4
Master’s Degree or above	22	6.4
Total	346	100

Source: Researcher (2025)

The results show that 34.1% of the respondents had attained secondary education, 28.3% held diploma or certificate qualifications, and 18.8% had completed primary education. Moreover, 12.4% were bachelor's degree holders, and 6.4% were master's degree holders or above. This suggests that the majority of female SME owners in Nairobi City County have achieved basic to moderate levels of education, which could increase their capacity to embrace digital banking platforms and adopt and use them to make informed investment choices.

4.2.3 Years in Operation

The study aimed to determine the duration respondents had been operating their businesses to assess their level of experience and business stability. Table 4.5 shows the distribution of respondents according to the number of years in business operation.

TABLE 4.5

Years in Operation

Years	Frequency	Percent
Less than 1 year	67	19.4
1–3 years	136	39.3
4–6 years	82	23.7
7–10 years	61	17.6
Total	**346**	**100**

Source: Researcher (2025)

The findings reveal that 39.3% of the respondents had operated their businesses for 1–3 years, 23.7% for 4–6 years, 19.4% for less than one year, and 17.6% for 7–10 years. This shows that most female-owned SMEs in Nairobi City County are relatively young businesses, which implies that more women are becoming more involved in entrepreneurship and are also adopting the use of online banking facilities in new business ventures.

4.3 Descriptive Statistics

This section presents the descriptive statistics of the study variables, which include digital credit, digital savings, insurtech, robo-advisory services, and investment decisions. The descriptive analysis was done to summarize the perception and experiences of the respondents in terms of the use of the digital banking services and how they impact the investment decisions made by female-owned SMEs in Nairobi City County. The results are presented in terms of means and standard deviations to show the central tendency and variability of responses across the study variables.

4.3.1 Digital Credit Services

This section presents the descriptive statistical analysis of digital credit services, offering insights into how these services are accessed, utilized, and how they contribute to business

investment decision-making among female-owned SMEs in Nairobi City County. The analysis aims to capture the extent to which digital credit platforms have influenced financing behavior, liquidity management, and overall business growth within this demographic. It further explores respondents' experiences with the availability, affordability, and reliability of digital lending options.

Table 4.6 provides a detailed summary of respondents' perceptions regarding various dimensions of digital credit services, including ease of access, repayment flexibility, loan approval speed, and the perceived impact on investment-related decisions. By examining these perspectives, the section sheds light on the effectiveness of digital credit as a financial innovation that enhances capital accessibility and empowers women entrepreneurs in the county's SME sector.

TABLE 4.6

Digital Credit Services

	N	Minimum	Maximum	Mean	Std. Deviation
I can easily access digital credit services for my business.	346	1.00	5.00	4.3613	1.10052
I frequently use digital credit facilities to finance my operations.	346	1.00	5.00	3.8786	1.22167
The payment terms of digital credit are favorable for my business.	346	1.00	8.00	3.4769	1.21383
Digital credit has positively contributed to the growth of my business investments.	346	1.00	5.00	3.0607	1.41393
Digital credit services have improved my ability to make investment decisions. ☐	346	1.00	5.00	2.7457	1.32054
Valid N (listwise)	346				

Source: Researcher (2025)

The results show that the majority of the respondents agreed that they can easily get digital credit to fund their businesses (Mean = 4.36, SD = 1.10), which is a high availability and convenience of digital lending platforms. Another factor that moderately relied on by respondents is the use of digital credit to finance operations (Mean = 3.88, SD = 1.22) and was relatively favorable in terms of payment terms (Mean = 3.48, SD = 1.21). Nevertheless, comparatively lower means were obtained regarding the contribution of digital credit to the growth of business investment (Mean = 3.06, SD = 1.41) and its impact on enhancing investment decision-making (Mean = 2.75, SD = 1.32). This implies that accessibility and

utilization of digital credit is high, but its perceived influence on long-term investment performance is intermediate, which may be caused by high-interest rates and short repayment terms.

4.3.2 Digital Savings Services

This section presents the descriptive statistical findings on digital savings services, focusing on how their adoption influences investment decision-making among female-owned SMEs in Nairobi City County. The analysis evaluates the role of digital savings platforms in promoting financial discipline, capital accumulation, and long-term business planning. It also examines how accessibility, user convenience, and integration with other digital financial tools contribute to improved investment outcomes for women entrepreneurs.

Table 4.7 provides a detailed summary of respondents' perceptions regarding the accessibility, efficiency, and overall impact of digital savings on their business operations and investment behavior. The insights derived from this data help illustrate how digital savings mechanisms not only facilitate secure and flexible saving options but also enhance liquidity management and enable female entrepreneurs to reinvest more confidently in business growth and diversification.

TABLE 4.7

Digital Savings Services

	N	Minimum	Maximum	Mean	Std. Deviation
Digital savings services have improved my savings discipline.	346	1.00	5.00	3.5260	1.17986
I find digital savings convenient and secure.	346	1.00	5.00	3.5145	1.14516
I regularly use digital savings platforms for my business funds.	346	1.00	5.00	3.4740	1.28115
My savings through digital platforms have helped in planning future investments.	346	1.00	5.00	3.4075	1.24591
Digital savings services have increased my capacity to fund new investments.	346	1.00	5.00	2.7023	1.31252
Valid N (listwise)	346				

Source: Researcher (2025)

These findings indicate that the respondents moderate that digital savings services have enhanced their savings discipline (Mean = 3.53, SD = 1.18) and that they are convenient and secure (Mean = 3.51, SD = 1.15). Fair adoption among female entrepreneurs was also noted with a similar mean registered in regular use of digital savings platforms (Mean = 3.47, SD = 1.28). Moreover, the respondents admitted that savings made with the assistance of the digital platform will facilitate future investment planning (Mean = 3.41, SD = 1.25), but fewer respondents agreed that digital savings will help to considerably augment their ability to make new investments (Mean = 2.70, SD = 1.31). Such results indicate that although digital savings tools encourage financial discipline and planning, their effect on increasing investment capacity is moderate, which may be because of the limited size of savings or competing business costs.

4.4.3 Insurance Technology Services

This section presents the descriptive statistical analysis of insurance technology (insurtech) services, focusing on assessing their level of awareness, accessibility, and influence on the investment decisions of female-owned SMEs in Nairobi City County. The analysis seeks to understand how the adoption of digital insurance solutions contributes to risk mitigation, financial stability, and overall business confidence among women entrepreneurs. By examining the extent to which these services are known, accessible, and effectively utilized, the section highlights the growing importance of insurtech in supporting resilient and sustainable business practices.

Table 4.8 summarizes respondents' perceptions regarding the availability, affordability, and effectiveness of digital insurance products in protecting their enterprises from financial shocks. It also captures views on how such services enhance investment confidence by providing a safety net against potential business losses. Through this analysis, the section

underscores the pivotal role of insurtech in fostering a secure investment environment and promoting long-term growth for female-owned SMEs in the county.

TABLE 4.8

Insurance Technology Services

	N	Minimum	Maximum	Mean	Std. Deviation
I am aware of insurance technology services available for my business.	346	1.00	5.00	3.1618	1.17823
I have used digital insurance (insurtech) products for my business.	346	1.00	5.00	3.7630	1.23073
Insurtech services are affordable and accessible.	346	1.00	5.00	3.7486	1.13076
Using insurtech services reduces the risks associated with my investments.	346	1.00	5.00	3.7370	1.10738
Insurtech services give me confidence to make long-term investment decisions.	346	1.00	5.00	3.7746	1.09864
Valid N (listwise)	346				

Source: Researcher (2025)

The findings indicate that the respondents agreed moderately that they are aware of insurance technology services (Mean = 3.16, SD = 1.18) and that they expressed fairly high agreement with the use of digital insurance products (Mean = 3.76, SD = 1.23). Insurtech services were also perceived to be affordable and accessible (Mean = 3.75, SD = 1.13) and assist in ensuring reduced risks when it comes to investments (Mean = 3.74, SD = 1.11). Moreover, the majority of the respondents were sure that insurtech provides them with the opportunity to make long-term investment choices (Mean = 3.77, SD = 1.10). The results indicate that the insurtech

awareness and adoption among female SME owners are increasing, and the digital insurance options contribute to risk management and investment confidence.

4.4.4 Robo-Advisory Services

This section presents the descriptive statistical analysis of robo-advisory services, focusing on their level of accessibility, user awareness, and influence on the investment decision-making processes of female-owned SMEs in Nairobi City County. The analysis examines how the integration of technology-driven financial advisory tools assists entrepreneurs in making data-informed, strategic investment choices. It further explores the extent to which these digital advisory platforms enhance financial literacy, improve portfolio management, and support goal-oriented business growth among women-led enterprises.

Table 4.9 provides a comprehensive summary of respondents' perceptions regarding the usefulness of robo-advisory tools in offering financial guidance, investment planning, and performance evaluation. The responses highlight how these automated advisory systems contribute to better decision-making through real-time insights, personalized recommendations, and cost-efficient financial management. Overall, this section underscores the growing relevance of robo-advisory technologies as enablers of smarter investment behavior and sustainable financial empowerment for female entrepreneurs in Nairobi City County.

TABLE 4.9

Robo-Advisory Services

	N	Minimum	Maximum	Mean	Std. Deviation
The features of robo-advisory services are helpful in evaluating investment opportunities.	346	1.00	5.00	3.7081	1.14400
Robo-advisory services provide accurate and reliable financial guidance.	346	1.00	5.00	3.5636	1.14854
Robo-advisory services have influenced my investment decision-making positively.	346	1.00	5.00	3.5405	1.15712
I can easily access robo-advisory services when needed.	346	1.00	5.00	3.3815	1.28497
I am aware of robo-advisory services for investment decisions.	346	1.00	5.00	3.3439	1.29891
Valid N (listwise)	346				

Source: Researcher (2025)

The results show that the respondents moderately believed their robo-advisory services to be useful in determining the opportunity to invest (Mean = 3.71, SD = 1.14) and to offer accurate and reliable financial advice (Mean = 3.56, SD = 1.15). Respondents also concurred that such services have positively affected their investment decision-making (Mean = 3.54, SD = 1.16), indicating that robo-advisory tools are increasingly becoming useful in assisting female entrepreneurs to make informed and data-driven financial decisions. These findings indicate that there is a slow transition towards the use of digital investment tools that ease the

management of the portfolio and enhance confidence in financial planning among the women-owned SMEs.

Nevertheless, the comparatively low mean value of ease of access (Mean = 3.38, SD = 1.28) and awareness (Mean = 3.34, SD = 1.30) indicates that a significant number of respondents continue to experience difficulties when it comes to making full use of the robo-advisory services. The lack of awareness, digital literacy and exposure to complex fintech products can become obstacles to their overall adoption. This implies that although the potential of robo-advisory platforms to positively influence sound investment decisions is clear, their effectiveness would be optimized by augmenting awareness, accessibility, and customized training programs to ensure that female SME owners are able to optimize their benefits in long-term business growth and sustainability.

4.4.5 Investment Decisions

This section outlines the descriptive statistics of investment decisions in order to determine how investment decisions are made/managed by female owned SMEs in Nairobi City County. Table 4.10 provides an overview of the respondents' opinions on the most important factors in the investment decision-making process, such as the planning process, risk assessment, and capital allocation.

TABLE 4.10

Investment Decisions

	N	Minimum	Maximum	Mean	Std. Deviation
I set clear expectations for investment returns	346	1.00	5.00	4.1879	1.16816
I make investment decisions that support business expansion.	346	1.00	5.00	4.0145	1.16585
I carefully evaluate investment risks before committing funds.	346	1.00	5.00	3.8468	1.17076
I allocate capital effectively across business areas.	346	1.00	5.00	3.7861	1.07430
I diversify my investments to reduce risks.	346	1.00	5.00	3.6850	1.16801
Valid N (listwise)	346				

Source: Researcher (2025)

The results indicate that a majority of the respondents concurred that they have clear expectations regarding investment returns (Mean = 4.19, SD = 1.17) and make investment decisions that facilitate business growth (Mean = 4.01, SD = 1.17). The respondents also stated that they are keen to scrutinize the risks involved in investing their money (Mean = 3.85, SD = 1.17) and that they effectively distribute capital to various business sectors (Mean = 3.79, SD = 1.07). The average score on diversification of investments was a bit lower (Mean = 3.69, SD = 1.17) indicating that although risk assessment is being practiced, diversification is not being fully adopted by most of the female entrepreneurs.

Generally, the findings suggest that female SME owners in Nairobi City County have a prudent investment behavior that is planned, goal-oriented, and risk-averse. Nonetheless, inadequate diversification can expose their firms to greater financial risks. This puts the

emphasis on the necessity to improve financial literacy and guidance to assist female entrepreneurs in searching the wider field of investment and have greater financial strength in the long term.

4.4: Diagnostic Tests

A series of diagnostic tests was conducted to ensure that the dataset met all the fundamental assumptions required for reliable and valid regression analysis. These diagnostic procedures were essential in verifying the suitability and robustness of the analytical model used to examine the relationship between digital banking services and the investment decisions of female-owned SMEs in Nairobi City County.

Specifically, the tests evaluated the normality of the data distribution, the presence of multicollinearity among predictor variables, the linearity of relationships, as well as the issues of heteroscedasticity and autocorrelation. Assessing these parameters helped confirm that the statistical model was both stable and appropriate for inferential analysis. By addressing potential violations of these assumptions, the study ensured the accuracy, consistency, and credibility of its results, thereby strengthening the validity of the conclusions drawn regarding how digital financial innovations influence investment behavior among female entrepreneurs.

4.4.1 Normality Test

The Kolmogorov-Smirnov and Shapiro-Wilk tests were used to examine the normality of the study variables. Table 4.11 shows the results on digital credit services, digital savings services, insurance technology services, robo-advisory services and investment decisions.

TABLE 4.11

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Digital credit nservices	.071	346	.000	.982	346	.000
Digital saving services	.084	346	.000	.983	346	.000
Insurance technology service	.125	346	.000	.965	346	.000
Roboadvisory service	.098	346	.000	.974	346	.000
Investment decisions	.126	346	.000	.926	346	.000
a. Lilliefors Significance Correction						

Source: Researcher (2025)

Table 4.11 depicts that, in both tests, all the variables are significant ($p < 0.05$), and this is contrary to a perfect normal distribution. However, due to a rather large sample size of 346 respondents, the data is believed to provide an approximation of normality, in accordance with the Central Limit Theorem. Although the normality tests indicate that the data are not perfectly normally distributed, the deviations are not substantial enough to undermine the validity of subsequent regression analysis. The data are therefore considered suitable for further statistical testing.

4.4.2 Multicollinearity Test

The researchers performed a multicollinearity test to ascertain whether the independent variables were highly correlated with each other, which might bias the regression estimates. The Variance Inflation Factor (VIF) and Tolerance values were used as indicators of multicollinearity. Table 4.12 presents the results of the test.

TABLE 4.12

Multicollinearity Test

	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Digital credit services	0.7	1.429
Digital saving services	0.449	2.228
Insurance technology service	0.472	2.118
Robo advisory service	0.429	2.33

Source: Researcher (2025)

All the variables presented in Table 4.12 recorded tolerance values greater than 0.1 and Variance Inflation Factor (VIF) values below the critical threshold of 10, indicating the absence of multicollinearity concerns within the model. This suggests that the independent variables were sufficiently independent of each other, allowing for clear differentiation among them. Consequently, the individual effects of each independent variable on investment decisions among female-owned SMEs in Nairobi City County could be accurately and reliably estimated without distortion from overlapping variable relationships.

4.4.3 Heteroscedasticity Test

The Modified Breusch-Pagan test was done to test the assumption that the variance of the error terms in the regression model was constant, which was one of the major assumptions of ordinary least squares (OLS) regression. Table 4.13 presents the results of the test.

TABLE 4.13

Heteroscedasticity Test

Modified Breusch-Pagan Test for Heteroskedasticity		
Chi-Square	df	Sig.
0.131	1	0.718

Source: Researcher (2025)

The outcome indicates that the p-value is 0.718, higher than the level of significance (0.05), and thus the null hypothesis of homoscedasticity is not rejected. This means that the error terms are constant across observations, which proves that there was no heteroskedasticity in the data. Thus, the regression model can be viewed as reasonable and valid to be used in further analysis

4.5 Correlation Results

A correlation analysis was conducted to examine both the strength and direction of the relationships between digital banking services and investment decisions among female-owned SMEs in Nairobi City County. The analysis utilized the Pearson correlation coefficient (r) to measure the degree of association between the independent variables—digital credit services, digital savings services, insurance technology services, and robo-advisory services—and the dependent variable, investment decisions. This approach enabled the researcher to determine how closely variations in digital financial services are linked to changes in investment decision-making patterns among the respondents. The results of this analysis are presented in Table 4.15.

TABLE 4.15

Correlation Test

Correlations						
		Investment decisions	Digital credit services	Digital saving services	Insurance technology service	Robo advisory service
Investment decisions	Pearson Correlation	1				
	N	346				
Digital creditservices	Pearson Correlation	.424**	1			
	N	346	346			
Digital saving services	Pearson Correlation	.548**	.534**	1		
	N	346	346	346		
Insurance technology service	Pearson Correlation	.654**	.377**	.626**	1	
	N	346	346	346	346	346
Robo advisory service	Pearson Correlation	.599**	.446**	.661**	.691**	1
	N	346	346	346	346	346

Source: Researcher (2025)

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

Correlation analysis indicated that digital credit services were positively and significantly correlated to investment decisions ($r = 0.424$, $p < 0.01$). It means that the greater access and use of digital credit access increases better investment choices among female-owned SMEs. Digital credit allows business owners to access financing in an easy and fast way and to utilize financing opportunities to capture investment opportunities and grow their businesses. Nonetheless, the moderate intensity of the relationship indicates that, although digital credit is associated with improved investment performance, other variables (including repayment terms,

interest rates, and credit limits) may determine the degree to which this relationship affects investment decisions.

The findings also indicate that there is a high positive correlation of the digital savings services and investment decisions ($r = 0.548$, $p < 0.01$). This implies that women entrepreneurs the owners of the SMEs who utilize digital savings platforms actively are in better positions to make good investment choices. By saving on a regular basis, entrepreneurs can build enough capital to invest back in business growth, innovation or diversification. Financial discipline, transparency and accessibility is also encouraged by digital savings platforms and women become more empowered to plan and implement investment strategies.

The findings also indicate that there is a high positive correlation of the digital savings services and investment decisions ($r = 0.548$, $p < 0.01$). This implies that women entrepreneurs the owners of the SMEs who utilize digital savings platforms actively are in better positions to make good investment choices. By saving on a regular basis, entrepreneurs can build enough capital to invest back in business growth, innovation or diversification. Financial discipline, transparency and accessibility is also encouraged by digital savings platforms and women become more empowered to plan and implement investment strategies. Insurance technology (insurtech) services were found to exhibit a very strong and significant positive correlation with investment decisions ($r = 0.654$, $p < 0.01$). The implication of this discovery is that insurtech solutions improve investment confidence by reducing the risks in business operations. By embracing digital insurance products, female entrepreneurs will experience more security in their investments, as they will be aware that they are insured in case of financial losses. The finding depicts the significance of combining insurtech solutions with business management in an attempt to enhance stability and increase long-term investments among women-led SMEs.

Similarly, robo-advisory services showed a strong positive and significant correlation with investment decisions ($r = 0.599$, $p < 0.01$). This proves that female entrepreneurs with robo-advisory tools enjoy the advantage of data-driven and personalized investment advice that enhances the quality of decision-making. These platforms make financial analysis easier, provide automated recommendations, and assist users in assessing the investment risks more precisely. The strong correlation highlights the growing role of financial technology in empowering women entrepreneurs to make informed, strategic, and confident investment decisions that foster business sustainability and growth.

4.6 Regression Analysis

A regression analysis was conducted to determine the combined influence of digital banking services, specifically digital credit, digital savings, insurance technology, and robo-advisory services, on the investment decisions of female-owned SMEs in Nairobi City County. This analysis aimed to quantify how these digital financial innovations collectively shape business investment behavior and financial decision-making. The results of the model summary are presented in Table 4.16, providing insights into the overall explanatory power and effectiveness of the regression model in capturing the relationship between the study variables.

TABLE 4.16:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.702[a]	.493	.487	.57440

Source: Researcher (2025)

The results presented in the table indicate that the multiple correlation coefficient (R) is 0.702, showing a strong positive relationship between the independent variables, digital credit, digital savings, insurance technology, and robo-advisory services, and the dependent variable, investment decisions among female-owned SMEs in Nairobi City County.

The R Square value of 0.493 signifies that approximately 49.3% of the variation in investment decisions can be explained by the combined effect of the four digital banking service variables included in the model. The remaining 50.7% of the variation is attributed to other factors not captured within the model.

The Adjusted R Square value of 0.487 slightly corrects for the number of predictors in the model, confirming that the model provides a good fit for the data. The standard error of the estimate (0.57440) reflects the average distance that the observed values fall from the regression line, indicating a relatively moderate level of prediction accuracy. Overall, these results suggest that digital banking services collectively have a substantial and meaningful influence on the investment decisions of female-owned SMEs in the county.

4.12: ANOVA Results

The ANOVA test was used to ascertain whether the overall regression model was significant in explaining the relationship between the digital banking services and investment decisions

among female-owned SMEs in the Nairobi City County. Table 4.17 presents the ANOVA results.

TABLE 4.17

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	109.187	4	27.297	82.734	.000[b]
	Residual	112.507	341	.330		
	Total	221.694	345			

Source: Researcher (2025)

According to the results of ANOVA, the model is significant ($F = 82.734$, $p = 0.000$), which means that the combination of the independent variables, including digital credit services, digital savings services, insurance technology services, and robo-advisory services, has a strong impact on investment decisions. The significance level ($p < 0.05$) indicates that this regression model fits the data well and that the association between digital banking services and investment decisions is not a matter of chance. This means that integration and effective utilization of digital banking services are key determinants of investment behaviors in the female-owned SMEs in Nairobi City County.

4.13 Regression Coefficients

The regression coefficients were analyzed to determine the individual contribution of each independent variable, namely digital credit services, digital savings services, insurance technology services, and robo-advisory services, in explaining the variations in investment

decisions among female-owned SMEs in Nairobi City County. This analysis helped to identify the relative influence and significance of each digital banking component on business investment behavior. The detailed results of this assessment are presented in Table 4.18.

TABLE 4.18

Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.096	.172		6.367	.000
	Digitalcreditservices	.146	.051	.133	2.884	.004
	Digital saving services	.085	.055	.089	1.551	.122
	Insurance technology service	.374	.051	.413	7.353	.000
	Robo advisory service	.186	.056	.196	3.322	.001

Source: Researcher (2025)

Y=1.096+0.146X1+0.374X2+0.186X3

Where:

Y =Investment decisions (dependent variable)

X_1=Digital credit services

X_2 = Insuretech services

X_3 = Robo-advisory services

The results in Table 4.17 show that digital credit services had a positive and statistically significant effect on investment decisions ($\beta = 0.133$, $p = 0.004$). These implies that digital credit improves the capacity of female entrepreneurs to make timely and strategically informed investment choices by offering them a convenient and flexible financing model. Access to immediate digital loans enables proprietors of businesses to exploit new business prospects and manage cash flow in a more efficient manner. Nevertheless, even though the correlation is meaningful, its comparatively low coefficient in comparison to other variables implies that

credit itself might not be enough to have sustainable investments unless it is complemented by good repayment conditions and financial management capabilities.

Digital savings services had a positive but statistically insignificant effect on investment decisions ($\beta = 0.089$, $p = 0.122$). This means that despite the fact that digital savings platforms encourage financial discipline and a way of accumulating capital, they do not have a direct impact on investment decisions. Female SME owners may be using these platforms more for liquidity management or precautionary savings rather than for long-term investments. The inference of insignificance may also have been due to low savings capability of small businesses or the lack of integrated investment products that were tied to digital savings accounts.

The results also show that insurance technology (insurtech) services exerted the most significant positive and significant impact on investment decisions ($b = 0.413$, $p = 0.000$). This implies that the use of insurtech services significantly enhances investment confidence by minimizing business risks and uncertainties. By using digital versions of insurance products, female entrepreneurs have a higher chance of investing in growth-oriented businesses since they are aware that in case of unforeseen situations, they have been covered. The strong relationship underscores the crucial role of risk mitigation in promoting long-term investment planning and sustainability.

Lastly, robo-advisory services also exhibited a positive and significant influence on investment decisions ($\beta = 0.196$, $p = 0.001$).This indicates that the availability of automated financial advisory tools improves the quality of decision-making by offering data-based, personalized, and timely investment advice. Robo-advisors help entrepreneurs to analyze investment opportunities, risk profiles, and make informed financial decisions. This

relationship highlights the growing importance of technology-driven financial literacy and digital advisory solutions in empowering women entrepreneurs.

Comprehensively, the regression outcomes indicate that all digital banking services have a hybrid effect in enhanced investment choices with insurance technology services having the significant impact, followed by robo-advisory and digital credit services. These results support the opinion that the incorporation of digital finance solutions, especially those that increase access to credit, risk management, and financial advisory services, can greatly support the investment ability and financial stability of female-owned SMEs in Nairobi City County.

H01: The statistically significant positive impact of digital credit on the investment decisions was statistically significant ($b = 0.146$, $p = 0.004$); hence, the null hypothesis was rejected, which established that access to digital credit significantly improves investment decision-making among female-owned SMEs.

H02: There was a positive but statistically non-significant impact of digital savings services on investment decisions ($b = 0.085$, $p = 0.122$); therefore, the null hypothesis was not rejected, meaning that digital savings does not significantly impact investment decisions.

H03: Insurance technology (insurtech) services had a strong positive statistically significant impact on investment decisions ($b = 0.374$, $p = 0.000$); consequently, the null hypothesis was rejected, which proves the presence of a strong beneficial impact of insurtech services on investment confidence and decision-making.

H04: Robo-advisory services positively affected investment decisions statistically significantly ($b = 0.186$, $p = 0.001$); thus, the null hypothesis was rejected, which means that robo-advisory tools have a significant positive impact on the quality of investment decisions in female-owned SMEs

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter provides an overview of the main conclusions, findings, and suggestions drawn from the investigation into how digital banking services affect the choices made by female-owned SMEs in Nairobi City County about investments. The chapter shows how each goal was successfully met through empirical analysis by methodically connecting the study results to the particular research objectives and hypotheses. According to Creswell & Creswell (2018), the discussion and conclusion chapter provides a logical synthesis of the study results by interpreting the findings in the context of accepted ideas and earlier research. In this context, the chapter analyzes how digital credit, digital savings, insurance technology (insurtech), and robo-advisory services affect female-owned small and medium enterprises' investment decision-making.

This section also draws evidence-based conclusions grounded in the analyzed data, offering theoretical insights and practical implications relevant to both policymakers and financial service providers. According to the World Bank (2022), digital financial innovations play a critical role in promoting financial inclusion and enabling women entrepreneurs to make more informed and strategic investment choices. Therefore, the findings discussed in this chapter contribute to the growing body of literature that links digital financial ecosystems to women’s economic empowerment and entrepreneurial growth (OECD, 2023). Finally, the chapter provides actionable recommendations aimed at enhancing access to and the utilization of digital banking platforms to strengthen the investment capacities of female-owned SMEs in Nairobi City County and beyond.

5.2 Summary of the study

The section presents an overview of the study, outlining its primary objectives, the methodology, and major findings. The study examined the effect of digital banking services pecifically digital credit, digital savings, insurance technology and robo-advisory services on the investment decisions of female-owned SMEs in Nairobi City County. Data were collected from 346 respondents using structured questionnaires and analyzed through descriptive and inferential statistics. The summary describes the approach to all the objectives and reflects the key findings of the analysis.

5.2.1 Effect of Digital Credit Services on Investment Decisions

The initial aim of research was to determine the impact of digital credit services on investment decisions of female owned small and medium enterprises (SMEs) in Nairobi County City, Kenya. The results showed that access to and use of digital credit positively and significantly affected investment decisions ($b = 0.146$, $p = 0.004$), suggesting that access to and use of digital credit positively influence female entrepreneurs to make timely and informed investment decisions. These results concur with Ngugi and Komo (2021)**,** who found that digital credit improves access to finance, enabling SMEs to invest in productive ventures and expand their operations. Similarly, Mwaura (2020) established that digital lending platforms have significantly bridged the financing gap among entrepreneurs by offering flexible and efficient access to credit.

The research also indicated that digital credit facilities are convenient and accessible to female entrepreneurs as opposed to the traditional banking system, where female entrepreneurs face hurdles like collateral needs and bureaucratic processes of loan issuance. Business owners can get access to short-term financing through mobile lending platforms, which meet the working capital requirements, liquidity management, and investment planning. This finding aligns with Were and Wambua (2019)**,** who observed that the adoption of digital lending technologies

enhances the responsiveness of SMEs to market opportunities, leading to improved investment performance. The accessibility of fast digital loans also enables entrepreneurs to exploit new investment opportunities that are otherwise overlooked in traditional credit systems.

Although these advantages exist, the research concluded that the effect of digital credit services on investment choices, although significant, was moderate. Interest rates are usually high, repayment periods are short, and the amount of loans allocated is small, which often limits the capacity of female entrepreneurs to invest such funds on a long-term basis. These findings are supported by the Central Bank of Kenya (2022)**,** which noted that many digital lending products in Kenya are designed for short-term consumption rather than business investment. Moreover, the low financial literacy level of some SME owners can be an obstacle to efficient use of borrowed capital, further decrease the chances of making meaningful investment. Thus, although digital credit services have increased the access to financing and better investment decision-making, affordable loan products, longer-term repayment, and financial management training are required to maximize the long-term effects on female-led businesses.

5.2.2 Effect of Digital Savings Services on Investment Decisions

The second objective of the study was to evaluate the effect of digital savings services on the investment decisions of female-owned small and medium-sized enterprises (SMEs) in Nairobi City County, Kenya. The results showed that there was a positive, but statistically non-significant, relationship between digital savings services and investment decisions ($b = 0.085$, $p = 0.122$). This implies that although digital savings promote financial discipline and accumulation of capital, their impact on investment decisions is not significant. Such findings are in line with those of Omondi and Muturi (2020), who have indicated that the effect of digital savings on investment is heavily dependent on financial literacy and the presence of investment-related savings products.

The research determined that digital savings platforms are convenient and affordable, and entrepreneurs can save regularly and allocate their funds in a more effective way. This saving culture aids in the management of liquidity and readiness of business to future investment opportunities. Nonetheless, it was found that a significant number of female SME owners channeled digital savings through precautionary savings as opposed to direct investment. This observation aligns with Kamau and Kinyua (2021), who found that SMEs often use digital savings for operational stability rather than for long-term investment expansion.

Though the association between digital savings and investment choices was not significant, digital savings are essential to financial inclusion and sustainability. As highlighted by Ngugi and Komo (2021), building a culture of saving strengthens financial resilience and investment readiness. Thus, incorporating investment capabilities into digital savings applications and providing personalized financial literacy training have the potential to increase the role of digital savings in investment decisions among female-owned SMEs.

5.1.4 Effect of Robo-Advisory Services on Investment Decisions

The fourth objective of the study was to establish the effect of robo-advisory services on the investment decisions of female-owned small and medium-sized enterprises (SMEs) in Nairobi City County, Kenya. The findings indicated a positive and statistically significant relationship between robo-advisory services and investment decisions ($\beta = 0.186$, $p = 0.001$). This implies that the use of robo-advisory tools helps to increase the quality of investment decision-making among female entrepreneurs by offering data-driven insights and automated financial guidance. These findings are consistent with Kamau and Kinyua (2021), who noted that technology-based financial advisory platforms improve investment literacy and strategic financial planning among SMEs.

The study revealed that robo-advisory services assist entrepreneurs in evaluating investment opportunities, managing risks, and diversifying their portfolios. By offering personalized and affordable advisory support, these digital tools empower business owners to make informed and confident investment choices. This agrees with Ngugi and Komo (2021), who established that the adoption of robo-advisory technology fosters evidence-based decision-making, reduces information asymmetry, and promotes long-term investment sustainability.

Overall, it can be emphasized that the immense impact of robo-advisory services testifies their increasing significance in improving financial decision-making processes for women-owned SMEs. The findings align with Omondi and Muturi (2020), who emphasized that access to automated advisory systems supports inclusive financial participation and improves investment outcomes. Therefore, creating awareness and adoption of robo advisory services, as well as training in financial literacy, may further drive investment capacity and competitiveness among female entrepreneurs in Nairobi City County.

5.3 Conclusions

The study concluded that digital banking services have a significant impact on the investment choices by female-owned small and medium-sized enterprises (SMEs) in Nairobi City County, Kenya. The results showed that digital credit, insurance technology (insurtech), and robo-advisory services have a statistically significant positive effect on investment decisions, and digital savings services had a positive but statistically insignificant relationship. These findings show that digital financial innovations play a critical role in increasing financial inclusion, improving access to finance, and strengthening the investment capacity of female entrepreneurs.

The study further concluded that digital credit services play an important role in improving access to timely and flexible financing and enabling women entrepreneurs to make informed investment decisions. However, the moderate nature of this relationship suggests that challenges such as high interest rates and limited loan amounts and short repayment periods may constrain the effectiveness of digital credit in supporting long-term investments. Similarly, digital savings services promote financial discipline and capital accumulation but have limited direct influence on investment decision-making. This suggests that even though savings through digital platforms address the question of financial security, further mechanisms, such as investment-linked products and financial advisory support, are necessary to convert savings into viable business investment.

In addition, the study concluded that insurance technology (insurtech) services have the strongest influence on investment decisions among female SME owners. By providing affordable and accessible risk management solutions, insurtech helps to build business confidence and encourages entrepreneurs to invest in more growth-oriented investments. Robo-advisory services were also found to play a significant role in enhancing the quality of investment decisions by offering personalized, data-driven, and cost-effective financial advice. Overall, the study concluded that the effective adoption and utilization of digital banking services can greatly enhance investment behaviour and business performance for female-owned SMEs. Therefore, the need for increased access, affordability and awareness of these services is critical to promote sustainable investment growth and empower women entrepreneurs in Nairobi City County.

5.4 Recommendations

Based on the study findings and conclusions, several recommendations were made to enhance the effectiveness of digital banking services in improving investment decisions among female-owned SMEs in Nairobi City County, Kenya.

Firstly, financial institutions and digital lenders should develop affordable and flexible digital credit products that fit the needs of female entrepreneurs. This includes reducing interest rates, extending repayment terms, and increasing loan limits in order to facilitate long-term investment versus simply meeting short-term financing requirements. Additionally, including credit education and financial management training can help women make more effective and productive use of borrowed funds.

Secondly, the insurance providers and regulators must advocate for broader insurtech service adoption by ensuring affordability, accessibility, and trust in digital insurance products. Awareness campaigns should educate SMEs on the importance of risk management and how insurance can protect their investments from uncertainties. Collaboration between insurtech companies and SME development agencies can also be useful in tailoring insurance solutions for the needs of small businesses.

Lastly, financial technology companies and government agencies should advocate for adoption of robo-advisory services by facilitating access and awareness to female owners of SMEs. Simplified and easy-to-use digital advisory platforms should be developed to give affordable investment advice to financially unfurnished entrepreneurs. Partnerships between fintech firms, financial institutions, and business associations could further enhance training and mentorship programs, ensuring that female entrepreneurs make informed, data-driven, and sustainable investment decisions.

5.5 Limitations of the Study

While this study offers valuable insights into how digital banking services influence the investment decisions of female-owned SMEs in Nairobi City County, several limitations should be acknowledged when interpreting the findings.

The research was geographically confined to Nairobi City County, which enjoys relatively advanced digital infrastructure and higher levels of financial technology adoption compared to other regions in Kenya. This urban focus limits the generalizability of the findings, as access to digital financial services—such as digital credit, digital savings, insurtech, and robo-advisory platforms—is significantly lower in rural and semi-urban areas where business environments and technological readiness differ substantially (World Bank, 2022).

The study relied primarily on self-reported data collected through structured questionnaires. Although this approach allowed for rich insights into the perceptions and experiences of respondents, it is inherently subject to potential response biases, including social desirability, selective recall, and misreporting. Such biases may have affected the accuracy and objectivity of the responses, particularly regarding sensitive aspects like investment risk behavior, business performance, and financial decision-making practices (Creswell & Creswell, 2018).

Also, the study's focus was limited to female-owned SMEs and did not include a comparative analysis with male-owned enterprises. While this gender-specific approach provided a focused understanding of women's entrepreneurial engagement with digital banking services, it also restricts the applicability of the findings to the broader SME population. Future studies could expand the scope to include male-owned SMEs or conduct cross-sectoral and cross-regional analyses to better understand variations in digital financial adoption and investment decision-making across different business contexts in Kenya.

5.6 Areas for Further Study

The scope of this study was limited to investigating how digital banking services affected the investment choices made by female owned small and medium-sized businesses (SMEs) controlled by women in Nairobi City County, Kenya. Even though the results offer important new information about how women's investing habits are influenced by digital credit, digital savings, insurtech, and robo-advisory services, there are still a number of areas that might use more investigation. First, future research might include other Kenyan urban, peri-urban, and rural counties in addition to Nairobi City County. Comparing urban and rural settings could show whether socioeconomic, environmental, and infrastructure factors have distinct effects on the uptake, use, and impact of digital banking services (World Bank, 2022).

Further studies can also examine the part played by other cutting-edge financial technologies that are steadily changing the financial scene. Peer-to-peer (P2P) lending platforms, digital asset management systems, mobile investment apps, and blockchain-based finance are a few examples. The Organization for Economic Co-operation and Development (OECD, 2023) claims that these technologies are changing how SMEs interact with financial markets, manage investments, and raise cash, as well as quickly increasing access to financing. Analyzing these technologies would improve knowledge of how SMEs in developing nations make financial decisions and expand their businesses through ongoing digital innovation.

Future research should also look into how financial literacy, digital competency, and behavioral characteristics influence and moderate the relationship between investment decisions and digital banking services. According to earlier studies, entrepreneurs' perceptions, adoptions, and benefits of digital financial instruments are greatly influenced by their financial capacity and digital literacy (Demirgüç-Kunt et al., 2022). Policymakers, financial institutions, and fintech developers might create more inclusive and user-centered digital financial solutions

that are suited to the needs of female entrepreneurs if they had a better understanding of these behavioral and cognitive aspects.

Lastly, to evaluate the long-term impacts of digital banking services on business performance, financial sustainability, and economic empowerment among female-owned SMEs, longitudinal study might be carried out. Longitudinal designs, as opposed to cross-sectional ones, would enable the tracking of dynamic shifts in company performance and financial behavior across time (Creswell & Creswell, 2018). Such studies would add to the expanding corpus of research on how women's long-term economic participation and entrepreneurial resilience are improved in Kenya and other emerging nations through consistent interaction with digital financial ecosystems.

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APPENDICES

APPENDIX 1: INTRODUCTION LETTER



To Whom It May Concern

Date: 1ST August, 2025

Dear Sir/Madam,

I am conducting a study titled "Digital Banking Services and Investment Decisions of Female-Owned Small and Medium Enterprises in Nairobi City County, Kenya''. The research explores how digital banking services influence investment decisions among Female-Owned SMEs, which are vital to Kenya's economic growth yet often face challenges such as limited access to tailored digital and financial solutions.

Your participation in completing the attached questionnaire is important to gaining valuable insights for my research. In addition, your participation will provide valuable insights to inform policy, guide financial service providers and empower female entrepreneurs. All information will be kept confidential and used solely for academic purposes.

Your cooperation is greatly appreciated. Please complete the attached questionnaire. Should you have any questions or require further information, please feel free to contact me.

Thank you for your time and participation.

Sincerely

Mercy NyabokeNyangeya

Research, 2025

APPENDIX 2: QUESTIONNAIRE

Dear Respondent,

I am a student at KCA University taking Masters Programme. I am conducting research on: Digital Banking Services and Investment Decisions of Female-Owned Small and Medium Enterprises in Nairobi City County, Kenya. I therefore request you to kindly complete the questionnaire below to assist me collect data. Your information alongside others will help me in my research and will be kept strictly confidential and used for academic purposes only. For Sections 2–5, please tick the option that best represents your opinion using the following scale:

1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

SECTION A: Demographic Information

1. Age Group	
☐	Below 25 years
☐	25–34 years
☐	35–44 years
☐	45–54 years
☐	55 years and above

2. Highest Level of Education	
☐	Primary
☐	Secondary
☐	Diploma/Certificate
☐	Bachelor’s Degree
☐	Master’s Degree or above

3. Years in Business	
☐	Less than 1 year
☐	1–3 years
☐	4–6 years
☐	7–10 years
☐	More than 10 years

4. Business Type	
☐	Manufacturing
☐	Retail
☐	Services
☐	Hospitality
☐	Agribusiness
☐	Other (specify) _____

SECTION B: Digital Credit Services

Objective: To assess the effect of digital credit service on the investment decisions of female-owned small and medium enterprises in Nairobi City County, Kenya

Statement	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
I can easily access digital credit services for my business.	☐	☐	☐	☐	☐
I frequently use digital credit facilities to finance my operations.	☐	☐	☐	☐	☐
The payment terms of digital credit are favorable for my business.	☐	☐	☐	☐	☐
Digital credit services have improved my ability to make investment decisions.	☐	☐	☐	☐	☐
Digital credit has positively contributed to the growth of my business investments.	☐	☐	☐	☐	☐

SECTION C: Digital Savings Services

Objective: To evaluate the effect of digital savings service on the investment decisions of female-owned small and medium enterprises in Nairobi City County, Kenya

Statement	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
I regularly use digital savings platforms for my business funds.	☐	☐	☐	☐	☐
Digital savings services have improved my savings discipline.	☐	☐	☐	☐	☐
I find digital savings convenient and secure.	☐	☐	☐	☐	☐
My savings through digital platforms have helped in planning future investments.	☐	☐	☐	☐	☐
Digital savings services have increased my capacity to fund new investments.	☐	☐	☐	☐	☐

SECTION D: Insurance technology Services

Objective: To establish the effect of insurance technology services on the investment decisions of female-owned small and medium enterprises in Nairobi City County, Kenya

Statement	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
I am aware of insurance technology services available for my business.	☐	☐	☐	☐	☐
I have used digital insurance (insurtech) products for my business.	☐	☐	☐	☐	☐
Insurtech services are affordable and accessible.	☐	☐	☐	☐	☐
Using insurtech services reduces the risks associated with my investments.	☐	☐	☐	☐	☐
Insurtech services give me confidence to make long-term investment decisions.	☐	☐	☐	☐	☐

SECTION E: Robo-Advisory Services

To determine the effect of robo-advisory service on the investment decisions of female-owned small and medium enterprises in Nairobi City County, Kenya.

Statement	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
I am aware of robo-advisory services for investment decisions.	☐	☐	☐	☐	☐
I can easily access robo-advisory services when needed.	☐	☐	☐	☐	☐
The features of robo-advisory services are helpful in evaluating investment opportunities.	☐	☐	☐	☐	☐
Robo-advisory services provide accurate and reliable financial guidance.	☐	☐	☐	☐	☐
Robo-advisory services have influenced my investment decision-making positively.	☐	☐	☐	☐	☐

SECTION F: Investment Decisions (Dependent Variable)

Objective: To assess the investment decision-making of female-owned SMEs.

Statement	1	2	3	4	5
I allocate capital effectively across business areas.	☐	☐	☐	☐	☐
I carefully evaluate investment risks before committing funds.	☐	☐	☐	☐	☐
I diversify my investments to reduce risks.	☐	☐	☐	☐	☐
I set clear expectations for investment returns	☐	☐	☐	☐	☐
I make investment decisions that support business expansion.	☐	☐	☐	☐	☐

SECTION G: Additional Comments (Optional)

Please share any other comments on how digital banking services have influenced your investment decisions:

_____

__

_____

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_____

__

Thank you for your part

APPENDIX 3: INFORMED CONSENT FORM

Study Title: Digital Banking Services and Investment Decisions of Female-Owned Small and Medium Enterprises in Nairobi City County, Kenya

Researcher: Mercy Nyaboke Nyangenya Institution: KCA University1	Purpose of the study	This study aims to understand how digital banking (credit, savings, insurance, robo-advisory) affects how female running small businesses make investment choices.
2	Study procedures	a) Answer some questions in a survey. b) This will take about 10–15 minutes. c) You can skip any question you do not want to answer.
3	Voluntary Participation	a) Participation is voluntary. b) You can stop at any time without any problem.
4	Risks	a) No risks are expected. b) Some questions may feel personal, you may choose not to answer.
5	Benefits	a) There is no payment for participation. b) Your views may help improve support for the female in business.
6	Privacy	a) Your answers will be kept confidential. b) Your name or business will not appear in the report.
7	If you cannot read	a) This form will be read aloud to you. b) You may give consent by signing.
9	Contact Information	For any questions, contact: **Researcher: 2400360@students.kcau.ac.ke** **Supervisor:i.tirimba@kcau.ac.ke**

Consent

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant Signature	_____
Date:	_____

Researcher: 

APPENDIX 4: ETHICAL CLEARANCE CERTIFICATE

KCA UNIVERSITY SCIENTIFIC & ETHICS REVIEW COMMITTEE

Thika Road, Ruaraka
P.O. Box 56808-00200 Nairobi Kenya
Pilot Line: +254 20 8070408/9

Tel: +254 20 3537842
Fax: +254 20 8561077
Mobile: +254 734 888022, 710 888022
Email: kca@kca.ac.ke
Website: www.kca.ac.ke

REF: KCAU/SERC/SOB0348 Date: 2nd OCTOBER 2025

TO: MERCY NYABOKE NYANGENYA (24/00360)

Dear Sir/Madam,

RE: DIGITAL BANKING SERVICES AND INVESTMENT DECISIONS OF FEMALE-OWNED SMALL AND MEDIUM ENTERPRISES IN NAIROBI CITY COUNTY

This is to inform you that the KCA University Scientific Ethics Review Committee (KCAUSERC) has reviewed and approved your research proposal. Your application approval number is KCAUSERC/SOB0348. The approval period is from 2nd October 2025 to 2nd October 2026.

This approval is subject to compliance with the following requirements.

i. Only approved documents, including informed consents, study instruments, and MTAs, will be used.
ii. All changes, including (amendments, deviations, and violations), are submitted for review and approval by KCAUSERC.
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 KCAUSERC 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 KCAUSERC within 72 hours.
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days before expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to KCAUSERC.

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

APPENDIX 5: NACOSTI LICENSE

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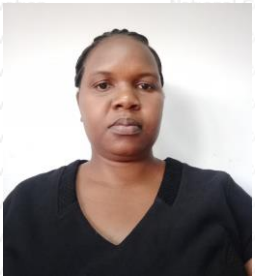
REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **809571**

Date of Issue: **15/October/2025**

RESEARCH LICENSE



This is to Certify that Ms.. MERCY NYABOKE NYANGENYA of KCA University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in on the topic: DIGITAL BANKING SERVICES AND INVESTMENT DECISIONS OF FEMALE-OWNED SMALL AND MEDIUM ENTERPRISES IN NAIROBI CITY COUNTY for the period ending : 15/October/2026.

License No: **NACOSTI/P/25/4180970**

809571

Applicant Identification Number

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

Verification QR Code

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