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The Relationship between digital financial strategies and financial performance of microfinance banks in Kenya.

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THE RELATIONSHIP BETWEEN DIGITAL FINANCIAL STRATEGIES AND FINANCIAL PERFORMANCE OF MICROFINANCE BANKS IN KENYA

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DECLARATION

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

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ABSTRACT

Microfinance banks (MFBs) in Kenya play a significant intermediary role and financial inclusion of the unbanked. Despite substantial investments in technological tools and the integration of digital channels, MFBs in Kenya have experienced mixed financial performance over the last five years. This study addresses this discrepancy by investigating the relationship of digital financial strategies and financial performance. The specific objectives were to determine the effects of bank characteristics and use of digital financial strategies, to assess the perceptions of MFBs on the role of digital financial strategies on financial performance and to establish the association of digital financial strategies and financial performance of microfinance banks. Drawing upon Dynamic Capabilities Theory, Financial Intermediation Theory, and Financial Innovation Theory, this research employs a positivist philosophical approach and a mixed research design. The target population encompasses all 14 operational microfinance banks as of December 31, 2022. Both primary and secondary data were gathered, with secondary data sourced from Annual Bank Supervision Reports and audited financial statements from 2018 to 2022. Primary data was collected through structured questionnaires distributed to employees in the Finance and ICT departments of the 14 targeted microfinance banks. Data analysis involved both descriptive analysis and inferential statistics, including OLS regression analysis to generate research findings. The study results indicate that both mobile and internet banking significantly enhances the financial performance of MFBs. However, respondents identify regulatory and supervisory challenges, legacy infrastructure constraints, budgetary limitations, and difficulties in meeting rapidly evolving consumer demands as significant obstacles to the effective implementation of digital financial strategies. In conclusion, this study establishes that total assets, earnings, and credit risk of a bank exert a positive and significant influence on the adoption of digital financial strategies in MFBs in Kenya. Additionally, mobile banking, in terms of transaction value, exhibits a positive relationship with the financial performance of MFBs. The study recommends increased regulatory support from the Central Bank of Kenya and emphasizes the need for MFBs' top management to allocate more resources towards strategies that enhance the adoption and use of digital financial services. The findings of this study hold relevance for MFBs' management, policymakers, regulators, bank customers, as well as researchers and academicians alike.

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ABBREVIATIONS AND ACRONYMS

AI	Artificial Intelligence
ATM	Automated Teller Machine
CBK	Central Bank of Kenya
DFS	Digital Financial Services
DLT	Distributed Ledgers
E-Banking	Electronic Banking
FDI	Foreign Direct Investments
IFC	International Finance Corporation
KYC	Know Your Client
M-Banking	Mobile Banking
MFBs	Microfinance Banks
MSMEs	Micro Small and Medium Enterprises
ODA	Official Development Assistance
SDGs	Sustainable Development Goals
SME	Small and Medium Enterprises

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The growing significance of technology has accelerated the process of globalization, and rapid advancements in technology have profoundly reshaped global business practices. This transformation has stimulated innovation and development across various sectors, playing a pivotal role in shaping economic changes worldwide (McKinsey & Company, 2016). A comprehensive investigation conducted by Frame et al. (2018) on technological innovation revealed that it has not only instigated financial innovations but has also brought about significant modifications in numerous aspects of financial instruments, services, processes, and institutional frameworks within the banking sector. The prevailing perception is that innovation contributes to the reduction of operational costs, enhancement of efficiency, and a general increase in productivity within the industry. Scholars like Cheruiyot (2010) have emphasized innovation, delineated as the creation, advancement, and execution of novel products, processes, or services aimed at enhancing efficiency, effectiveness, or competitive positioning and Quinn (2010). Atalaya et al. (2013) contend that within an environment marked by continual change, technological innovation emerges as the foremost pivotal strategic reservoir of sustainable competitive advantage.

The 2017 Digital Banking Benchmark report highlighted the intensifying competition and dynamism within the financial services ecosystem, encompassing fully digital banks, FinTechs, and unconventional competitors. This landscape posed challenges for traditional banks, as they grappled with delivering innovative functionalities while navigating uncertainties about key priorities (Digital Banking Benchmark, 2017). The report underscored the imperative for traditional banks to enhance agility in service delivery and introduce innovative products to maintain relevance in the evolving financial services industry.

In the European context, the internet has surfaced as a broadly acknowledged distribution pathway within the banking sector. Both traditional banks and new entrants are recognizing its efficacy in comparison to other channels (Ozili, 2018). The widespread

use of mobile devices has further catalyzed a surge in mobile-based innovations, contributing to the proliferation of digital-based banking products and services. These technological advancements are reshaping the financial ecosystem and influencing the future trajectory of banks (McKinsey & Company, 2016).

In developing economies, many banks have strategically transitioned from traditional frontline services to electronically marketing and selling products through mobile and online platforms (Kaur et al., 2021). Successful banks have shifted their focus from managing physical banking locations and channels to overseeing service distributions across various electronic channels. While banks invest in diverse banking models, the effectiveness of these models can vary from one institution to another. The shift from old operational models to new ones is deemed necessary to optimize returns and meet customer needs in a dynamic business environment (Nazaritehrani & Mashali, 2020).

In Nigeria, as per the findings of Ohiani (2021), there is a notable embrace of technology within the banking sector, resulting in a heightened utilization of electronic banking services. This technological integration has instigated a transformation in the way Nigerian banks provide their services, enabling the introduction of diverse array of products and services. The incorporation of technological innovations has afforded Nigerian banks a competitive edge, as these advancements present novel strategies for outpacing competitors, as indicated by Adanu and Osita (2022).

Kenya has been a pioneer in delivering digital financial services for more than a decade. The Kenyan banking sector has not been left behind in embracing technology as a strategic response. The heightened adoption of smartphones and the expanded reach of the internet have also served a pivotal function in the proliferation of digital finance through digital platforms which has provided access to an array of financial products and services. event to the underserved and unbanked (Central bank of Kenya (CBK), Report, 2021). Franz and Omollo (2014) identified that the emergence of technological applications and financial innovation has led to the establishment and widespread adoption of novel financial channels, technologies, institutions, and markets, necessitating a reassessment of their presumed stability. The banking sector has undergone substantial changes and transformations in the delivery of financial services, with financial technology playing a

pivotal role in this evolution (Ahmed & Wamugo, 2018). This sector is experiencing heightened turbulence and competitiveness, compelling banks to engage in innovation as a requisite for their continued existence (Harelimana, 2017).

In order to augment financial inclusion and bolster financial performance, the banking sector assumes a pivotal role in the adoption of optimal strategies. A notable revelation from the 2021 FinAccess Household Survey underscores the burgeoning influence of fintech and advancements, particularly in the realms of mobile financial services. These advancements have been instrumental in advancing financial inclusion by mitigating the costs associated with access to financial services through digital platforms (CBK, 2021). Moreover, technological progress has conferred consumers with the ability to selectively opt for specific financial products, concurrently fostering a culture of innovation and customer-centricity among banks. It is imperative for financial institutions to embrace strategies aimed at enhancing the financial system, thereby reaching the unbanked and under-banked demographics, providing them with the means to access and utilize financial services. This, in turn, is expected to fuel economic growth and facilitate empowerment opportunities. The transformative impact of technological developments has empowered banks to address prevailing challenges by implementing novel strategies that not only offer solutions but also prioritize customer satisfaction through the delivery of superior services (CBK, 2021).

1.1.1 Digital Financial Strategies

Digital Financial Strategies (DFS) entail utilization of digital technologies for delivery of services to consumers. The implementation of DFS, facilitated by financial technology, holds the capacity to reduce expenses, improve operational efficiency, bolster security and transparency, and enable the provision of customized services to a broader consumer base (Pazarbasioglu et al., 2020). In response to financial disruptions, digital financial strategies have undergone progressive development over time, transforming conventional banking services through innovative advancements in contemporary technological platforms, including but not limited to mobile banking solutions, internet banking, electronic transfers, and digital payment systems. Digital disruptions offer the potential to improve efficiency with innovation in a more competitive financial system that yield high

margin for financial inclusion and thus deepen access to formal finance. As posited by King (2016), financial institutions must undergo a strategic realignment akin to technology enterprises to enter the digital domain and enhance service provision. By implementing digital financial strategies, banks and financial institutions can effectively manage expenses, allure and sustain customer loyalty, and cultivate new business opportunities.

As evidenced in research conducted by Jia et al. (2022), Ozili (2018), and Ogutu and Fatoki (2019), technology has given rise to inventive financial products and services, particularly in the digital realm. These include mobile financial services, electronic payment cards, among others. Digital financial services encompass various transactions, such as payments, remittances, and credit, facilitated through digital channels, including mobile devices. These advancements not only contribute to the improvement of service quality offered by financial institutions but also play a pivotal role in introducing new revenue streams and expanding the institutions' ability to reach a broader clientele (Liu, 2021).

Mobile banking is a constituent of the digital banking platforms that has grown rapidly over the last decade. This may stem from the growing prevalence of mobile phones worldwide. As per the Digital 2022 Global Overview Report, a majority exceeding two-thirds (67%) of the worldwide populace employs mobile phones as their primary means to access diverse digital services. In the United States, the estimated number of mobile banking users in 2021 stood at 169.3 million, with approximately 80% expressing a preference for mobile banking as their primary method of accessing their accounts (Digital Global Overview Report, 2022). Kenya is recognized as one of the most extensive and successful mobile money sectors in Africa, consistently taking the lead on the continent in both scale and innovation. This can be attributed to mobile penetration in the country which is the highest in the region due to increased investments in technology infrastructure. Conversely, ninety-two (92%) percent of banks have embraced or created a mobile financial services platforms (either app or USSD) to facilitate their management of banking operations and customer engagement services, as indicated by the CBK Innovation Survey in 2021.This explains why mobile money and mobile banking continue

to be the most used digital platform. The data provided by CBK in the 2021 Annual Supervision report reveals that the increase in bank deposits over the years can be attributed to the mobilization of deposits via digital platforms, with mobile banking channels emerging as the predominant digital channels. These platforms empower banks to extend their reach to areas where physical presence would necessitate substantial investments in infrastructure. Furthermore, they afford customers convenient accessibility to a spectrum of bank products and services, facilitating bill payments and transactions.

Internet banking has also gained ground due to increased access of the internet. Internet banking is whereby customers can access bank services via the internet. Internet access may be achieved through various technology devices such as personal computers, cell phone, or any other appropriate gadget or device. Global data indicates a rise in the utilization of digital banking services among consumers in the United States, with the user base expanding from 196.8 million in 2021 to 203 million in 2022. In the year 2020, the Far East and China collectively constituted a noteworthy portion, exceeding 805 million active users engaged in online banking activities, as reported by various sources (Statista, PwC, and Galileo, 2022). Anticipated trends suggest a consistent upward trajectory in the adoption of online banking or internet banking from 2021 to 2024, with particular prominence in the burgeoning Asian market. Developing countries and mostly in Africa still lag behind. Banks in Kenya have also leveraged on internet banking to extend access to financial services. This has been made possible due to increased usage of mobile devices, computers and internet penetration globally, regionally and even locally (Misati et al., 2022). According to CBK Innovation Survey, (2021), 45 percent of the bank institutions reported continued improvements on the mobile and internet banking channels to ensure 24/7 access, easier interactions, and seamless and secure transaction processing for the customers. This indicates continued commitment to digital transformation by bank institutions in Kenya.

The supervisory report by the Central Bank of Kenya (CBK) in 2017 revealed a substantial rise in the cessation of transaction volumes facilitated through alternative channels within the banking sector. Correspondingly, the Kenya Bankers Association (KBA) documented in 2018 that financial institutions in Kenya had progressively adopted alternative banking

channels over the preceding five years, resulting in a diminishing reliance physical interaction with financial service providers. Presently, the typical client is inclined to engage in daily banking activities without physically visiting a bank branch, opting instead for emerging channels like agents, mobile money, and online banking. This transformation in banking behaviour is not exclusive to Kenya, as many countries are experiencing enhanced and more robust financial systems. This evolution is attributed to innovative practices enabling banks to surpass traditional banking models.

In the 2021 Annual Supervision report, CBK noted that there has been a tremendous increase in customer deposits over the years, digitization, facilitated by channels like agency banking, mobile phones, and internet banking platforms, is credited for this phenomenon. Furthermore, as indicated by the Banking Sector Innovation Survey (2021), the banking industry experienced a heightened pace of digitization in response to the onset of the COVID-19 pandemic in 2020. This trend is substantiated by the CBK statistics in the 2021 Annual Supervision report, revealing that mobile money usage in Kenya reached a historic peak in December 2021, with users conducting transactions totalling Ksh.622.14 billion on mobile phones. The increase in mobile money transactions is linked to a rise in digital transactions by both businesses and households, driven by the imperative of convenience and the necessity to minimize physical interactions in light of the COVID-19 situation (CBK, 2021).

As demonstrated, Kenya has consistently assumed a leading role in furnishing digital financial services. The Central Bank of Kenya, in its capacity as the regulatory authority, has actively advocated for the implementation of fitting and resilient financial technologies aimed at fostering financial inclusion and prioritizing customer-centric practices. A growing segment of the Kenyan populace is displaying an increasing technological acumen, propelling the demand for digital finance. Consequently, there arises a requisite for the formulation and implementation of digital financial strategies by banking institutions in Kenya, particularly by microfinance banks, which predominantly cater to the financial needs of the unemployed or individuals and groups with low incomes. These demographic segments often encounter difficulties in accessing services from larger banks and would otherwise lack access to financial services. This research

endeavours to ascertain the extent of the adoption of digital channels, assess the role played by digital financial strategies, and evaluate the impact of such strategies on the financial performance of microfinance banks.

1.1.2 Financial Performance of Microfinance Banks in Kenya

Financial performance is the cumulative outcome of diverse policies and managerial decisions, encapsulating the overall operational outcomes of combined liquidity, asset management, and debt management strategies (Durrah et al., 2019). The Kenya Financial Sector Stability Report (2021) underscores concerns regarding the financial performance trajectory of microfinance banks (MFBs) over the past seven years, extending through 2021. Despite reports by MFBs of an improvement in total losses before tax to Ksh.877 million in 2021 from Ksh.2.2 billion in 2020, only four out of the fourteen MFBs reported profits. Among these, two MFBs each recorded profits of Ksh 17 million, one MFB reported Ksh 36 million in profits, and another MFB recorded a notable growth in profits amounting to Ksh 131 million. Conversely, the remaining ten MFBs incurred losses ranging from Ksh. 8 million to Ksh.522 million. The Return on Assets (ROA) and Return on Equity (ROE) have consistently reflected negative values over the past five years.

The sector posits that the diminished viability of MFBs is attributed to sluggish growth in loans and profitability. Credit risks persist, with the annual growth in gross loans contracting by 7.3 per cent in 2021, compared to a negative growth of 1.2 per cent in 2020, indicative of a low uptake of loans. Customer deposits remained stagnant between 2020 and 2021, while borrowings from other sources have steadily declined since 2018, reaching below Ksh.10 billion in 2021. This decline may elucidate the sluggish expansion in loans and advances.

Numerous studies, such as those conducted by Giordani et al. (2013), Tunay and Tunay (2015), Wadesango and Magaya (2020), and Kiemo and Mugo (2021), have utilized financial ratios, ROA and ROE, as metrics for assessing financial results. In alignment with this tradition, the current investigation aims to employ ROA as a key indicator of financial performance.

1.1.3 Bank Characteristics

Bank characteristics play a pivotal function in the decision-making process regarding adoption of digital financial strategies by individual banks and ultimately, it holds the capacity to influence the competitiveness and long-term profitability of a bank. Factors such as the bank's size, profit margins, capital positions, and business models may collectively shape the degree of success and enduring advantages derived from digital transformation (Liu, 2021). The existing literature shows that the various bank characteristics studies may influence how financial institutions adopt digital financial strategies and subsequently the financial performance.

In Zimbabwe, Abel and Roux (2016) conducted a study exploring the interplay between efficiency, the size of banks, and the banks performance within the period from 2009 to 2014. Their findings suggested a positive association between efficiency and financial performance. In a separate investigation, Tiriongo and Wamalwa (2020) observed that certain bank attributes, including capital adequacy, asset quality, profitability, and liquidity conditions, play a role in influencing the volume of transactions facilitated through mobile money services. This indicates that these bank characteristics are linked to the adoption and performance of digital platforms for mobile money, subsequently influencing the overall financial performance of banks.

Rotich et al. (2019) identified in their research that bank size constitutes a noteworthy factor influencing financial performance. The dynamics of emerging technologies, coupled with the substantial initial investment required, tend to favour larger banks with robust balance sheets over smaller banks with less financial fortitude. Moreover, while a bank's profitability is a pertinent consideration in the decision-making process regarding digital transformation, its impact remains uncertain. In other words, a highly profitable bank may be better positioned to fund investments in digital technology, but it might also experience less pressure to embark on digitalization as a means to enhance future profitability (Liu, 2021).

The studies reviewed in the above sections shows that majority of the studies and evidence thereof have primarily concentrated on the connections between innovations in finance and bank performance and majorly focusing on large banks. There is limited or no focus

at all microfinance banks and especially within Kenya. The above studies have fallen short in investigating or demonstrate the effects of bank characteristics on the association between digital financial strategies and financial performance of microfinance banks. This study will be limited to microfinance banks in Kenya due to their unique nature and their role to financial inclusion and deepening in the country. This research is seeking to ascertain the association between digital financial strategies and financial performance of microfinance banks in Kenya.

1.1.4 Microfinance Banks in Kenya

According to the Bank Supervision Annual Report of the Central Bank of Kenya for the year 2021, the asset base of the Kenyan banking sector demonstrated a notable growth of 11%, reaching Ksh 6.0 trillion compared to Ksh 5.4 trillion in 2020. This upswing is primarily attributed to increased investments in government securities, loans, and advances. As of December 31, 2021, the composition of the Kenya Banking sector comprised 38 commercial banks and 14 microfinance banks. Within this framework, there were 20 locally operated privately-owned commercial banks and 2 publicly operated commercial banks, contributing 68.3% and 0.5%, respectively, to the total net assets. Notably, 17 commercial banks in operation were foreign-owned, collectively accounting for 31.2% of the sector's assets.

According to Chala and Bessie (2016), micro-financing has emerged as a potent development tool in the fight against poverty, primarily through the provision of loans to the economically disadvantaged segments of society in the developing world. According to Malenya and Kariuki (2017), Micro-Finance Institutions (MFIs) are described as entities involved in activities encompassing the delivery of financial services, such as credit, savings, and insurance, to individuals with low income situated slightly above the nationally defined poverty line. Additionally, they cater to poor individuals who fall below the poverty line, aiming to generate social value. The generation of social value, as highlighted by Smith (2006), encompasses activities such as poverty alleviation and the broader enhancement of livelihood opportunities. This is achieved through the supply of capital for micro-enterprises, as well as the provision of insurance and savings for risk mitigation and consumption smoothing.

Microfinance banks in Kenya are categorized into three peer groups: large, medium, and small. The classification is based on market share, with a microfinance bank considered large if it holds a market share of 5 percent and above, medium if the market share ranges between 1 percent and 5 percent, and small if the market share is below 1 percent. As of the latest data from the Central Bank of Kenya (CBK) in 2021, there are three large microfinance banks collectively holding an 80.2 percent market share, six medium-sized microfinance banks with a combined market share of 18.9 percent, and five small microfinance banks with an aggregate market share of 0.9 percent in Kenya.

According to the Central Bank of Kenya (CBK) Supervision Report for the year 2021, the count of licensed microfinance banks remained steady at fourteen as of December 31, 2021. Among these, three were granted licenses as community microfinance banks, while the remaining eleven held nationwide microfinance bank licenses. The predominant activity undertaken by these microfinance banks was lending, constituting 54 percent of their total assets. In terms of funding sources, customer deposits and borrowings played pivotal roles, contributing 68 percent and 12 percent, respectively, to the total funding of microfinance banks. The increase in deposited funds was linked to successful mobilization endeavours facilitated by established branch networks and alternative channels for business delivery. Microfinance banks just like commercial banks perform intermediary roles in the economy by delivering basic functions of deposit taking, lending money, bank assurance and channels of transfer services. They however play a significant and unique role in facilitating microfinance. They are uniquely positioned to reach the poor and enjoy greater acceptability among the poor due to their flexibility in operations as noted by Malenya et al. (2017).

Commercial banks majorly service population in urban and peri-urban regions which are perceived to be formal and of high-income individuals and firms. MFBs have significant contributions in financial intermediation by banking a large segment of rural population whose economic activities are majorly driven by agricultural produce and informal SME sector. This implies that there is still a blend of digital banking and traditional conventional banking for providing access and usage to the different demographics. Microfinance banks (MFBs) encounter significant challenges, notably stemming from the

high costs associated with physical branch banking and the pursuit of revenue growth reliant on branch operations.

The dynamic regulatory landscape and intense competition from major commercial banks in the retail banking sector are exerting substantial pressure on financial viability of Microfinance Banks (MFBs). This has compelled them to mitigate overall transaction costs by embracing technological channels for customer outreach and service delivery. Additionally, fierce competition from alternative credit providers, particularly digital credit providers and commercial banks, constrains the lending capacity of MFBs.

1.2 Problem Statement

The financial performance of microfinance banks measured in ROA and ROE reported a negative trend with annual aggregate percentage changes of – 3.4% and -33.3% respectively. The drop in profitability was witnessed in the years 2016, 2017, 2018, 2019 and 2020 as per CBK (2021) annual supervision report. The decline in profitability is of great concern; this is a problem because MFBs play key role in driving financial inclusion by offering financial intermediary services to the larger rural population segment in retail banking through outreach of the unbanked and under banked customers and MSMEs considered risky and volatile by the large commercial banks. According to the International Finance Corporation (IFC) report from 2017, it is estimated that a significant 40 percent of formal MSMEs sin developing nations encounter unfulfilled financing requirements, amounting to an annual shortfall of USD 5.2 trillion. In sub-Saharan Africa, where there are over 44 million formal MSMEs, approximately 52 percent face credit constraints, lacking the necessary financing to sustain their businesses adequately. In this context, the potential collapse of Microfinance Banks (MFBs) within the banking sector could have far-reaching consequences, potentially leading to the destabilization of the entire economic structure and financial system.

According to FinAccess Household Survey (2021) increased uptake of digital services such as mobile money can spur utilization of financial services for individuals and MSMEs who had been previously not included in formal markets. Kenya digital banking channel is still under-developed as compared to other developed economies even with the innovations in mobile banking and internet banking. Whereas many commercial banks

and MFBs claim to advance financial inclusion, the link and the contribution of specific digital financial strategies and financial performance is yet to be proven. The banks' investors, managers and regulators need to know which specific strategies drives banks financial performance and which strategies matters for low-income and underserved customers to attain financial inclusivity. The banks have now the opportunities to address the financing gap of a note worth market share segments of MSMEs and this can only be achieved if the institutions are in sound financial health.

Ozili (2018) notes that while there could be a positive correlation between user-friendly financial inclusion through digital finance, it is crucial to emphasize that this perceived positive correlation is more pronounced among affluent and middle-income digital finance users. Conversely, the relationship may exhibit non-linear or adverse trends for users with low income and poor financial standing. Additionally, the lack of assessment of digital strategies within the banking sector has resulted in information asymmetry among customers and users of financial services. According to Ahmed and Wamugo (2018), mobile banking is seen as a competitive tool implemented in Kenya to achieve cost reduction in the realm of banking. Misati (2020) acknowledges the emergence of digital financial services in the financial landscape as a catalyst for competition in the markets. These services address inefficiencies in conventional banking or offer bundled services not provided by traditional banks, thereby expanding the user base. Fintech players excel in certain aspects of the value chain within the banking industry, providing a more efficient, attractive, and more rapid alternative compared to conventional banking approaches.

Upon reviewing previous studies, it is evident that there is a dearth of notable research on the subject at hand. Existing studies have predominantly concentrated on financial innovations and digital finance within large banks, neglecting to thoroughly investigate microfinance banks despite their recognized significance in financial inclusion and deepening. This research seeks to close this disparity by offering insights into the extent of the adoption of technologically innovative stools in microfinance banks in Kenya. It will specifically examine the catalytic impact of digital financial strategies on financial

performance and, in turn, establish the association between these strategies and the financial performance of microfinance banks in Kenya.

1.3 Research Objectives

The main objective of the study was to explore the relationship between digital financial strategies and financial performance of microfinance banks in Kenya. The specific objectives of the study will be:

i. To establish the association between digital financial strategies and financial performance of microfinance banks in Kenya.
ii. To determine the moderating effects of bank characteristics on the relationship between digital financial strategies and financial performance of microfinance banks in Kenya.
iii. To assess the perception of microfinance banks on the role of digital financial strategies on financial performance.

1.4 Research Questions

i. What is the relationship between digital financial strategies and financial performance of microfinance banks in Kenya?
ii. What is the moderating effect of bank characteristics on the relationship between digital financial strategies and financial performance of microfinance banks in Kenya?
iii. What is the role of digital financial strategies on financial performance of microfinance banks in Kenya?

1.5 Scope of the Study

This study explored the relationship between digital financial strategies and the financial performance of microfinance banks in Kenya. The study limited itself to the four variables: mobile banking, internet banking, bank characteristics and financial performance. It was done on the fourteen (14) microfinance banks identified and licensed by the CBK as of December 2022 as per appendix III. The study used both secondary data and primary data. The secondary data was largely drawn from Bank Annual Supervisory reports, Central Bank Statistical reports and banks audited financial statements spanning

the years 2018 to 2022. The primary data was administered by way of survey questionnaire targeting banks' employees during the month of April 2023.

1.6 Significance of the study

This research is anticipated to provide advantages to the following:

1.6.1 Policy Makers and Regulators

The discourse within this research has the potential to contribute substantively to ongoing discussions spearheaded by entities such as the United Nations, the World Bank, and the Government of Kenya, concerning the advocacy for financial inclusion, the attainment of Sustainable Development Goals (SDGs), and the realization of Vision 2030 objectives. The outcomes derived from this research afford national policymakers a thorough comprehension of the challenges linked to the rapid advancement of digital financial strategies. This comprehension aids in the formulation of regulations geared towards ensuring judicious risk management within the context of a dynamically evolving technological landscape, as adopted by various institutions. Furthermore, the research findings may offer valuable insights and a foundation for the development of policies by the Central Bank of Kenya, specifically focused on overseeing customer privacy and the security of digital services. Tackling apprehensions related to the rise and extensive acceptance of technology-driven innovations, the study could serve as a guide for the establishment of a comprehensive, system-wide framework aimed at monitoring the stability of banks.

1.6.2 Banks

The insights from this study can improve commercial banks and microfinance banks decision in allocating investment resources in various digital strategies that support financial performance and financial inclusion based on viability and impact. They will understand how these digital strategies positively and negatively influence financial performance among different bank tiers and catalyse financial inclusion among different population segments, challenges of adopting to specific channel of strategies to help inform future feasibility work and deployment of technological tools. The efforts to address inquiries regarding the adoption or ongoing exploration of technology-driven products in the conduct of banking business serve as crucial endeavours. These

endeavours are instrumental in aiding banks to discern both the advantages and potential drawbacks associated with technological advancements and adoption.

1.6.3 Banks Customers

Policy makers may find relevant resources to inform policy on creation of an enabling environment that support innovative applications by adjusting regulations to support the digital evolution trends. Digital systems evolve and the systems need to serve the broader objectives of socio-economic growth and development as well as protecting consumer interests. Policy makers can derive pricing information for digital financial services to guide consumer protection objectives which may be beneficial to consumers of banks' products and services.

1.6.4 Researchers and Academicians

The literature and discoveries emanating from this research can serve as an invaluable asset for informing subsequent studies with akin interests, acting as a foundational reference for further exploration in the subject domain. In the current global era characterized by a technological revolution, numerous unresolved questions persist within current research. Consequently, this study holds the potential to serve as a benchmark for future research endeavours, offering novel perspectives and contributing to the body of knowledge in the realms of banking and finance.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This section examines pertinent literature concerning digital financial strategies and firm performance from journals, past research, organizational performance reports and working documents. This was done to understand work that has been done in the same field of study to aid situating new gaps that the current study will address.

2.2 Theoretical Literature

The theoretical framework serves as the foundational support for the investigated issue. A theory comprises logical statements or a set of statements substantiated by evidence designed to elucidate certain phenomena. Onyango (2022) emphasizes that theory provides a systematic basis for explaining the relationships among the phenomena under examination. The primary theoretical foundation for this study will be the Dynamic Capabilities Theory, complemented by support from the Financial Intermediation theory and the Financial Innovation Theory. These theories collectively contribute to grounding the study theoretically and facilitating the explication of the phenomena under investigation. Elaborate explanations of these theories are provided in the subsequent sections:

2.2.1 Dynamic Capabilities Theory

The central theoretical framework guiding this study was the Dynamic Capabilities theory, introduced by Teece (2001) as an expansion of the resource-based theory. This theory arose in response to the limitations of the resource-based view (RBV) in explaining the emergence and adaptation of resources and capabilities to address swiftly changing environments (Choi & Moon, 2015). The key premise of Dynamic Capabilities posits that an organization's fundamental competencies should be leveraged to establish short-term competitive positions that can subsequently evolve into long-term competitive advantages. It underscores the imperative of competitive survival in the face of rapidly evolving conditions of contemporary business, contending that dynamic capabilities can serve as a basis for gaining a competitive edge by facilitating the integration of organizations, mobilize, and adjust their resources and capabilities to effectively respond to rapidly evolving environment.

The theory posits that the ownership of resources grants an organization a distinct advantage in developing competitive edges over its competitors. The term 'dynamic' signifies a firm's capacity to rejuvenate its capabilities amidst evolving business conditions. Firms must possess the capacity to adjust to the changing business requirements in order to stay ahead of the competition and secure a leadership position in the market. The term 'capability' denotes the proficiency and extent of management's role in guiding a firm's strategy. The theory, thus, underscores the significance of managerial adaptation in integrating and adjusting the firm's internal and external resources, all while considering its operational capacities to navigate the evolving market landscapes.

A significant critique of the dynamic capabilities concept revolves around the inherent challenge of empirical measurement. This encompasses difficulties in assessing not only the dynamic capabilities themselves but also the operational processes that underlie them, along with the intricate connection between capabilities and a company's performance. Additionally, gauging the idiosyncratic routines and processes specific to individual firms or embedded within their resource bundles poses a further measurement challenge (Easterby-Smith et al., 2009). Moreover, Eisenhardt and Martin (2000) present an alternative perspective on dynamic capabilities, contending that they do not serve as a wellspring for competitive advantage or superior firm performance. Teece (2009) counters these assertions by emphasizing that although adhering to best practices may not confer competitive advantage, they are improbable to qualify as dynamic capabilities. Zollo and Winter (2002) adopt a more neutral stance on this matter, asserting that dynamic capabilities are merely oriented towards the pursuit of enhanced effectiveness (p. 340).

This theory was considered relevant for this study since the banking sector is an increasingly dynamic and volatile industry that is continually facing trend shifts, mostly driven by technology that require the players to continually reassess and reinvent themselves. Further the study targets microfinance banks whose main clientele are persons perceived to be excluded by the main commercial banks due to their demographic characteristics. This necessitates microfinance banks to consistently innovate and introduce pertinent products and services that align with the requirements of their clients. As a result, an organization's capability to promptly organize and readjust externally

acquired competencies, alongside leveraging internal resources, becomes a crucial asset in pursuing its aspirations. This theory informs broad objective as well as the first specific objective of study which aims to establish the association between digital financial strategies and financial performance of microfinance banks in Kenya.

2.2.2 Financial Intermediation Theory

The conceptual framework surrounding financial intermediation was established during the 1960s, primarily attributed to the seminal work of Gurley and Shaw (1960). Current iterations of financial intermediation theory underscore the function of intermediaries in mitigating transaction costs and addressing informational asymmetries. The theories emphasize the pivotal functions of banks in facilitating efficient fund allocation, mitigating market failures, and managing asymmetric information—a critical component for successful financial inclusion (Kalunda & Ogada, 2019). The production of reliable information and the decrease in transaction costs contribute to the profitability and stability of financial institutions. In this context, financial intermediaries act as agents for individual lenders and borrowers, capitalizing on economies of scale or scope facilitated by digital financial services.

The advent of pervasive digital networks has created business opportunities across established and emerging economic sectors. Barney (2004) observes that firms embracing digital networks experience accelerated transaction execution, rapid information exchange, and innovation through novel business processes. Previously, nearly all transactions, barring those conducted with cash, necessitated a bank or a regulated payment system operator. However, there is a discernible shift from this norm. The prominence of non-cash transactions has increased, validating the financial intermediation theory initially posited by Gurley and Shaw (1960).

The theory, based on the assumption that intermediaries reduce transaction costs and information asymmetries, involves financial institutions utilizing funds from surplus units to lend to deficit units in the economy. Intermediation, in this context, mitigates transaction costs and addresses information asymmetry. Douglas (1984) contends that information asymmetry is inherent in the economic and financial system, with borrowers possessing more knowledge about investments and projects than lenders. Financial

intermediaries act as intermediaries, providing this information at affordable transaction costs. Developments in information technology, financial sector deepening, and deregulation have been instrumental in reducing transaction costs and enhancing information availability.

UNEP (2014) highlights the role of technology in the financial intermediation process, making banking services accessible without requiring physical presence. While modern economic theory considers changing times and environmental adaptation, financial intermediaries are viewed as creators of specialized financial commodities (Markides, 2014). Market imperfections give rise to financial intermediaries; within ideal market scenario devoid of transactional or informational expenses, they would be non-existent.

Critics, such as Sholtens and Wenseveen (2003), argue that risk management has gained prominence in the financial industry. They perceive the function of financial intermediation to extend risk in imperfect markets, suggesting redundancy in perfect markets. Despite globalization and the information revolution, financial intermediaries seem more relevant in stock market exchanges than traditional banking. They propose a shift in focus towards value addition. Banking institutions perceive intermediation as the process of connecting potential borrowers and lenders through a third party—the intermediary. By facilitating lending to diverse individuals and businesses, financial intermediaries mitigate the risk of a single default causing total asset loss.

Financial intermediaries can extend larger loans than individual savers might achieve by consolidating numerous small deposits. This dynamic arises from the typical preference of borrowers for short-term loans, juxtaposed with the reluctance of savers to commit their funds for extended periods. Through the aggregation of a versatile pool of deposits, financial intermediaries effectively address the divergent preferences of both lenders and borrowers (Wecker, 2012).

This theoretical framework holds significance, as it centers on the banking industry, fundamentally characterized by its role in intermediation. The primary impetus of the study is to investigate the degree to which technology can augment the intermediation functions of microfinance banks. The objective is to empower these institutions to deliver

a more diverse array of products efficiently to a wider client base. The theory serves as a guiding principle for our second research objective, which seeks to discern the moderating effect of bank characteristics on the association between digital financial strategies and the financial performance of microfinance banks in Kenya.

2.2.3 Financial Innovation Theory

William Silber introduced the theory of financial innovation in 1975, positing that the development of novel financial instruments or practices serves to alleviate the limitations in the financial resources affecting banks (Silber, 1983). Recognizing the significance of financial advancements, Miller (1986) emphasized that the creation of new products and services is essential for the expansion of the financial sector. In his exploration of capital market growth, Tufano (2003) noted that by the end of the year 2000, 18% of public offerings comprised securities that had not existed before 1994. Highlighting the impact on financial stability and policy making, Levich (1985) underscored the importance of financial innovation. Additionally, Merton (1992), in his studies on financial innovation, cost of capital, financial risks, and financial intermediation, documented the increasing need for financial innovation to stimulate economic growth and facilitate business operations.

Technological and financial innovation contribute to a pivotal role in fostering financial inclusion by addressing existing structural and infrastructural challenges in reaching underserved populations (Al-Mudimigh and Anshari, 2020). Financial innovation serves to rectify market inefficiencies or imperfections, particularly in incomplete markets, thereby enhancing opportunities for risk-sharing (Tufano, 2003). Recent scholarly works, such as Ouma et al. (2017), define financial innovation as the development of novel financial instruments, technologies, products, and services aimed at enhancing the delivery of financial services. This research highlights how financial innovation, exemplified by the widespread use of mobile phones, facilitates the provision of financial services, promoting household savings and augmenting the overall amount saved.

Beck et al. (2016) assert that considerable advancements have been achieved in the last two decades, leveraging financial innovation to advance financial inclusivity in African nations. This perspective aligns with the endorsement of digital financial strategies as

catalysts for financial performance. The implementation of digital financial strategies, driven by technological innovations, emerges as a critical factor propelling financial inclusion through the integration of technology by Kenyan banks.

Critics of the financial innovation theory argue that it falls short in recognizing the significance of various factors, such as resource availability, the adoption rate of new technologies, social context, demographic conditions, and the overall environment where these technologies are intended to be utilized. A notable omission in the theory is the acknowledgment of the social orientation of users, customers, and the financial health of institutions. The acceptance and relevance of emerging technologies are intricately tied to the prevailing cultural norms, economic structure of society, the educational system, and the government regulations in effect (Lyytinen & Damsgaard, 2001).

This theory holds significance for the study as it helps understand how technological change has resulted into innovative (digital) financial services and how this affects financial intermediation in microfinance banks. This theory therefore informs the third study objective which seeks to assess the role of digital financial strategies on financial performance of microfinance banks in Kenya.

2.3 Empirical Literature

Wachira, Kalui, and Gathii (2021) conducted an inquiry into the impact of digital financial services on the performance commercial banks in Kenya. Their investigation revealed negative correlation between mobile money, digital payments, and the performance of commercial banks in the Kenyan. Conversely, the research identified a positive and statistically significant correlation between customer deposits, gross non-performing loans, and the performance metrics of commercial banks in Kenya.

The study concluded that the provision of fintech services adversely affects the overall commercial banks' performance. This phenomenon is ascribed to the observation that an increased adoption of digital financial services by customers corresponds to a decrease in the fees earned by banks for delivering services.

Dzombo et al. (2018) undertook an investigation with the primary objective of elucidating the intermediary effect of financial inclusion on the association between branchless

banking and the financial performance of commercial banks in Kenya. Employing a correlation research design, the study encompassed a population of 42 duly licensed commercial banks operating within the Kenyan. The findings from the study indicated that, when employed in isolation, both agency banking and electronic banking services had a significant negative impact on the financial performance of commercial banks. In contrast, when deployed in tandem as a cohesive multichannel strategy, the combination of agency banking and electronic banking demonstrated a positive and statistically significant influence on the financial performance of commercial banks.

Furthermore, the study findings substantiate that the degree of financial inclusion serves to fortify the connection between the branchless banking approach and the financial performance of commercial banks.

Rosen (2013) delved into an examination of mobile banking and agent banking, concluding that alternative delivery channels possess the potential to serve as a bridge between financial institutions and underserved populations. This potential is contingent upon the provision of appropriate financial tools, thereby fostering opportunities through enhanced financial inclusion. The utilization of mobile money is underpinned by a multifaceted value proposition, encompassing heightened operational efficiencies, reduced paperwork, enhanced transparency, and accountability facilitated by electronic records, as well as increased autonomy and self-sufficiency for users.

In corroboration, the Central Bank of Kenya (2015) observed a noteworthy development where mobile payments in Kenya surpassed the combined volume and value of all electronic card transactions. This paradigm shift was evident both in terms of customers utilizing mobile payments and the overall value of the financial transactions, underscoring the growing significance of mobile financial services in the Kenyan financial landscape.

2.3.1 Digital financial Strategies and Financial performance of Microfinance Banks in Kenya

2.3.1.1 Mobile Banking and Financial Performance of Microfinance Banks in Kenya

Zimmerman (2016) observed that mobile banking in the developing world faced skepticism within the financial community. While advocates contended that mobile phones had the potential to revolutionize personal finance in less affluent nations, regulators expressed concerns about inherent risks related to money laundering. Additionally, many bankers were apprehensive, speculating that the low customer balances associated with mobile banking might not justify the transaction costs.

According to Rose (1999), mobile banking is defined as a service offered by financial institutions in collaboration with telecommunication service providers, enabling clients to conduct banking activities through their mobile phones. This service primarily targets the unbanked population—those without access to traditional banking or bank accounts, particularly those situated at the lower echelons of the economic hierarchy, often residing in rural areas. These individuals stand to gain advantages from banking services, such as the ability to save and borrow efficiently and securely.

Several studies have been undertaken to explore the association between mobile banking and performance of banks; Ching, Sim, Kam, and Tan (2011) conducted a comprehensive review exploring the factors influencing the use of mobile banking in Malaysia. The main objective of their research was to investigate the interconnections among various components, including usefulness, ease of use, social norms, risks, innovativeness, and relative advantages, in relation to the inclination to adopt mobile banking by Malaysians. The research revealed significant associations between usefulness, ease of use, relative advantages, risks, and personal innovativeness with the use of mobile banking services in Malaysia. Their study noted the inherent potential for improved performance for banks that adopted and promoted mobile banking as a service offering. The study however failed to address the facet of inclusivity which is the main concern of the present study.

McGregor (2013) conducted an examination of mobile banking, analyzing the ways in which technology aids unbanked and underbanked populations in mitigating financial

risks with enhanced security for financial services. The study highlighted that individuals steadily resort to cell phones to fulfil their individual financial requirements in situations where traditional banking services are not readily accessible. Moreover, the research identified three pivotal functions played by mobile banking: firstly, facilitating financial services in areas devoid of conventional banks; secondly, raising pertinent regulatory policy considerations within the financial services sector; and lastly, disassembling financial services into distinct elements, providing valuable conceptual insights into the essence of financial services and demystifying the sector.

In efforts to establish the effects of principal mobile money services impacting financial inclusion in Kenya, Wakaba and Wepukhulu (2019) conducted a study targeting major mobile money transfer service providers (Safaricom, Airtel, Equity and Telkom). The research design of the study employed a census approach using descriptive statistics, regression and correlation analysis of data and study variables between the years 2013 and 2018. The study findings established that agency banking services, mobile money services and online payments of bills positively and significantly influence financial inclusion in Kenya.

In a separate investigation, Wambari et al. (2009) delved into the realm of mobile banking with the objective of establishing its importance in the day-to-day operations of micro and small businesses (MSEs). The study aimed to comprehend the prospects and obstacles associated with utilizing mobile banking as a business instrument. The research identified that the utilization of mobile phones represent outcomes of a social process, intricately woven into cultural norms, particularly those prevalent in SMEs. This integration resulted in tangible economic benefits.

Furthermore, the study indicated that mobile banking exerted a discernible impact on organizational behavior and decision-making processes, thereby influencing the comprehensive business performance and contributing to the dynamics of the Kenyan economy. These findings align with the outcomes of Kigen's (2010) investigation, which examined the impact of mobile banking on transaction costs within microfinance institutions. Kigen found that mobile banking substantially lowered transaction costs, albeit the direct impact on banks was limited at that time due to a relatively modest

customer base. The study foresaw considerable reduction in cost of operation for financial institutions that embraced this technology, projecting substantial gains.

Waiganjo (2018) conducted an investigation into the effect of mobile banking on the financial profitability of Tier 1 commercial banks in Kenya. The study revealed that both the monthly value transacted through mobile banking and the number of mobile banking users significantly influenced the financial profitability of these banks. Moreover, a positive correlation was identified between perceived increases in customer base, initiatives to combat fraud and cybercrime, and the financial viability of banks.

In light of these findings, the study recommended that policymakers incorporate mobile banking considerations into their policy formulations, recognizing the evolving technological landscape and the anticipated transition from conventional banking to technologically supported financial services channels. Additionally, the study suggested the importance for further research to delve into the difficulties linked to the use of mobile banking within commercial banks in Kenya.

In a separate local investigation, Mwariri and Awuor (2020) explored the influence of mobile banking adoption on the financial performance of Micro Finance Institutions in Nanyuki town, Kenya. The study was grounded in the Technology Adoption Model, employing a descriptive research design. The target population comprised managerial-level employees from three deposit-taking Micro-Finance institutions. Questionnaires were utilized for data collection, and subsequent analysis involved both descriptive and inferential statistical techniques.

The findings suggested that the implementation of a mobile banking strategy significantly improved the financial accessibility of MFIs. Additionally, the study demonstrated a positive and significant correlation between mobile banking adoption and the financial performance of MFIs. The conclusion drawn was that the adoption of a mobile banking strategy contributed to heightened financial accessibility and improved service delivery for MFIs. Consequently, there is a compelling need for MFIs to increasingly integrate mobile banking to facilitate a higher volume of transactions, thereby enhancing overall financial performance. Nonetheless, it was observed that a notable proportion of MFIs had not completely embraced the mobile technology use. The study recommends that MFIs

should consider adopting mobile banking technology as a mechanism to improve efficiency and effectiveness in reaching out to customers, ultimately contributing to improved financial performance.

2.3.1.2 Internet Banking and Financial Performance of Microfinance Banks in Kenya

Internet banking is characterized by using online networks to provide a diverse array of value-added products and services to bank customers (Steven, 2002). Online platforms allow customers to transact via various bank accounts in one place across a set of financial institutions.

Internet banking serves as a supplementary service delivery channel rather than replacing the traditional brick-and-mortar bank branches. The evolution of internet banking has altered competition dimensions in the retail banking sector. The innovations relating to internet banking increased new retail banking distribution channels and enhanced convenience in banking for customers. Internet has enabled banks to operate websites, transaction platforms and operate 'virtual' banks that allow penetration of other financial markets without necessitating physical presence of banks in those markets.

Al-Samadi (2014) conducted a study examining the impact of electronic banking on the profitability of banks in Jordan. The research focused on a sample comprising 15 banks. The results of the investigation revealed that electronic banking has a significant negative impact on the profitability of these banks. Notably, traditional channels remain the predominant means through which banking operations are conducted by these institutions. The study demonstrated that the operational costs associated with electronic banking outweigh the revenue derived from the provision of electronic banking services in the context of Jordan.

In 2014, Malhotra performed research exploring the power of Internet banking on the profitability of banks in India. This investigation comprised a survey involving 85 commercial banks, revealing that 57 percent of Indian banks were actively conducting transactions through Internet banking services. The analysis further demonstrated that

larger-tier banks utilizing Internet services exhibited superior profitability ratios compared to their counterparts employing traditional service delivery approaches.

These findings align with research carried out by Mwale et al. (2019) on the effect of internet banking on the financial performance of tier one commercial banks in Kenya, which employed a census technique. The research affirmed that the adoption of Internet banking conferred strategic advantages over competitors and heightened the probability of customer loyalty due to the availability of round-the-clock banking services. Additionally, the study concluded that Internet banking not only saved time through operational efficiency but also enhanced control, establishing a positive and significant relationship between internet banking and financial performance of tier one commercial banks.

Ariyasema and Jayarathne (2019) performed a study investigating the effect of electronic banking on the financial performance of domestic commercial banks in Sri Lanka. The findings indicated a positive influence of E-banking on the performance of the banking industry in Sri Lanka. The adoption of electronic banking was found to enhance the productivity and effectiveness of commercial banks in the country. The study unveiled that E-banking contributes to improved performance by providing value-added products and services through information and communication technology (ICT). As a result, the study recommended that banks should strategically acquire technology based on their individual needs and objectives rather than simply following the technology trends of other banks.

The above finding corroborates with those of a study by Kiragu (2017) which examined the effects of electronic banking on the financial performance of Kenyan banks. The study sought to effect of electronic banking on extent of banking services and the effects of E-Banking on financial performance of the banks. The study employed descriptive design and targeted five tire 1 banks in Kenya. The research collected both primary and secondary data. Data was analysed using descriptive statistics. The study found out that electronic banking platforms enhanced service delivery to their customers. E-banking was also found to have reduced the costs of service delivery. On overall the study found out

that electronic banking had some impact on profitability as well as the financial performance of Kenyan Banks.

2.3.2 Microfinance Banks' Characteristics on Digital Financial Strategies and Financial Performance

The expansion and advancement of digital banking in Kenya have facilitated the continued disaggregation of bank operations and profitability services that were traditionally provided by banks. The ongoing evolution in the technological landscape is expected to exert a lasting impact on the future profitability of financial entities. Essential metrics such as capital adequacy, liquidity, and the prevalence of non-performing loans may face potential influences. The driving forces behind the asset quality of banks, a pivotal aspect of their financial performance, encompass macro-economic factors as well as institution-specific factors within the banking sector. The transformative effects of digitalization underscore the dynamic nature of the banking industry in Kenya, introducing both opportunities and challenges for financial players.

Various factors specific to banks and developments in the market have a direct impact on bank cost efficiency. Changes in capital levels can potentially influence the risk tolerance of banks, affecting the quality of their loan approvals and, consequently, the incidence of non-performing loans (Ghosh, 2015). The adoption of innovations that alter the cost structure of banks also directly affects risk monitoring, thereby influencing overall bank profitability. Notably, innovations in payment systems, as highlighted by Scott, Van Reenen, and Zachariadis (2017), have been linked to improved performance within the banking sector.

Examining the effects of mobile money on banking sector stability in Kenya, Tiriongo and Wamalwa (2020) employed a generalized method of moment estimation approach. Their study considered diverse measures such as capital adequacy, asset quality, profitability, and liquidity conditions in relation to the value of transactions via mobile money services. The findings indicated a growth in the value of mobile money transactions, associated with a potential reduction in capital adequacy and liquidity ratios of banks, along with an increase in the non-performing loan ratio to total loans. The implication drawn from this study underscores the importance of carefully considering the

trade-offs between the beneficial effects on profitability and the potential adverse consequences on capital adequacy, liquidity conditions, and asset quality before banks adopt technological innovations. This approach is crucial for ensuring a balanced and sustainable impact on the banks' overall performance in the long run.

A study conducted by Muthiora (2015) pertaining to the enabling of mobile financial services policies in Kenya discloses that although mobile financial services exhibit a high transaction volume for a substantial portion of the population, the operational and liquidity risks associated with banks are considerable. Despite the ongoing evolution of the mobile money and digital financial services ecosystem, it is imperative to acknowledge the manifold opportunities it creates. Simultaneously, there is an increasing imperative for regulatory bodies to remain vigilant in response to these developments. Ensuring the compatibility and alignment of regulatory frameworks with emerging business models is essential to safeguard financial sector stability and overall financial health. The proliferation of mobile banking products and services has far-reaching implications for the banking sector's operational dynamics, where mobile money, as a transaction tool and payment medium, can significantly influence banking operations. Consequently, the financial services provided through mobile money have the potential to impact how banks allocate funds, exerting influence on loan portfolios and liquidity conditions, thus bearing consequences for overall financial performance.

Rotich et al. (2019) posit that bank size emerges as a pivotal predictor of financial performance, particularly when considering economies of scale. This is evident in instances where commercial banks seek to expand via mergers and acquisitions to attain a distinctive edge in competition. Aligning with this perspective, Olowokure et al. (2015) assert that the distinctiveness of financial institutions in relation to their asset base, deposits, loans, and capital holds a pivotal significance in shaping the decision-making quality related to a bank's activities. This, in turn, exerts an influence on the overall strength of financial performance.

There are studies that associate large bank undertaking of high-risk ventures to the generation of high returns such as bank undertaking of bank assurance business (Kristen & Sengupta, 2016). Contrary, other researchers view large banks to be points of regulatory

attractions; that are exposed to systemic risks associated with complexities, size, and economic sectors interconnectedness (Tirole et al., 2012). Abel and Roux (2016) conducted an assessment of the interplay among efficiency, bank size, and the performance of banks in Zimbabwe during the period spanning 2009 to 2014. The study's results uncovered a positive correlation between efficiency, financial performance, and economic stability. It was observed that heightened economic activities result in need for financial services, consequently enhancing efficiency within the banking sector. The study thus posited that an escalation in economic activities contributes to surge in the request for financial services, fostering greater efficiency.

Muhindi and Ngaba (2018) employed panel data spanning the years 2012 to 2016 to examine the impact of bank size on the financial performance of Kenyan banks. The key variables in the study included size of capital, branch counts, customer deposits, loans, and advances. The research indicated a direct relationship between size and financial performance, with larger banks exhibiting a higher Return on Assets (ROA) compared to their medium and small counterparts.

In contrast, findings by Mulwa and Kosgei (2016) contradicted this trend, revealing a negative association between bank size and financial performance. This discrepancy underscores the complexity of the relationship between bank size and financial outcomes, suggesting that contextual factors and methodological approaches may contribute to variations in research outcomes.

2.3.3 Digital Financial Strategies Adoption and Financial Performance of Microfinance Banks

The integration of mobile financial services into the operational framework of banks carries significant market and policy implications, as noted by Kipkemboi and Bahia (2019). From a market standpoint, the uses of mobile financial services holds the promise of diminishing transaction costs for both banks and their clientele. Furthermore, it presents potential investment avenues for businesses, allowing them to cultivate capital buffers.

On the policy front, there is a discourse suggesting that the incorporation of mobile money may amplify various multipliers and simultaneously decrease the velocity of money. This phenomenon can pose challenges to the effective execution of monetary policy, especially

in a quantity-targeting regime akin to that of Kenya. The intricate interplay between market dynamics and policy considerations underscores the need for a nuanced understanding of the broader implications associated with the incorporation of mobile financial services into banking operations.

Tiriong and Wamalwa (2020) conducted an investigation revealing that the adoption of mobile services had discernible effects on the deposit numbers and the corresponding amounts mobilized through these accounts. This influence extended to bolstering remittance flows and introducing novel financial products within the banking sector. These developments bear implications for market liquidity and the operational dynamics of banking institutions.

The emergence and expansion of mobile money payment systems as financial service products have precipitated a reduction in the utilization of payment instruments traditionally offered by banks, including cheques and direct transfers. Consequently, this shift has resulted in a decline in banks' profit margins within specific product lines. The transformation in payment preferences due to expansion of mobile money underscores the need for banks to adapt to evolving market dynamics and reconsider their product offerings in response to changing consumer behaviors.

The evolution of Digital Financial Services (DFS) has significantly transformed the dynamics of personal customer-banking relationships, offering substantial advantages to banks that were traditionally reliant on conventional banking channels. One notable benefit for banks arising from DFS is the establishment of memorable customer experiences, leading to heightened client retention. Technological advancements have empowered banks to construct advance databases and extensive information sets concerning their clientele. Leveraging these information, banks can precisely focus and direct their business initiatives, employing credit-scoring techniques for more accurate decision-making (Tiriongo & Wamalwa, 2020).

The adoption of technology has not only enhanced customer experiences but has also streamlined processes. Products and services, which were previously contingent on the bank's assessment of its clients, have become easier to handle and more standardized. This

technological shift has, in turn, facilitated greater efficiency and responsiveness in the delivery of banking services. The transformative impact of DFS on banking operations underscores the importance for financial institutions to adapt to these changes in order to stay competitive and meet evolving customer expectations.

Cornelius and Young (2018) explored how retail banks adapt to changing market that is driven by disruptive fintech firms. The paper examined the impact of digital technologies such as mobile banking on retail banks channel strategies. The study adopted a survey of 100 bank managers from cross border retail banks in East Africa. The findings suggest that, for retail banks to maintain competitiveness and relevance within the evolving digital marketplace, it is imperative for them to transcend conventional distribution strategies, including traditional branch banking.

Microfinance entities are actively incorporating and exploring novel technologies and solutions to enhance client outreach, decision-making processes, and operational efficiency. The incorporation of technology within the financial sector is revolutionizing the delivery of financial services, and the resultant disruptions are reshaping the technological landscape within the microfinance sector. The key questions one may ask is whether technology has optimized customer acquisition for enhanced financial performance of the microfinance banks, does technology provide excellent customer experience and does technology help penetrate the unexplored markets and help retain existing markets share that helps improve the banks' financial performance.

Contrastingly, Information and Communication Technology (ICT) is seen as having limitations in addressing the challenges of information disparity and unfavourable choices that are inherent in financial intermediation, as suggested by Dabrowski (2017). The growing reliance on technology for service delivery, especially by entities operating outside traditional banking regulations, gives rise to institutions that are vulnerable to business failure, misuse, and fraudulent activities.

Nonetheless, several challenges are hindering the successful implementation of digital financial strategies in the Kenya banking sector. Poor change management and other internal management factors as often revealed to be the root causes of DFS adoption

failure (IFC, 2018). As highlighted by the International Finance Corporation (IFC), the recognition of the imperative to invest in digital banking services has significantly improved. However, there remains a considerable number of operational services that experience challenges due to insufficient resources and the utilization of inappropriate technology, stemming directly from early strategic missteps. There are largely untapped digital financial services benefits by commercial banks through agent networks as marketing asset as well as other sales channels contributed by regulation. IFC (2018) reports that the regulatory restrictive conditions have imposed limitations on digital financial services thereby lowering consumer uptake. To completely capitalize on the advantages of financial inclusion and ensure sustained financial vitality, it is imperative for microfinance banks (MFBs) to grasp the economic, social, and cultural dynamics influencing the adoption of Digital Financial Services (DFS) within the banking sector. To gain insight into this matter, MFBs needed to address pivotal questions, such as identifying the factors propelling the scale and adoption of DFS, assessing the significance of DFS in terms of affording opportunities for operational expansion, risk management, and the optimization of shareholder value, and understanding the impact of DFS on its users.

2.4 Summary of Literature and Research Gap

Despite the many positive changes brought by adoption of digital financial strategies and the expansive infrastructure by Commercial banks and Microfinance banks in driving financial inclusion in Kenya, there is still a significant underprivileged segment of population which remain underserved and unserved. Pazarbasioglu et al. (2020) observes that 65 per cent of adult population in emerging nations are without access to even the simplest transaction account that would enable them to transact securely and conveniently. While many studies have been done and established a positive correlation between digital strategies and performance of commercial banks in Kenya, limited studies have been done on the same in microfinance banks.

Ching et al. (2011); McGregor (2013); Wakaba & Wephukulu (2019); Wambari (2019), all studied various aspects of mobile banking and generally established a positive correlation between mobile banking and the performance of commercial banks. Mungai

(2017); Mwende, Bichanga and Mosoti (2015); Simboley (2017) all studied various aspects of agency banking and established a positive correlation between agency banking and firm performance. The same was the case Bamzi, Javed, Nazir and Razu (2015); Odawa (2016); Abdullahi and Nyaoga (2017) all studying various aspects of ATMs and firm performance.

The reviewed studies are mainly resident in commercial banks with limited studies available on the construct under study in microfinance banks pointing to an empirical gap which the study seeks to address.

Table 2.1 Summary of Literature and Research Gap

Author	Main Empirical Study	Purpose of the Study	Findings	Research Gaps	Type of gaps identified	How the study seeks to fill the Gap
Mwende, et al. (2015)	Importance of Agency banking in the provision of Banking services in Kenya.	To assess the cost of banking transactions accessibility of agents and efficiency of banking services accessed through bank agents	Agency banking reduces transaction costs, offers extended operating hours, shorter queues compared to branches, and is more accessible to individuals with limited means who may find branches intimidating. It proves to be efficient in terms of both transaction	The study scope was targeting commercial banks excluding microfinance banks.	Contextual gap	The study will seek to link association agency banking and performance of microfinance banks

			costs and time savings			
Wakaba and Wepukhulu (2019)	Mobile financial Services and financial Inclusion	To investigate the influence of mobile financial service on financial inclusion in Kenya	Agency banking and Mobile banking services positively and significantly influence financial inclusion in Kenya	Study ignored to consider the institutional characteristics like profitability, size, asset quality that act as catalyst in enhancing financial inclusion	Conceptual gap	The study seeks to establish how unique digital financial strategies and financial inclusion given the varying levels of profitability, size, asset quality and liquidity of microfinance banks.
Simboley (2017)	Agency banking and financial performance of	To determine the effects of agency banking	Agency banking has significantly influenced the performance of commercial banks	The study also done in commercial banks; findings may differ in	Contextual gap	The study seeks to establish the extent to which agency banking influences the

	commercial banks	customer growth, deposit growth and cost reduction of commercial banks in Kenya	in Kenya viewed from the variables under study	microfinance banks		performance of microfinance banks
Waiganjo (2018)	Effect of Mobile banking on the financial profitability of Tier 1 commercial banks in Kenya	To determine the effect of number of users, increased security of mobile banking and profitability.	Positive correlation between number of transactions and fraud mitigation and financial profitability	Study done in large commercial banks	Contextual gap	Present study will focus on microfinance banks

Odawa (2016)	Intelligent ATMs and the performance of commercial banks in Kenya.	To determine the influence of self - service technologies on the performance of listed commercial banks	SST improved service delivery, reduced operating costs and increased customer convenience	Study done on listed commercial banks and only interrogated ATMs.	Contextual gap and methodological gap	Present study will be done on microfinance banks and will combine other aspects of digital finance strategies
Kigen (2010)	Impact of Mobile banking on transaction costs of microfinance institutions	To assess the impact of mobile banking on the transaction costs of microfinance	Positive correlation between mobile banking and reduction in transaction costs	Study restricted to transaction costs only	Contextual gap	Present study will review other facets of performance

		institutions in Kenya				
Ching et al. (2011)	Factors affecting adoption of mobile banking.	Determine the factors affecting Malaysian mobile banking adoption.	The study revealed that factors such as usefulness, ease of use, relative advantages, risks, and innovativeness exhibited a significant relationship with the adoption of mobile banking services in Malaysia. Furthermore, it highlighted the inherent potential for enhanced performance in	This study was an empirical analysis and was conducted in Malaysian context, and therefore cannot be generalised in the Kenya context.	Contextual gap	The focuses on different aspects of digital financial strategies and not mobile banking only. In addition, this study will be conducted in Kenyan context, and will rely on both primary and secondary data sources, which are expected to provide rich information to help make

			banks that embraced and actively promoted mobile banking as a service.			inference on the subject matter.
Kiragu (2017)	Effects of E-Banking on the Financial Performance of Kenyan Banks.	To examine effect of electronic banking on extent of banking services; the effect on costs, profitability, and effects on financial performance of the banks	Found out that electronic banking had an impact on the financial performance of Kenyan Banks.	This research concentrated on the relationship between e-banking and the financial performance of five tier 1 banks in Kenya. Therefore, the findings cannot be generalized beyond this specific study. Additionally, it	Contextual, Conceptual and methodological gap	The proposed study looks at various aspects of digital financial strategies and financial performance, with a focus on microfinance banks in Kenya. This study will also incorporate both primary and secondary data sources.

				exclusively relied on primary data.		The study has also incorporated control variables such as bank characteristics and corporate governance.
Mwariri and Awuor (2020)	Mobile banking on financial performance of Micro Finance Institutions	Investigated the influence of adoption of mobile banking on the financial performance of Micro Finance Institutions in Nanyuki	Mobile banking positively and significantly influences financial performance of MFIs.	The study focused on Mobile banking only and was conducted on three-deposit taking Micro-Finance institutions.	Contextual, and Conceptual gap.	The present study is studying not only mobile banking but also internet banking. The study also incorporates other control variables such as bank characteristics and corporate governance in

		town, Kenya.				order to have a clear picture on the subject matter.
Malhotra (2014)	The impact of internet banking on bank performance.	To examine the impact of internet banking on bank performance and risk, with a focus on Indian context.	Results showed that banks that use internet are the large tier banks and have better profitability ratios than the banks that use traditional approach of delivering services to customers.	The study focused on Internet banking only and was limited to 85 large commercial banks in Indian. Due to the differences in the two jurisdictions, the findings may not be applicable or generalized to	Contextual, and Conceptual gap.	The present proposed study will not only research on internet banking but also on mobile banking. In addition, this study focuses on Kenyan context and will be limited to microfinance banks in Kenya, due to their significance to financial inclusion and financial

				the Kenyan contexts		intermediation in the country.

2.5 Conceptual Framework

The research was grounded in the conceptual framework below, illustrating the interplay between the independent variables and the dependent variable. The independent variable (Digital Financial Strategies) was operationalized in the form of Mobile banking and Internet banking, institutional bank characteristic was operationalized in the form of size, capital adequacy, liquidity, asset quality and non-performing loan ratios while the dependent variable (Financial Performance) was operationalized in the form of Profitability as measured by Return on Assets (ROA).

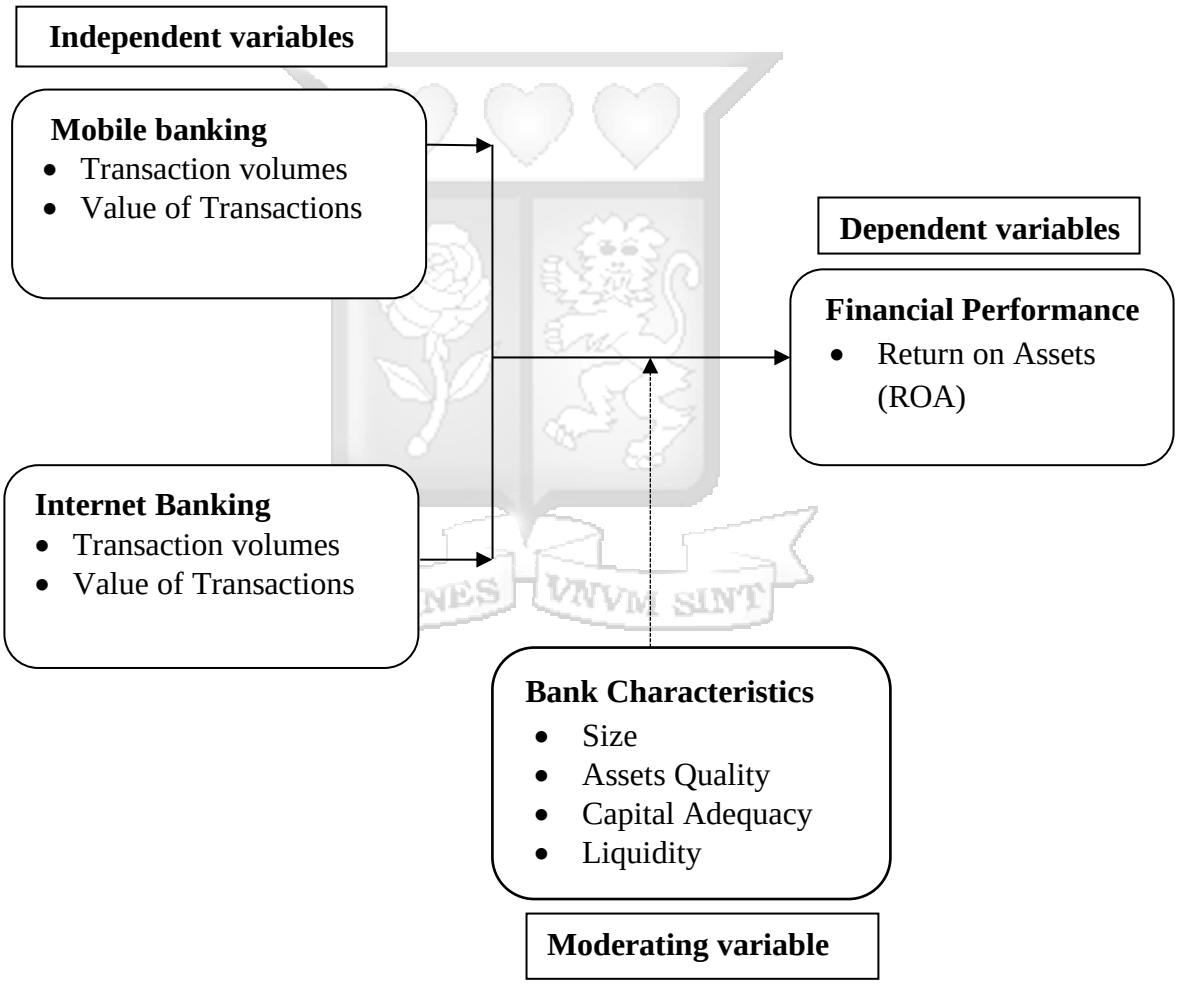

Figure 2.1 Conceptual Framework (Author, 2024)

2.6 Operationalization of the Variables

Table 2.2 indicates the criteria for the operationalization of the independent, control and dependent variables of the study. The measurements, supporting studies, study-based theories and the test of variables are highlighted.

Table 2.2 Table of Operationalization of Variable – For Secondary Data

Variable	Measurement of Variable	Supporting Past Studies	Supporting Theories	Data Source	Test
Dependent Variables					
Financial Performance	ROA	Kiemo & Mugo (2021), Dzombo et, al (2018)	Theory of Financial Growth	CBK Annual Reports, Banks Audited Financial Statements	Data Sets
Independent Variable					
Mobile Banking	• Value of Mobile Banking Transaction. • Transaction volumes	Misati et al (2021) & (AFI,2019; Arif,2018)	Theory of Financial Innovation	CBK Annual Reports, Banks Audited Financial Statements	Panel Data Analysis
Internet Banking	• Volume of Transactions • Value of Transactions	Misati et al (2021) & (AFI,2019; Arif, 2018)	Theory of Financial Innovation	CBK Annual Reports, Banks Audited Financial Statements	Panel Data Analysis
Moderating variable					

Bank Size	• Log of Total Assets	Misati et al (2021) & Kiemo & Mugo (2021)	Theory of Financial Innovation	Bank Supervision Annual Reports	Panel Data Analysis
Asset Quality	• Non-Performing Loans to Total Loans	Kiemo & Mugo (2021), Dzombo et, al (2018) & Trofimov et al, (2018) & CBK (2021)	Theory of financial innovation	CBK Annual Reports, Bank Annual Supervision Reports, Financial Statements	Panel Data Analysis
Capital Adequacy	• Capital Adequacy Ratio (Ratio of Capital to risk weighted assets	Kiemo & Mugo (2021), Dzombo et, al (2018) & CBK (2021)	Theory of financial innovation	Bank Supervision Annual Reports, Banks Financial Statements	Panel Data Analysis
Liquidity	• Total Liquid Assets to Total Short-term Liabilities	Kiemo & Mugo (2021) and CBK (2021)	Theory of financial innovations	Bank Supervision Annual Reports, CBK Reports	Panel Data Analysis

Table 2.3: Table of Operationalization of Variable – For Primary Data

Objective	**Indicators**	**Data Source**	**Measurement Scale**	**Type of analysis**	**Tools of analysis**

To assess the perception of microfinance banks on the role of digital financial strategies on financial performance.	• Adoption of digital financial strategies • Use of Digital Channels (M-Banking and Internet Banking	• Questionnaire	• Nominal Scale • Likert Scale	• Descriptive Statistics	• Frequency, percentages distribution tables, • Mean Scores, Standard deviation

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology employed in the study. It specifically highlights the research paradigm, research design, area of study, target population, sampling, data collection, measurement of variables, piloting of the instruments, testing their validity and reliability. It also covers the data analysis and presentation and the ethical considerations for the intended study.

3.2 Research Philosophy

Research philosophy encompasses the configuration, organization, and structure of scientific and academic concepts, values, and presumptions. It mirrors human perspectives regarding the world in which they presently exist and aspire to inhabit, laying the groundwork for the knowledge upon which the fundamental predispositions of a study rest (Mugenda & Mugenda, 2003). This philosophy is dedicated to the cultivation of knowledge and the very essence of knowledge itself (Creswell, 2009). The principal research philosophies commonly acknowledged are positivism and interpretivism. The philosophical underpinning of positivism is grounded in tangible facts, objectivity, impartiality, precision in measurement, and the validity of outcomes (Saunders, Phillip & Thornhill, 2007).

Positivism posits that observation and reason serve as the most effective avenues for comprehending human behaviour, asserting that genuine knowledge is derived from sensory experiences and can be acquired through systematic observation and experimentation. Positivists adhere to a realist perspective, positing that reality is presumed to exist objectively and is quantifiable through attributes that are autonomous of both the investigator and their tools. In essence, knowledge, from a positivist standpoint, is deemed objective and measurable. The fundamental concern of positivism lies in the revelation of truth through empirical methods (Henning, Rensburg & Smit, 2004).

The philosophy of interpretivism posits that individuals undergo subjective experiences of the external world, contending that reality is a product of social construction. Myers

(2009) asserts that interpretivist researchers operate on the premise that access to reality is attainable solely through social constructs, such as language, consciousness, and collectively understood meanings. The interpretive paradigm is rooted in the processes of observation and interpretation. Accordingly, observation involves the collection of information about events, while interpretation is the act of assigning meaning to that information through the derivation of inferences.

The present study embraced the positivist philosophical approach, aligning itself with a science-based framework. Comparable methodologies were employed in analogous studies conducted by other academics, including Muriithi (2016) and Kithinji (2018), both of whom also utilized the positivist philosophical approach.

3.3 Research Design

Kothari (2004) defines research design as the methodical structuring of conditions for the collection and analysis of data, aimed at conducting research in an economically efficient manner. The research design addresses issues such as the techniques employed for data gathering, the sampling method, and the tools used for data collection. In this study, a correlational research design was used, which falls under the category of non-experimental research designs. In this approach, the researcher examines the statistical relationship, or correlation, between two or more variables (Tan, 2014). The outcomes of a correlational study allow researchers to ascertain whether, and to what extent, two variables exhibit concurrent changes. In a positive correlation, both variables change in the same direction.

One method for dealing with correlational data involves the utilization of archival data. Archival data refers to information that has been previously collected and is typically accessible through primary research sources. This study therefore used correlational design to analyse longitudinal data sets studied over a period of five-years between the years 2018-2022. This research design was therefore found to be relevant to this study since it sought to establish the relationship between digital financial strategies and financial performance of microfinance banks in Kenya.

3.4 Population and Sampling

A population is characterized as a comprehensive collection of individuals, events, or objects that share a common observable trait of interest to a researcher (Sekaran, 2008). It encompasses all prospective participants that could constitute the study group (Kumar, 2008). The study targeted all 14 microfinance banks listed by CBK (2022) in their supervision report.

The study targeted all microfinance banks licensed by CBK and active as of December 31, 2022. According to Central Bank of Kenya Bank Supervision Report of 2022, there were 14 microfinance banks in Kenya. Given the limited size of the population, the study included all microfinance banks. The study did purposive sampling specifically targeting managers in identified portfolios who were deemed to be rich in information or have relevant information about the subject matter under study. This gave the total target population of the study to be 14 respondents.

3.5 Data Collection and Tools

The study drew data from secondary sources and primary sources. Secondary data was drawn from secondary sources such as CBK Bank Supervisory reports, Central Bank Statistical reports, and specific banks annual reports for the period 2018-2022. Data on the study variables -Financial Performance (ROA), mobile banking, and internet banking as well as data on control variables – bank characteristics was collected from CBK Annual Reports, and from Audited Financial Statements of individual banks for the specified period. Primary data was also collected using a questionnaire capturing information relating to the variables under study. The questionnaire was structured, and the questions were in the form of a five-point Likert scale.

3.6 Data Analysis

Data analysis involved inspection, cleaning, coding, transforming, and modelling data in order to highlight useful information which will be useful in drawing conclusions and ultimately aid the study to support decision making (Cooper & Schindler, 2008). The variables were drawn from fourteen (14) microfinance banks audited financial statements and Banks Annual Supervision reports of the years ending 2017 to 2021. This data was

panel in nature. Wooldridge (2010) defines panel data as a combination of both cross-sectional and longitudinal data sets.

Data analysis procedure involved the use of various econometric models to fix missing and unobserved items (Wooldridge, 2010). The models employed in this study comprised Pooled Ordinary Least Squares (OLS), as well as static models such as Fixed Effects and Random Effects. Pooled Ordinary Least Squares is applicable for conventional linear regression panel data when cross-sectional data is combined, and elements in the population have consistent intercepts and slope coefficients (Greene, 2008).

Hsiao (2003) suggests that panel data models provide advantages over Ordinary Least Squares (OLS) by enabling control for individual differences, capturing changes in individual characteristics over time, and mitigating biases through the aggregation of data across individuals and times. The choice between Fixed Effect and Random Effect Models can be determined using the Hausman test, which serves as a diagnostic approach to assess the robustness of the model in use. The Hausman test is particularly recommended for unbalanced data and in the presence of autocorrelation (Cameron & Trivedi, 2010). If the results of the Hausman test indicate that the random effect model is more appropriate, the model's robustness is further evaluated using the F-Statistic and R2 in the model results. Due to the limited sample size, T-test statistics were employed for hypothesis testing in this study. Panel data analysis was utilized to examine the relationships between mobile banking, internet banking, and bank characteristics on the financial performance of microfinance banks in Kenya. To achieve the desired results, the study employed the following data analysis model:

$$\boldsymbol{\pi_{it} = \alpha_0 + \alpha_1 MBT_{it} + \alpha_2 MBV_{it} + \alpha_3 ITV_{it} + \alpha_4 IBV_{it} + (\alpha_5 log_{it} + \alpha_6 AQ_{it} + \alpha_6 CA_{it} + \alpha_7 lDT_{it} + \alpha_8 ES_{it} + \alpha_9 BE_{it} + \alpha_{10} INF_{it} + \alpha_{11} GDP_{it}) + \varepsilon_{it}}$$

Where:

Where π_{it} = Financial performance of bank i at time t as expressed by ROA

$\boldsymbol{\alpha_0}$= Intercept

$\boldsymbol{MBT_{it}}$ = mobile banking number of transaction of bank i at time t

MBV_{it} = mobile banking transactions value of bank i at time t

ITV_{it} = internet banking number of transaction of bank i at time t

IBV_{it}= internet banking transaction value of bank i at time t

log_{it} = natural logarithm of total assets of bank i at time t

AQ_{it} = asset quality of bank i at time t

CA_{it} = capital adequacy of bank i at time t

lDT_{it} = liquidity of bank i at time t

ES_{it} = earning strength of bank i at time t

BE_{it} =efficiency of bank i at time t

ε_{it}= Error term where i is cross-sectional and t time identifier

$\underline{\alpha}_1$-$\underline{\alpha}_{10}$= Coefficients of parameters

3.7 Research Quality

Data validity and data reliability are the fundamental elements of quality of research. Data validity pertains to the degree to which a variable can consistently measure the intended construct it claims to evaluate (Hair, Money, Page & Samuel, 2009). The study employed content validity, and the reliability of the data is understood as the dependability of the data (Bryman & Bell, 2011). The data in this study were predominantly sourced from published and audited reports, contributing to the reliability of the data. The study also paid attention to appropriate sample size to achieve reliable result with high control on study variables to avoid biasness. To conform to research quality, several regression diagnostic tests were performed which include test for normality, autocorrelation, test of significance, multicollinearity, and heteroscedasticity.

A normality test was employed to ascertain whether the data collected originated from a population with a normal distribution. Normality test showed the distribution of random variables within data sets. Normality test played an important role in predicting dependent variables scores.

Multicollinearity is defined as a phenomenon where an independent variable is predicted linearly with a certain degree of accuracy in a multiple regression model. Multicollinearity was assessed by examining the Variance Inflation Factor (VIF) and evaluating tolerance (1/VIF).

3.8 Ethical Issues and Management

Ethical considerations, including confidentiality, anonymity, and voluntary consent, are paramount in research. The study was conducted after obtaining approval from the Ethics Review Board of Strathmore University. Additionally, the researcher obtained a research permit from the National Commission for Science, Technology, and Innovation (NACOSTI). The research process was in accordance with the laid down guiding principles by the University. The study upheld high standard of integrity, quality, and compliance to confidentiality requirements as well as third party data collection protection regulations.

CHAPTER 4: RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the research findings and subsequent discussion. The research findings were analyzed based on the research objectives, which aimed to establish the association between digital financial strategies and the financial performance of Microfinance Banks in Kenya; to determine the effects of bank characteristics and use of digital financial strategies and to assess the perception of microfinance banks on the role of digital financial strategies on financial performance of Microfinance Banks in Kenya Hence, this section analyses and interprets data gathered from both primary and secondary sources during the period 2018-2022.The analysis is divided into four sections: Panel Data Analysis, Diagnostic tests, Inferential Statistics and Descriptive Statistics Analysis.

4.2 Diagnostic Tests

4.2.1 Heteroscedasticity Test

The hypothesis testing for heteroskedasticity, the null hypothesis typically states that there is homoscedasticity (constant variance of residuals), while the alternative hypothesis suggests that the presence of heteroskedasticity, that is varying variance of residuals. This is illustrated in Table 4.1.

Table 4.1: Heteroscedasticity Test

Heteroscedasticity Test: White's General Test Statistic	
Chi-sq	65
Degree of Freedom	64
p-Value	0.4416

Based on the results, the calculated p-value was 0.4416, which is greater than the significance level of 0.05 at a 95% confidence level. This implies that there is no evidence to suggest the existence of heteroskedasticity in the data, indicating the absence of this issue.

4.2.2 Serial Correlation Test

The null hypothesis (H0) under examination posits the absence of first-order autocorrelation in the panel data. Simply put, it assumes that the errors (residuals) from

the examined regression model do not exhibit correlation across time periods within each panel. This is explicitly presented in Table 4.2.

Table 4.2 Serial Correlation Test

Serial Correlation Test: Woolridge Test of Autocorrelation			
F-Statistic F (1,12)	17.394	Prob.F	0.0013

Given the results, the observed p-value was 0.0013<0.05 at 95% level of significance. This suggests that there is evidence of first order autocorrelation in the panel data. The data has problem of serial correlation. The data has been subjected to heteroscedasticity as a test for robust standard errors.

4.2.3 Variance Inflation Factor

The Variance Inflation Factor (VIF) serves as a diagnostic test for multicollinearity, with the null hypothesis stating the absence of such an issue, and the alternative hypothesis suggesting its presence. The findings are presented in Table 4.3.

Table 4.3 Multicollinearity Test

Testing for Multicollinearity		
Variable	**VIF**	**1/VIF**
log Value of Mobile Banking	5.85	0.170986
Capital Adequacy	5.62	0.178068
Bank Tier	4.78	0.209264
Liquidity Ratio	2.75	0.363685
Bank Efficiency	2.62	0.38178
Asset Quality	2.54	0.394405
Earnings Strength	2.17	0.460718
log Value of Internet Banking	2.05	0.487501
GDP Growth	1.36	0.736374
Covid19	1.34	0.748826

AvInflatio~e	1.3	0.769793

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Mean VIF	**2.94**	

The results indicate that the Variance Inflation Factor (VIF) for all variables is below 5, indicating the absence of an issue with multicollinearity.

4.2.4 Augmented Dickey-Fulley Test

The null hypothesis of the Augmented Dickey-Fuller (ADF) test posits that time series data are non-stationary. If the p-value is below the chosen significance level (0.05), one can reject the null hypothesis and infer that the series is stationary. The outcomes of the ADF test are presented in Table 4.5.

Table 4.5: Augmented Dickey-Fulley Test

Variable	Statistic		Value	P-value
log_MBV	Inverse chi-squared(26)	P	136.4075	0.0000
	Inverse normal	Z	-9.0133	0.0000
	Inverse logit t(64)	L*	-10.8504	0.0000
	Modified inv. chi-squared	Pm	15.3108	0.0000
log_IBV	Inverse chi-squared(26)	P	865.0477	0.0000
	Inverse normal	Z	-28.1489	0.0000
	Inverse logit t(64)	L*	-69.3912	0.0000
	Modified inv. chi-squared	Pm	116.355	0.0000
Capital Adequacy	Inverse chi-squared(26)	P	88.3346	0.0000
	Inverse normal	Z	-2.3786	0.0087
	Inverse logit t(64)	L*	-5.814	0.0000
	Modified inv. chi-squared	Pm	8.6442	0.0000
Asset Quality	Inverse chi-squared(26)	P	81.7261	0.0000
	Inverse normal	Z	-1.7964	0.0362
	Inverse logit t(64)	L*	-4.262	0.0000
	Modified inv. chi-squared	Pm	7.7278	0.0000
GDP Growth	Inverse chi-squared(26)	P	42.4667	0.0220

	Inverse normal	Z	-3.2995	0.0005
	Inverse logit t(64)	L*	-3.0468	0.0017
	Modified inv. chi-squared	Pm	2.2835	0.0112
Liquidity	Inverse chi-squared(26)	P	142.2086	0.0000
	Inverse normal	Z	-3.473	0.0003
	Inverse logit t(59)	L*	-9.5966	0.0000
	Modified inv. chi-squared	Pm	16.1152	0.0000
Earning Strength	Inverse chi-squared(26)	P	40.6588	0.0336
	Inverse normal	Z	-0.676	0.2495
	Inverse logit t(64)	L*	-1.4039	0.0826
	Modified inv. chi-squared	Pm	2.0328	0.0210
Bank Efficiency	Inverse chi-squared(26)	P	40.6178	0.0339
	Inverse normal	Z	-0.9629	0.1678
	Inverse logit t(64)	L*	-1.4621	0.0743
	Modified inv. chi-squared	Pm	2.0271	0.0213
ROA	Inverse chi-squared(26)	P	107.423	0.0000
	Inverse normal	Z	-4.2263	0.0000
	Inverse logit t(64)	L*	-7.4097	0.0000
	Modified inv. chi-squared	Pm	11.2913	0.0000
ROE	Inverse chi-squared(26)	P	276.9345	0.0000
	Inverse normal	Z	-9.5645	0.0000
	Inverse logit t(59)	L*	-22.3973	0.0000
	Modified inv. chi-squared	Pm	34.7984	0.0000
Log of Assets	Inverse chi-squared(26)	P	28.2051	0.3484
	Inverse normal	Z	0.5254	0.7003
	Inverse logit t(64)	L*	0.2285	0.5900
	Modified inv. chi-squared	Pm	0.3058	0.3799
log_MBT	Inverse chi-squared(26)	P	1.8736	1.0000
	Inverse normal	Z	5.2082	1.0000
	Inverse logit t(64)	L*	5.1312	1.0000
	Modified inv. chi-squared	Pm	-3.3457	0.9996

log_IBT	Inverse chi-squared(26)	P	1.3036	1.0000
	Inverse normal	Z	6.0539	1.0000
	Inverse logit t(64)	L*	6.188	1.0000
	Modified inv. chi-squared	Pm	-3.4248	0.9997
Av. Inflation Rate	Inverse chi-squared(26)	P	8.6095	0.9995
	Inverse normal	Z	1.8023	0.9642
	Inverse logit t(64)	L*	1.6181	0.9447
	Modified inv. chi-squared	Pm	-2.4116	0.9921
Credit Risk	Inverse chi-squared(26)	P	28.7219	0.3239
	Inverse normal	Z	0.8085	0.7906
	Inverse logit t(64)	L*	0.7358	0.7677
	Modified inv. chi-squared	Pm	0.3775	0.3529

From the results, most variable have p-values lower than 0.05 significance level suggesting strong evidence in favour of stationarity of these variables. However, a few variables like log of assets, the p-values were higher indicating non-stationarity hence were not considered for the study.

4.2.5 Normality Test

A normality test is carried out to assess whether the dataset is suitably modelled by a normal distribution. This is demonstrated in Table 4.6 below.

Table 4.6: Normality Test Results

Variables	**Shapiro-Wilk**			**Skewness**	**Kurtosis**
	Statistic	**df**	**Sig.**	**Statistic**	**Statistic**
log_MBV	0.958	65	0.026	0.472	-0.336
log_IBV	0.920	65	0.000	0.543	-0.397
Capital Adequacy	0.696	65	0.000	-1.671	2.501
Asset Quality	0.187	65	0.000	0.781	2.828
Log of Assets	0.952	65	0.014	0.245	-0.822
Liquidity	0.385	65	0.000	0.476	3.013

Av. Inflation Rate	0.836	65	0.000	0.692	-0.476
Earnings strength	0.732	65	0.000	-1.246	0.047
Bank Efficiency	0.510	65	0.000	-1.912	3.088
GDP Growth	0.702	65	0.000	3.305	1.719
ROA	0.277	65	0.000	0.161	2.130

The outcomes of the normality test suggest a departure from normal distribution in the data. The null hypothesis (H0) positing normal distribution is rejected in favor of the alternative hypothesis (H1) suggesting non-normal distribution, given that the p-values fall below 0.05 at a 95% confidence level. Skewness values varied between -1.912 and 3.305, while kurtosis exhibited a range from -0.822 to 3.088. Skewness close to 0(zero) suggest that data is approximately symmetrically distributed, statistics greater than 0(zero) indicates right skewed and statistics less than 0(zero) indicate left skewed. Hence, despite the absence of a normal distribution in the data, a transformation was applied using natural logarithms.

4.3 Relationship between Digital Financial Strategies and Financial Performance of Microfinance Banks in Kenya

The panel data was drawn from 13 Microfinance Banks for the study period of years 2018 to 2022. It was necessary to ascertain the suitability of either a fixed effect or random effect regression model through the application of the Hausman test. The Hausman test was performed to assess whether the differences in coefficients between the two models are systematic (indicating that one model is consistently better than the other) or not. Table 4.7 displays the findings:

Table 4.7: Hausman Test

Hausmann Test				
	Coefficients			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b Std. err.

log_MBV	0.545453	0.0923544	0.4530987	0.3880097
log_IBV	-0.01531	0.0116094	-0.0269228	0.0292662
Capital Adequacy	0.076917	-0.0425336	0.1194507	0.0719639
Assets Quality	-0.22359	-0.105978	-0.1176159	0.075294
LogofAssets	-0.49025	-0.1861941	-0.3040574	0.1738007
Inflation	6.156437	7.986234	-1.829797	3.845261
GDPGrowth	-0.55818	0.1749202	-0.7331023	0.4509874
Liquidity	-0.02314	-0.0371119	0.0139731	0.0276461
Earning Strength	0.410417	0.3504218	0.0599956	0.1953985
Bank Tier	0.015551	-0.0000161	0.015567	0.0120668
Credit Risk	0.229529	0.1116788	0.1178498	0.0757652
Bank tier	-0.01214	-0.0997259	0.0875841	0.1665192
Covid19	-0.09438	-0.0575511	-0.0368334	0.0347728
Chi sq statistic	5.73			
d.f	13			
Prob	0.9554			

The results indicate that the test yielded a chi-statistic of 5.73, observed with thirteen (13) degrees of freedom, and a corresponding p-value of 0.9554.

The p-value of 0.9554 is greater than the common significance level of 0.05. There is insufficient evidence to reject the null hypothesis. This implies that the variations in coefficients between the fixed and random-effects models lack a systematic pattern.

There is no strong indication of endogeneity in the data. The outcomes of the Hausmann test suggest that the random-effects model is more suitable.

4.3.1 Random Effect Regression Results

Table 4.8: Random Effect Panel regression estimates model.

ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
log_MBV	.2498	.1385	1.80	.0793	-.0307	.5302	*
log_IBV	-.0025	.0168	-0.15	.8826	-.0366	.0316	
Capital Adequacy	.0197	.0414	0.47	.6376	-.0642	.1035	
Assets Quality	.0048	.0046	1.03	.3093	-.0046	.0142	
Liquidity	.0548	.0203	2.70	.0102	.0138	.0959	**
Earning Strength	.0887	.1078	0.82	.4156	-.1295	.307	
Efficiency	.0074	.0065	1.13	.2645	-.0058	.0207	
Covid19	.0581	.0281	2.07	.0454	.0013	.115	**
roa_d	.122	.0079	15.45	0	.106	.138	***
GDP Growth	.3548	.4603	0.77	.4456	-.577	1.2867	
2018b	0	.	.	.	.	.	
2019	-.0048	.0672	-0.07	.9434	-.1408	.1312	
2020	-.0705	.0929	-0.76	.4528	-.2585	.1176	
2021	-.1147	.0938	-1.22	.2289	-.3046	.0752	
2022	-.1189	.0986	-1.21	.2354	-.3186	.0807	
Constant	-.4612	.1943	-2.37	.0228	-.8547	-.0678	**

Mean dependent var	-0.1042	SD dependent var	0.1582
R-squared	0.8838	Number of obs	65
F-test	20.6389	Prob > F	0.0000
Akaike crit. (AIC)	-185.3987	Bayesian crit. (BIC)	-152.7829

**** p<.01, ** p<.05, * p<.1*

The result analysis of 13 Microfinance banks indicates that the coefficient for value of mobile banking is positive (0.2498) but not significant (p-value=0.0793>0.05) relationship with financial performance This suggests that for every unit increase in the value of mobile banking, there is a corresponding 24.98% increase in financial performance, measured by return on assets. The value of internet banking is negative (-0.0025) but not significant (p-value=0.8826>0.05). This indicates that value of internet banking has no meaningful impact on banks' return on assets. The banks factors: capital adequacy is positive (0.0197) but not significant (p=0.6376>0.05) relationship with

financial performance; banks' asset quality is also positive (0.0048) but has no significant impact on return on assets (p=0.3093>0.05); bank efficiency is positive (0.0074) but not significant (p-value=0.2645>0.05). This implies that when the bank factors; assets quality, capital adequacy, bank efficiency and banks' earning strength are low these have negative impact on financial performance.

However, the banks' liquidity ratio showed a positive (0.0548) and significant relationship with financial performance as measured by return on assets (p-value=0.0102<0.05). This implies that for a unit increase in bank liquid assets over the current liabilities during the period of study, there was a corresponding increase in return on assets by 5.48%. The COVID-19 effect showed a positive (0.0581) and significant relationship with financial performance (p-value=0.0454<0.05). This suggests that the banks' financial performance during COVID-19 period improved by 5.81% while other factors are held constant. The GDP growth had a positive (0.3548) but not a significant relationship with financial performance (p-value=0.4456>0.05).

In addition, F-statistic was 20.6389 and Prob>F (0000). The low p-value indicates the overall significance of the model. The cumulative R-squared of 88.38% indicates that the variables examined explain 88.38% of the variations in financial performance. Consequently, the remaining 11.62% may be attributed to factors unique to this study.

The effect observed from the result above is the negative coefficient of value of internet banking (-0.0025) and a positive but no significant impact of mobile banking on financial performance (0.2498). The adverse impact and the lack of a statistically significant correlation between mobile banking, internet banking, and financial performance may be elucidated by the observation that the tangible investment in mobile and internet banking, quantitatively speaking, is categorized as an expenditure. This, in turn, diminishes the operational profit, ultimately contributing to a decline in Return on Assets (ROA) due to reduced net profits. In an alternative interpretation, the insignificance of the effects may stem from the prevailing circumstance where a majority of microfinance banks are currently in the investment stage of adopting digital financial tools, such as mobile banking and internet banking. It is plausible that the revenue derived from these channels at the banks' level has not yet surpassed the break-even point. At this stage, it is likely that

many banks are not generating substantial volumes of mobile banking and internet banking, and consequently, the revenues generated remain insufficient compared to the investments made in digital channels.

4.4 The relationship between Bank Characteristics on Digital Financial Strategies and Financial Performance of Microfinance Banks in Kenya

Prior to conducting the regression analysis, a correlation analysis was performed to examine the relationships between variables. The association was determined using the Spearman rank correlation coefficient. Table 4.9 presents the outcomes.

Table 4.9: Correlation Analysis

Spearman's rho		**log_MBV**	**log_MBT**	**log_IBV**	**log_IBT**
Capital Adequacy	Correlation Coefficient	0.071	0.093	-0.009	0.098
	Sig. (2-tailed)	0.575	0.461	0.944	0.435
Assets Quality	Correlation Coefficient	0.218	0.226	0.114	0.222
	Sig. (2-tailed)	0.081	0.070	0.364	0.076
Log of Assets	Correlation Coefficient	.937**	.946**	.682**	.947**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000
Liquidity Ratio	Correlation Coefficient	0.088	0.064	0.096	0.078
	Sig. (2-tailed)	0.487	0.613	0.446	0.539
Av. Inflation Rate	Correlation Coefficient	0.087	0.077	0.057	0.101
	Sig. (2-tailed)	0.492	0.545	0.651	0.424
GDP Growth	Correlation Coefficient	-0.024	-0.009	-0.235	-0.021
	Sig. (2-tailed)	0.849	0.942	0.059	0.865
Bank Tier	Correlation Coefficient	-.813**	-.847**	-.532**	-.838**

	Sig. (2-tailed)	0.000	0.000	0.000	0.000
Earnings Strength	Correlation Coefficient	.596**	.607**	.449**	.609**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000
Bank Efficiency	Correlation Coefficient	-.543**	-.560**	-.418**	-.563**
	Sig. (2-tailed)	0.000	0.000	0.001	0.000
COVID-19	Correlation Coefficient	-0.007	-0.044	0.133	-0.024
	Sig. (2-tailed)	0.958	0.726	0.291	0.848
Credit Risk	Correlation Coefficient	.245*	.260*	0.174	.249*
	Sig. (2-tailed)	0.050	0.037	0.165	0.045
ROA	Correlation Coefficient	0.002	0.007	0.061	-0.002
	Sig. (2-tailed)	0.986	0.956	0.632	0.990
ROE	Correlation Coefficient	0.078	0.076	0.121	0.070
	Sig. (2-tailed)	0.534	0.547	0.338	0.580
	N	65	65	65	65

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

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

The correlation analysis results in Table 4.9 shows that there is positive, strong and significant relationship between total assets of a bank and mobile banking number of transaction (MBT) of a bank (r= 0.946**, p-value=0.000<0.01); internet banking transaction value of a bank (IBV) (r = 0.682**, p-value=0.000<0.01); internet banking number of transaction (IBT) of a bank (0.947**, p-value=0.000<0.01). This suggests that there is a positive and statistically significant correlation between the total assets of a bank, as a bank characteristic, and the adoption of digital financial strategies, including mobile banking and internet banking. It means that MFBs with large amount of assets are more likely to use of digital financial strategies, and an increase in bank's total assets would significantly increase use of digital financial strategies.

The correlation results further shows that bank earning strength have a positive, moderate and significant association with mobile banking transactions value of bank (r = .596**, p-value=0.000<0.01), mobile banking number of transaction of a bank (r = 0.607**, p-value=0.000<0.01); internet banking transaction value of a bank (r = 0.449**, p-value=0.000<0.01); internet banking number of transaction of a bank (r= 0.609**, p-value=0.000<0.01). This implies that that bank earning strength or an increase in that bank's earning strength would significantly increase use of digital financial strategies (that is, mobile banking, internet banking).

Bank's credit risk (CR) was found to have a weak, but positive and significant relationship with mobile banking transactions value of bank (r = 0.245, p-value=0.050<0.05); mobile banking number of transaction of bank (r = 0.260, p-value=0.037<0.05); internet banking number of transaction of bank (0.249, p-value=0.045<0.05). This means that even though bank's credit risk has an influence on use of mobile banking, its contribution is little or weak.

However, bank tier was found to possess a negative but strong and significant association with mobile banking transactions value of bank (r = -0.0813**, p-value=0.000<0.01); mobile banking number of transaction of bank (r = -0.847**, p-value=0.000<0.01); internet banking transaction value of a bank (IBV) (r = -0.532**, p-value=0.000<0.01); internet banking number of transactions of bank (r = -0.838**, p-value=0.000<0.01). This suggests that the more the bank is in a higher tier, the more it's likely not to adopt/use

mobile banking and internet banking. The banks in lower tiers would more likely adopt/use mobile banking and internet banking than those in higher tiers.

In addition bank efficiency was also found to have a negative but statistically significant association with use of digital financial strategies as shown by the correlation coefficients of mobile banking transactions value of bank (r = -0.543**, p-value=0.000<0.01); mobile banking number of transaction of bank (r = -0.560**, p-value=0.000<0.01); internet banking transaction value of bank (r = -0.418**, p-value=0.001<0.01); internet banking number of transaction (IBT) of a bank (r = -0.563**, p-value=0.000<0.01. This implies that banks with higher efficiency would more likely not adopt/use mobile banking and internet banking. When there is efficiency in the delivery of financial services, they may not see the need to adopt/use mobile banking and internet banking.

Summary Descriptive Statistics

Table 4.10 displays the mean, standard deviation, minimum, and maximum values of the variables.

Table 4.10: Summary of Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic
log_MBV	65	0.60	3.00	1.7526	0.6064
log_IBV	65	0.44	2.52	1.3614	0.5855
Capital Adequacy	65	-3.32	2.66	0.0575	0.7533
Assets Quality	65	-22.00	0.77	-0.2957	2.7670
Log of Assets	65	1.65	4.49	3.1118	0.7900
Liquidity	65	0.01	7.20	0.5294	0.9899
Av. Inflation Rate	65	0.050	0.066	0.0570	0.00525
GDP Growth	65	-0.030	0.076	0.0402	0.03671
Earnings Strength	65	-0.580	0.040	-0.0907	0.14349
Bank Efficiency	65	0.00	16.00	2.2209	3.1270
ROA	65	-14.88	1.54	-0.3125	1.9082
Valid N (listwise)	65				

The findings suggest that both mobile banking (with a mean of 1.7526 and standard deviation of 0.6064) and internet banking (with a mean of 1.3614 and standard deviation of 0.5855) demonstrate moderate variability. This indicates a reasonably consistent level of adoption or usage by microfinance banks. The heightened adoption of these digital banking channels positively influences the financial performance of microfinance institutions.

Regarding capital adequacy (mean of 0.0575; standard deviation of 0.7533) and asset quality (mean of -0.2957; standard deviation of 2.7670), these exhibit moderate and high variability, respectively. This suggests a broad spectrum in the quality of assets held by these institutions. Maintaining a balanced capital structure and effectively managing asset quality across a diverse portfolio are crucial for the stability and growth of microfinance banks.

The efficiency of microfinance banks displays notable variability (with an indicator of 3.127), signifying significant disparities in efficiency levels among these institutions. Operational and managerial efficiency significantly impacts the return on assets in microfinance banks, yet considerable variation among institutions indicates potential areas for improvement.

Furthermore, the GDP growth rate and inflation rates exhibit moderate variability at 0.0367 and 0.0525, respectively. This indicates fluctuations in economic conditions that can impact the return on assets and the ability of microfinance banks to generate income under varying economic circumstances.

4.5 Perception of Microfinance Banks on the Role of Digital Financial Strategies on Financial Performance

To address the third objective of the study which sought to assess the perception of microfinance banks on the role of digital financial strategies on financial performance; primary data was gathered from microfinance banks in Kenya through a questionnaire.

A total of 14 microfinance banks licensed by CBK (as at end of year 2021) were targeted. Each microfinance bank was to fill one questionnaire. Out of the total 14 questionnaire administered, 10 questionnaires were received on time for analysis. This represents a 71%

response rate. According to various research methods authors, for example Babbie and Earl (2009), a 70% and above response rate is deemed very good, and therefore 71% response rate for this study was good enough to continue with the data analysis.

4.5.1 Target Market Segment Customer Segment Focus

The respondents were asked to indicate the customer segment that their organisation focused on. Table 4.11 showcases the results.

Table 4.11: Customer Segment Focus

Customer segment	Frequency	Percentage
Retail	10	100.0
MSME	9	90.0
Corporate	5	50.0

As shown in Table 4.11 above, all the 10 microfinance banks reported that they focused on retail segment; 9 (90%) of the MFB also focused on Micro Small and Medium enterprises (MSME) segment, while half of the banks indicated that they also focused on corporate segment. From the findings it can be seen that Retail and MSME market segments were the primary emphasis of the majority of the MFBs. The concentration on MSMEs could be majorly because this market segment makes the highest number of businesses in Kenya, and they are widespread in almost all sectors of the economy. They have also been shunned away by Conventional commercial banks and therefore it becomes a potential target market for MFBs.

4.5.2 Use of Digital Channels

This section examines the use of digital channels (M-banking and internet banking) and processes in key markets of the MFBs and their contribution to banks' financial performance.

4.5.2.1 Digital Channels the MFBs Used

The study enquired from the respondents on the digital channels their microfinance banks used to reach and serve customers. The outcomes are displayed in Table 4.12.

Table 4.12: Digital Channels the MFBs Used

Digital Channels	Frequency	Percentage
Mobile Banking	10	100.0
Internet Banking	7	70.0

The results presented in Table 4.12 indicate that all ten (10) (100%) MFBs indicated that they used mobile banking to reach and serve customers while 7 (70%) of the MFBs reported that they also used internet banking as a digital channel reach and serve their customers.

The widespread use of these digital channels by MFBs in Kenya to deliver services to consumers can be ascribed to the increased use of mobile phones in the country. This aligns with the statistics reported in a CBK Innovation Survey (2021), where it was disclosed that 92 percent of banking institutions have either adopted or developed a mobile banking solution (app or USSD) to facilitate their management of banking and customer-relationship services.

4.5.2.2 Extent the Mobile Banking has Influenced Various Aspects in the MFBs

The study sought to determine the extent to which mobile banking (M-Banking) had influenced the following aspects in the MFBs. The responses were captured using a five-point Likert scale whereby 1 is 'To no extent', 2 is 'To a little extent', 3 is 'To a moderate extent', 4 is 'To a great extent and 5 is 'To a very great extent. The responses were analysed through means and standard deviation. The results are presented in Table 4.13.

Table 4.13: Extent the M-Banking Influenced Various Aspects in the MFBs

Statements	N	Mean	Std. Deviation
The M-banking platform has helped increase customers deposits and savings in our bank.	10	3.60	1.265
The M-banking platform had enhanced payments and remittances	10	3.30	1.059

The M-banking platform has enhanced loan disbursements.	10	3.40	0.966
The number of bank accounts has increased due to adoption of M-banking.	10	3.30	1.160
The number of transactions has increased due to adoption of M-banking.	10	3.70	1.059
Average		**3.46**	**1.1018**

As shown in Table 4.13, most of the respondent revealed that the number of transactions had increased to a great extent due to adoption of M-banking as shown by a mean score of 3.70 on the Likert scale. The respondents also reported that M-banking platform had helped increase customers deposits and savings in their bank to a great extent (mean score = 3.60). On the other hand, the respondents were of the opinion that The M-banking platform had enhanced loan disbursements to a moderate extent (mean score = 3.40). In addition, the respondents reported that the banking platform had enhanced payments and remittances to a moderate extent, and that the number of bank accounts had increased to a moderate extent due to adoption of M-banking as shown by mean score of 3.30 respectively on the likert scale.

4.5.2.3 Contribution of Digital Banking Services on Bank's Financial Performance

The respondents were asked to rate the contribution of digital banking services in enhancing bank's financial performance. Please select one option for the statement. The responses were captured using a five-point Likert scale whereby 1 is 'Strongly Disagree', 2 is 'Disagree', 3 is 'Neutral', 4 is 'Agree' and 5 is 'Strongly Agree'. The data was analysed through mean scores and standard deviation. The findings are presented in Table 4.14.

Table 4.14: Contribution of Digital Banking Services on Bank's Financial Performance

Statements	N	Mean	Std. Deviation
Optimization of customer acquisition	10	4.10	0.568

Providing excellent customer experience	10	4.40	0.699
Enhanced penetration of unexplored markets and retain existing market share	10	4.00	0.816
Average	**10**	**4.17**	**0.694**

The results in Table 4.14 shows that majority of the respondents agreed that digital banking services enhanced MFBs' financial performance by providing excellent customer experience (mean score = 4.40). The respondents further concurred that digital banking services enhanced the bank's financial performance through optimization of customer acquisition (mean score = 4.10); and through enhanced penetration of unexplored markets and retaining existing market share (mean score = 4.00).

4.5.2.4 Extent Internet Banking Has Influenced Various Aspects in the Bank

The study asked the respondents to indicate the extent to which internet banking had influenced various aspects in their bank. The study employed a five likert scale (1-5) to capture the responses whereby 1 represents 'To no extent', 2 is 'To a little extent', 3 is 'To a moderate extent', 4 is 'To a great extent and 5 is 'To a very great extent. The responses were analysed through means and standard deviation. The results are presented in Table 4.15.

Table 4.15: Extent Internet Banking has Influenced Various Aspects in the Bank

Statements	N	Mean	Std. Deviation
The internet banking has improved interactions between customers and the bank.	7	3.43	0.535
The internet banking platform has helped increase customers deposits and savings in our bank.	7	3.71	0.756
The internet banking platform had enhanced payments and remittances	7	3.86	0.690
The internet banking platform has enhanced loan disbursements.	7	3.43	0.535

The number of bank accounts has increased due to adoption of internet banking.	7	3.14	0.378
The number of transactions has increased due to adoption of internet banking.	7	3.29	0.488
Average		**3.48**	**0.564**

The findings in Table 4.15 show that most respondents indicated that the internet banking platform had enhanced payments and remittances to a great extent (mean score = 3.86); and has also helped increase customers deposits and savings in their bank to a great extent (mean score = 3.71). On the other hand, the respondent reported that the internet banking had improved interactions between customers and the bank to a moderate extent; and also enhanced loan disbursements as shown by a mean score of 3.43 respectively on the likert scale. In addition, the respondents reported that due to adoption of internet banking the number of transactions in the banks had increased to a moderate extent (mean score = 3.29); and there was also an increase in bank accounts to a moderate extent (mean score = 3.14).

4.4.2.6 Internet Banking Influence on Financial Performance of Banks

The study further enquired from the respondents on the extent to which internet banking influenced financial performance of their banks. The findings are presented in Figure 4.1.

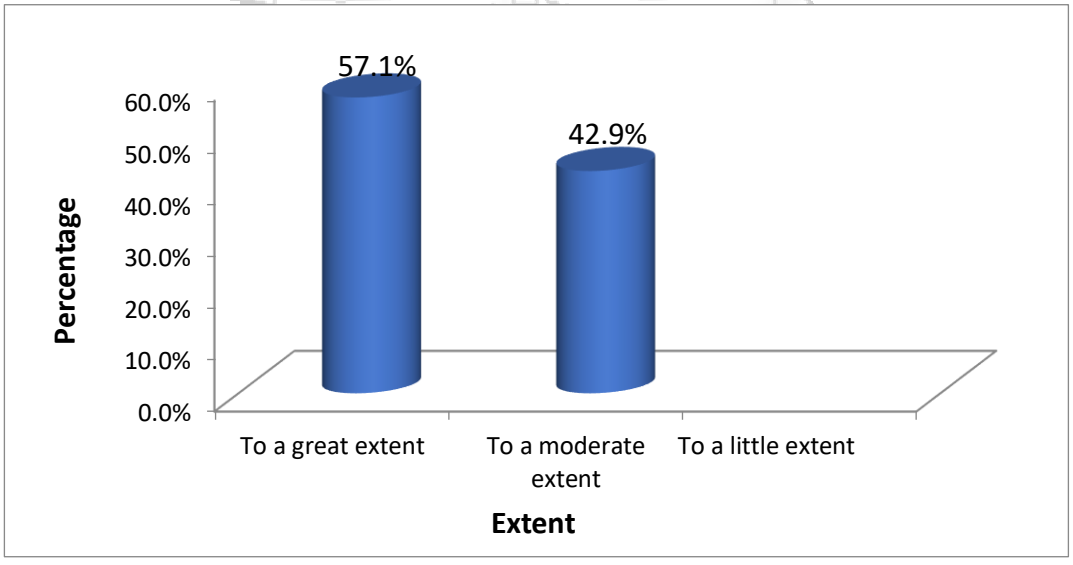

Figure 4.1: Internet Banking Influence on Financial Performance of Banks

Figure 4.1 above shows that a slight majority of the respondents 57.1% reported that internet banking influenced financial performance of their banks to a great extent. On the other hand, 42.9% of the respondents were of the opinion that internet banking influenced financial performance of their banks to a moderate extent.

4.5.3 Digital Channels Adoption in Delivery of Customer Services

4.5.3.1 Key Drivers for Scale up and Uptake of Digital Financial Services

The respondents were asked to indicate what they considered to be the key drivers for scale up and uptake of digital financial services in their banks. The different target banks gave almost similar key drivers which can be summarized as follows: Efficiency and Convenience: The respondents indicated the capability of digital channels to enhance of customer convenience, the ease of transacting, and flexibility that allows users to transact effortlessly had scale up the uptake of digital financial services in their banks; Costs of Operations: Digital tools have the potential to significantly reduce the cost of operations. The respondents stated that aspect of reduction of operational costs associated with the brick and mortar branches, and customers' convenience whereby the customers did not see the need to go to physical branches were fundamental factors to expansion and adoption of digital financial products in their banks; Accessibility: the respondents revealed that this was key in providing convenience as customers can access their accounts and initiate transactions at any time and also be able to manage them; Network connectivity in the country and wide use of mobile phones: Most of the respondents stated the increased network connectivity and increased use of mobile phones especially smart phones had enabled many customers to gain access to financial services that were previously unavailable due to the arrival of digital tools (mobile phones, internet); Regulatory support: Increased legislations and support from Central Bank of Kenya on digital lending and internet banking has been critical to the uptake of digital financial services. For instance, some respondents cited that the latest increase in Mpesa amount limits had made it easier for consumers to deposit and pay bills without having to walk to the banks; Outreach to the unbanked: the potential of digital tools in reaching the underserved populations who have limited access to traditional banking infrastructure was also cited a key driver for the adoption of digital channels. These people include people

in remote areas, those with physical disabilities and individuals with lower incomes; Increase Innovations- The increased growth technological innovations by fintech companies and development of mobile apps had scaled up the uptake of digital financial services; The changing customer behaviors: A good number of respondents also revealed that the changing customer behaviors and need to focus on users experience has been driving the scope and adoption of digital financial services; Marketing efforts and product development: Some of the respondents indicated that the potential of the digital channels to be used for digital marketing efforts and product development have led to scale up and uptake of digital financial services. Through the digital channels the banks are able to define and segment customers based on their behavior, attributes, and action taken on the app.

4.5.3.2 Obstacles to the Expansion of Digital Financial Services

The respondents were tasked with identifying what they perceive to be the primary obstacle to the growth of digital financial services in the microfinance market or sector. The respondents stated the following as the biggest obstacle to the expansion of digital financial services: One is target market literacy: Knowledge gap in digital financial services literacy among potential target customer was cited a major obstacle to the expansion of digital financial services. As argued by ta number of respondents most microfinance banks target distant areas with low digital literacy, making it difficult for them to adopt digital banking solutions. Furthermore, these communities frequently lack dependable internet connectivity, which further impedes the uptake of digital financial services. Another obstacle is cybercrimes - most of the respondents stated that fraudulent cases which emanate from use of DFS have made people shy away from completely trusting the channel. They reported that hacking and other fraudulent actions such as identity theft, phishing scams, and virus assaults were a major obstacle to the expansion of digital financial services. One of the respondents stated that “Individuals or organized organizations are frequently responsible for these cybercrimes, which aim to gain illegal access to sensitive information, cause financial damage, or disrupt online systems”.

Internet connectivity and Infrastructure challenges - Some respondents stated that internet connectivity has been a major obstacle in digital financial services since it restricts access

to banking and payment services for people living in rural locations. One of the respondents stated, “Some areas in the country have unstable mobile networks and people are unable to use online banking services or make digital transactions without stable internet connectivity, hampering financial inclusion initiatives”. Furthermore, lack of internet connectivity raises security concerns because it increases the possibility of personal and financial information being compromised during online transactions. In addition, some respondents reported that low-income earners had limited access to smart phones thus limiting access. A few respondents also indicated that competition in the industry especially from the commercial banks and other digital services providers was a challenge. According to the respondents the costs of digital financial services are high, in terms of staff training costs, and data security issues, which some MFBs may be unable to cater for effectively, as compared commercial banks which have large resources.

4.5.3.2 Values that Digital Financial Services Provide to the Bank

The respondents were asked to indicate the values that digital financial services provide to their bank in terms of favorable prospects to grow operations, mitigate risks and provide services. The respondents reported the following: Wide customer reach: Customers can conduct business and access bank services at their leisure thanks to digital services, which eliminate the need for physical visits to branches. This not only saves clients time and effort, but it also allows banks to serve a bigger audience, including those in remote places or with limited mobility. Furthermore, digital services are available 24 hours a day, seven days a week, allowing clients to handle their funds whenever and wherever they want, increasing convenience and happiness.

Cost effective in management/ Reduced costs of operations: Management costs are lowered because digital services allow for the automation of repetitive tasks, resulting in lower operational costs. Furthermore, digital services offer improved resource allocation and optimization, resulting in additional management cost savings. This can be accomplished through streamlining workflows and eliminating manual processes, resulting in greater efficiency and production.

Physical risks in cash movement reduction: As revealed by number of respondents physical hazards in cash movement have been minimized. This has been reduced to a

greater extent due to digital services such as online banking and mobile payment apps. These digital alternatives provide clients a safer and more convenient method to access and manage their money without requiring real currency transactions. Furthermore, using digital services reduces the danger of theft or loss associated with carrying significant quantities of currency. There was also enhanced product diversification- with the existence of the digital tools, the respondents argued that they can now introduce new financial products and services more easily while leveraging on the platform for example, integration of insurance services.

Furthermore, the respondents revealed that digital financial services have allowed the bank to reach a large customer base. DFS has also allowed for access of credit facilities to customers thus more income lines/channels. Digital financial services had also reduced the risk associated with large transactions since transfers are done digitally; had allowed banks to improve on turnaround time in service delivery thus efficiency; enhanced access to new, untapped markets/ Increased financial inclusion: The respondents indicated that DFS had enhanced ease of market penetration and reaching customers very fast. The power shifts to the customer as it gives them autonomy.

The automation of bank processes which have helped reduce administrative burden. One of the respondents stated that "We have commenced automating loan repayment tracking and including loan origination processes". There was also enhanced data driven decision making, business intelligence. Valuable insights into customer behavior and preferences and well as increase in efficiency in operations, reaching out to thousands of customers within short time, convenience and privacy.

4.5.3.2 Major challenges to Digital financial Strategies Adopted by the Bank

The study enquired from the respondents on the major challenges to digital financial strategies adopted by the bank that may have contributed to poor financial performance. The findings are showcased in Table 4.16.

Table 4.16: Major Challenges to Digital financial Strategies Adopted by the Bank

Major Challenges	Frequency	Percentage
Regulatory and supervisory challenges	8	80.0

Rapidly changing consumer needs	6	60.0
Top Digital talent retention	2	20.0
Infrastructure to meet new business requirements	8	80.0
Budget and resource constraints	6	60.0
Internal factors and change management process	1	10.0

Table 4.16's findings reveal that the majority of respondents (80%) reported that there were regulatory and /or supervisory challenges as well as legacy infrastructure challenges to meet new business demands respectively.

On the regulatory and supervisory challenges, some of the respondents explained that regulatory push back and need to meet consumer protection standards have led a blended approach that do not fully leverage on digital technologies. Other respondents argued that increased transactional fees have reduced the number of transactions and raised the default rate, causing the company's overall revenue to fall. Furthermore, clients have been increasingly hesitant to engage in transactions due to the higher costs involved, reducing the company's profitability even further.

On the legacy infrastructure to meet new business demands, some of the respondents explained that this was a major difficulty for microfinance banks, particularly in remote areas where most customers are digitally illiterate. As a result, microfinance institutions frequently struggle to integrate digital financial services and educate their consumers on the benefits and application of new technologies. Furthermore, poor internet connectivity and a lack of infrastructure worsen the problem, making it more difficult for microfinance institutions to overcome the digital gap in such rural areas. One of the respondents stated that, “The current systems we have lacks interoperability and inadequate network support to reach the majority of consumers of our products”. Some respondents also indicated that investing in research is not only costly but also time consuming. Staff capacity building is required also to allow them to pick key insights from the market to improve on services.

A further 60% of the respondents as shown in Table 4.16 stated that meeting rapidly changing consumer needs, and budget and resource limitations were a challenge to them respectively. The respondents explained that the customer base keeps changing regularly

and so does the competitive industry. Upgrading the services to meet the customer demand may be challenging and costly to the bank and this is a major challenge. One of the respondents stated that, “This is our biggest challenge. By the time we execute the strategies consumer needs have shifted cause of the continuous change of customer behaviour and preferences”.

On budget and resource limitations, the respondents explained that budget constrains may hinder the bank from acquiring new digital solutions since some of them are very costly and income generated may not cover the cost incurred. In addition, due to lack of expanding resources, some banks reported that they have been unable to provide financial services to individuals and businesses in rural areas.

In addition, the results show 20% cited top digital talent retention as major challenge while only 10% cited internal factors and change management process as a major challenge to digital financial strategies adopted by their bank that may have contributed to poor financial performance.

CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a discussion of the study results, conclusion and recommendations as guided by the study objective. At the end of this chapter, the study also suggests areas for further study.

5.2 Discussions of Results

5.2.1 Relationship between Digital Financial Strategies and Financial Performance of Microfinance Banks in Kenya

The other objective of the study was to establish the association between digital financial strategies and financial performance of microfinance banks in Kenya. The regression analysis results showed that value of mobile banking had a positive but not significant relationship with financial performance of MFBs in Kenya (B =0.2498, p-value=0.0793>0.05). This implies that even though an increase in value of mobile banking

would increase financial performance microfinance banks in Kenya, this relationship is not significant. These findings somehow in disagreement with those of Mwariri and Awuor (2020) who revealed that mobile banking positively and significantly influence financial performance of MFIs. A study by Waiganjo (2018) also found out that the value moved through mobile banking influenced financial profitability of the banks to a significant extent.

On the other hand, the study found that the value of internet banking have a negative and statistically insignificant relationship with financial performance of MFBs in Kenya (B = -0.0025, p-value=0.8826>0.05). This indicates that value of internet banking has no meaningful impact on banks' return on assets. These findings however contradicts those of Malhotra (2014) in India and Mwale et al. (2019) in Kenya whose studies revealed that there is positive significant relationship between use of internet banking services and financial performance of commercial banks. These two studies however focused on tier one commercial banks whose characteristics are different from those of MFBs.

5.2.2 Effects of Bank Characteristics on Use of Digital Financial Strategies and Financial Performance

One of the objectives was to determine the effects of bank characteristics and use of digital financial strategies. The findings indicate that total assets of a bank have a positive and significant relationship with use of digital financial strategies, that is, mobile banking and internet banking in microfinance banks in Kenya. These findings corroborate with those of Olowokure et al. (2015) who argued that uniqueness of banks in terms of assets have an influence on quality of decisions on the activities undertaken by a bank (for instance decision to use of digital financial strategies), which in effect, affects the strength of financial performance. The findings are also in in line with those of Rotich et al. (2019) who indicated that bank size was a key predictor of financial performance when economies of scale are considered. The findings also conform to the tenets of the Dynamic capability theory, which indicates that dynamic capability of a firm is determined by assets/ resources. This means that organisations (microfinance banks) with huge or high number of assets/resources are able to leverage assets and quickly adapt to the changing

market environments, keep innovating and come up with relevant products and services that meet the needs of their clients.

The study also found out that of bank characteristics such as bank earning strength and bank's credit risk have a positive and significant influence on use of digital financial strategies (mobile banking and internet banking) in microfinance banks in Kenya. However, bank efficiency was found to have a negative but significant association with use of digital financial strategies in microfinance banks in Kenya. These findings contradict those of Abel and Roux (2016) who examined the relationship between efficiency, among other bank characteristics on performance of banks in Zimbabwe and found a positive relationship between efficiency and financial performance. The author argued that an increase in economic activities increases the demand for financial services which increases efficiency.

The correlation results also shows that both bank's earning and credit risk have a positive and significant association with both mobile banking and internet banking in terms of number of transactions and transaction value. This implies that these two bank characteristics have a positive and significant influence on the use of digital financial strategies in MFBs in Kenya.

The results however show that bank tier and bank efficiency have a negative but statistically significant association with both mobile banking and internet banking in terms of number of transactions and transaction value. This therefore means that these two bank characteristics negate the use of digital financial strategies in MFBs in Kenya.

5.2.3 The Perception of Microfinance Banks on the role of Digital Financial Strategies on Financial Performance

The study also examined the perception of microfinance banks on the role of digital financial strategies on financial performance. The findings first revealed that majority of the microfinance banks majorly focused on retail customer segment and Micro Small and Medium enterprises (MSME) customer segment. MFBs have been found to play key role in driving financial inclusion by offering financial intermediary services to the larger rural population segment in retail banking through outreach of the unbanked and under banked

customers and MSMEs considered risky and volatile by the large commercial banks (CBK Annual supervision report, 2021); IFC report, 2017).

The study found out that mobile banking and internet banking were the two major digital channels that were used to reach and serve customers of the MFBs. Mobile banking was greatly used than internet banking. These findings are in agreement with Central bank of Kenya (CBK) report of 2021 which revealed that the increased adoption of smartphones and increased internet penetration also played a key role in the proliferation of digital finance through digital platforms which has provided access to a range of financial products and services event to the underserved and unbanked.

As indicated by the findings, the respondents revealed that adoption of M-banking had increased the number of transactions to a great extent and further helped to increase customers' deposits and savings in their bank. These findings are in agreement with those of Tiriong and Wamalwa (2020) who asserted that mobile services adoption impacted the number of deposit accounts and the values mobilized through these account/ platforms hence supporting even remittances flows. On overall the respondents agreed that digital banking services enhanced MFBs' financial performance by providing excellent customer experience; through optimization of customer acquisition; and through enhanced penetration of unexplored markets and retaining. On the other hand, a slight majority of the respondents were of the opinion that internet banking influenced financial performance of their banks to a great extent. The above finding corroborates with those of a study by Kiragu (2017) which examined the effects of electronic banking on the financial performance of Kenyan banks and found out that electronic banking platforms (mobile banking, internet banking) enhanced service delivery to their customers, and it had a positive impact on profitability/financial performance of the banks. The above findings are also in agreement with a study by Mwariri and Awuor (2020) investigated the influence of adoption of mobile banking on the financial performance of MFIs and Mwale et al. (2019) who studied the effect of internet banking on financial performance of tier one commercial banks in Kenya and found out that mobile banking positively and significantly influence financial performance of MFIs, and internet banking has a positive

significant relationship with financial performance of tier one commercial banks, respectively.

The respondents stated there were key drivers for scale up and uptake of digital financial services in their banks. The key drivers highlighted include: efficiency and customer convenience, (reduced) costs of operations, need to give customers increased accessibility of their accounts or financial services, regulatory support, availability of network connectivity in the country and wide use of mobile phones, increase technological innovations, the need to reach to the unbanked population, and the changing customer behaviors.

The respondents however reported that there were challenges or obstacles hindered the adoption and expansion of digital financial strategies by the MFBs, the challenges highlighted by the respondents includes: target market literacy, cybercrimes, internet connectivity and infrastructure challenges, competition in the industry especially from the commercial banks, regulatory and /or supervisory challenges, legacy infrastructure to meet new business demands, rapidly changing consumer needs, budget and resource limitations. These findings corroborate with those of Dabrowski (2017) who found that increased adoption of technology in the provision of services was susceptible to abuse, and fraud. Waiganjo (2018) also found that fraud and cybercrime were a major challenge while studying the effect of mobile banking on the financial profitability of Tier 1 commercial banks in Kenya. The above findings are also in agreement with the sentiments of IFC (2018) who reported that the regulatory restrictive conditions have to some extent-imposed limitations on digital financial services thereby lowering consumer uptake.

5.2 Conclusions

The concludes that total assets of a bank (which depicts banks size), bank's earning strength and bank's credit risk have a positive and significant influence on use of digital financial strategies (mobile banking and internet banking) in microfinance banks in Kenya. This means that these banks' characterises are very critical in influencing the use of digital financial strategies. Banks assets for instance give MFBs the resource muscle to adapt to the changing market environments which includes adopt relevant technological innovations to reach and serve their customers. The same with banks earnings, which

informs the banks' profits which are key to banks growth and expansions, as well as increased adoption and use of digital financial strategies.

The study also concludes that mobile banking in terms of transactions value has a positive relationship with financial performance of MFBs in Kenya. This implies that an increase in transactions value of mobile banking would increase financial performance microfinance banks in Kenya. The use of M-banking helped increase the number of transactions and also increase customers' deposits and savings in the banks to a great extent. On the other and, even though the inferential statistics found that the value of internet banking have a negative and statistically insignificant relationship with financial performance of MFBs in Kenya; the banks were of the view that internet banking influenced financial performance of their banks to a great extent. These digital banking services enhanced MFBs' financial performance by providing excellent customer experience; through optimization of customer acquisition; and through enhanced penetration of unexplored markets and retaining.

The study also concludes that the key drivers for scale and uptake of digital financial services among MFB are: efficiency and customer convenience, (reduced) costs of operations, need to give customers increased accessibility of their accounts or financial services, regulatory support, availability of network connectivity in the country and wide use of mobile phones, increase technological innovations, the need to reach to the unbanked population, and the changing customer behaviors.

There were however challenges and obstacles hindered the adoption and expansion of digital financial strategies by the MFBs, the challenges highlighted by the respondents includes: target market literacy, cybercrimes, internet connectivity and infrastructure challenges, competition in the industry especially from the commercial banks and fintech firms, regulatory and /or supervisory challenges, budget and resource limitations, legacy infrastructure to meet new business demands, and rapidly changing consumer needs.

5.4 Recommendations

5.5.1 Recommendations for Practice and Policy

The study recommends for increased regulatory support by CBK. The CBK as the regulator of MFBs should continually develop appropriate regulations and policies that encouraging the adoption and uptake of appropriate digital financial strategies or technologies that promotes financial performance of the banks, customer centricity and financial inclusion. The recent regulations to increase MPESA daily limits that an individual can transact in a day is an example of a regulation that can enhance use of digital financial strategies even by MFBs; the expansion of the digital payment wallets including regulation of cryptocurrency exchanges.

The CBK should promote innovation sandboxes. The creation of regulatory sandboxes that allow banks and fintech companies to test new products and services in a controlled environment, without immediately facing the full burden of regulatory compliance. This can encourage experimentation and innovation in the digital financial services space.

In order to enhance their financial performance, MFBs should continually adopt and encourage use appropriate digital financial strategies. The top management of MFBs should allocate/ commit more resources towards strategies geared towards enhanced adoption and use digital financial services. There is evidence that use of digital financial strategies can enhance efficiency of banks, enhance customer convenience, reduce costs of operations, enhanced penetration of unexplored markets and retaining, and used of these digital platforms to market and develop more relevant products for the customers.

There are however challenges that can negate the adoption and use of digital financial services or tools which includes: cybercrimes, internet connectivity and infrastructure challenges, regulatory and /or supervisory challenges, target market literacy. In this regard, the study recommends that the MFB should invest and put appropriate security safeguards including employing qualified staff to prevent and to monitor their digital financial platforms from illegally access by hackers, and thus give their customers confidence to use the digital financial platforms to transact. The banks should invest or spend more in developing appropriate technological infrastructure to support effective use of digital financial tools. In addition, they can also invest on awareness programme to educate their target market on the importance of use of digital financial platforms; this can also enhance increased financial inclusion of the unbanked population.

5.5.2 Recommendations for Further Research

The study as informed by the secondary data found out that internet banking had a negative and statistically insignificant relationship with financial performance of banks as measured by banks' return on assets. These findings were contrary to various studies earlier reviewed. In this regard, the study recommends that a similar study needs to be conducted for comparison of results. In addition, a future study on relationship between digital financial strategies and financial performance can be conducted also in other types of financial institutions including SACCOs, since most of the studies as previously reviewed have been conducted in commercial banks.

5.5 Limitations of the Study

In carrying out the study, there were some challenges or limitations encountered especially in the data collection process. First, in the collection of secondary data, the MFBs did not have well summarised data and the study relied heavily from CBK annual reports and other set of data reports. In addition, some of these data were termed as confidential and both CBK and the banks were not readily willing to share to a third party. This was the same case when the questionnaires were distributed to the respondents in the individual banks. Most respondents were not willing to give information they termed strategic for their businesses. However, the researcher explained and assured respondents and the institutions that the data was to be used for the purposes of a research study only and would not be shared with other third parties not involved this study.

REFERENCES

Abel, S., & Roux, P. L. (2016). Determinant of Banking Sector Profitability in Zimbabwe. *International Journal of Economics and Financial Sciences, 6*(9), 455-470.

Adanu, M.A. & Osita, E.O. (2022). The Impact of Revolution Strategies and Competitive Advantage on Nigerian Banks. *International Journal of Entrepreneurship, Innovation, and Business Strategies, 1*(1), 26 – 38.

Ahmed, O. N., & Wamugo, L. (2018). Financial Innovation and the Performance of Commercial Banks in Kenya. *International Journal of Current Aspects in Finance, 4*(2), 133-147.

Al-Mudimigh, A., Anshwari, M., & Masri, M. (2020). Financial Technology and Disruptive Innovation Business. *International Journal of Asian Business and Information Management, 11*(4), 29-43.

Al-Samadi, M., & Al-Wabel, S. (2014). Impact of Electronic banking on the Performance of Jordanian banks. *Journal of Internet Banking and Commerce*, *16*(2), 34-45.

Alu, A. O. (2002). *Effects of Information Technology on Customer Service in the Banking Industry in Nigeria*. M.B.A. Thesis, Obafemi, Awolowo University, ile-Ife Nigeria.

Armstrong, C. E., & Shimizu, K. (2007). Review of Approaches to Empirical Research on Resource Based View of the Firm. *Journal of Management*, *33*(6), 959–986

Ariyasema, D., & Jayarathne, T. (2019). Navigating Cyberspace for Socio Economic Transformation and Redefining Management in Light of Digital Economy. *Proceedings of the 8th International Conference on Management and Economics-2019.* Sri Lanka.

Arthur, K. N. A. (2017). Financial innovation and its governance: Cases of two major innovations in the financial sector. *Financial Innovation, 3*(10), 1-12, https://doi.org/10.1186/s40854-017-0060-2

Asante, K., Owen, R., & Williamson, G. (2014). Governance of new product development and perceptions of responsible innovation in the financial sector: insights from an ethnographic case study. *J Responsible Innov* 1:9–30

Atalaya, M., Anafarta, N. & Sarvanc, F. (2013). The relationship between innovation and firm performance: Empirical evidence from Turkish automotive supplier industry.

2nd International Conference on Leadership, Technology, and Innovation Management. *Procedia - Social and Behavioral Sciences, 7*(5), 226 – 235.

Barney, J. (2004). Firm Resources and Sustained Competitive Advantage. *Journal of Management, 17*(1), 99-120

Bazmi, N., Javed, N., Nazir, M. & Raza, S.A. (2015). *Effect of plastic money on the performance of the banking sector of Pakistan. Journal of Research in Economics and International Finance (JREIF), 4*(1) 22 – 26.

Beck, T., Tao, Chen, Chen, L., & Frank, M. S. (2016). Financial Innovation: The bright and the dark sides. *Journal of Banking and Finance, 72*, 28-51.

Bryman, A., & Bell, E. (2011). *Business Research Methods.* Oxford: Oxford University Press.

Chala, M., & Bessie, S. (2016). Factors Affecting Performance of Microfinance Institution in Bala Zone, Oromia Region. *European Journal of Business Management,* 8(16), 107-118.

Cameron, A., & Trived, P. (2010). *Microeconometrics using STATA.* Stat Press.

Capital Market Authority, Central Bank of Kenya, Insurance Regulatory Authority & Retirement Benefit Authority. (2021). *Kenya Financial Sector Stability Report.* Nairobi: Financial Sector Regulators.

Central Bank of Kenya. (2012). *Bank Supervision Annual Report.* Nairobi: Central Bank of Kenya.

Central Bank of Kenya. (2015). *Banking Sector Supervision Report.* Nairobi: Central Bank of Kenya. Retrieved from www.centralbank.go.ke

Central Bank of Kenya. (2017). *Banking Sector Supervision Report.* Nairobi: Central Bank of Kenya. Retrieved from www.centralbank.go.ke

Central Bank of Kenya (2018). *Bank Supervision Annual Report, 2017*. Nairobi: Central Bank of Kenya https://www.centralbank.go.ke

Central Bank of Kenya. (2021). *Bank Supervision Annual Report.* Nairobi: Central Bank of Kenya.

Central Bank of Kenya, Kenya National Bureau of Statistics & FSD Kenya. (2019). *2019 FinAcess Household Survey.* Nairobi: Central Bank of Kenya.

Ching M. C., Chuan, A. T., Sim, J. J. Kam, H. & Tan, B. (2011). Factors Affecting Malaysian Mobile Banking Adoption: An Empirical Analysis. *International Journal of Network and Mobile Technologies, 2*(3), 161-173.

Choi, J., & Moon, T. (2015). The Influence of resource competence on convergence performance through dynamic convergence capabilities. *Indian Journal of Science and Technology, 8*(25), 1-9.

Cornelius, K., & Youngsun, K. (2018). Beyond the Boundaries: challenges for Business, Policy and Society. *22nd Biennial Conference of the International Telecommunication.* Seoul.

Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (3rd ed.). London: Sage Publications.

Dabrowski, M. (2017). *Potential Impact of Financial Innovation on Financial Services and Monetary Policy.* Centre for Social and Economic Research Report.

Douglas, W. D. (1984). Financial Intermediation and Delegated Monitoring. *Review of Economic Studies, 51*(3), 393-414.

Durrah, O., Abdul-Rahman, A. A., Jamil, S. A., & Ghafeer, N. A. (2019). Exploring the Relationship between Liquidity Ratios and Indicators of Financial Performance: An Analytical Study on Food Industrial Companies Listed in Amman Bursa. International Journal of Economics and Financial Issues, 6(2), 435–441. Retrieved from https://www.econjournals.com/index.php/ijefi/article/view/2045

Dzombo, G. K., Kilika, J. M., & Maingi, J. (2018). The Mediating Effect of Financial Inclusion on the Relationship between Branchless Banking Strategy and Performance of Commercial Banks in an Emerging Market:The Case of Kenya. *International Journal of Economics and Finance, 10*(7), 161-176.

Easterby-Smith, M., Lyles, M.A., and Peteraf, M.A. (2009). Dynamic capabilities: current debates and future directions. *British Journal of Management 20*: S1–S8.

Frame, W. S., Wall, L.D., and White, L.J. (October, 2018). *Technological Change and Financial Innovation in Banking: Some Implications for Fintech*. FRB Atlanta Working Paper No. 2018-11, Available at SSRN: https://ssrn.com/abstract=3261732 or http://dx.doi.org/10.29338/wp2018-11

Franz, J. & Omolo, J. (2014). *Youth Employment Initiatives in Kenya: A Report of Review Commissioned by the World Bank and Kenya Vision 2030*. Nairobi: World Bank and Vision 2030 Delivery Secretariat.

Giordani, G., & Floros, C. (2013). How the Internet affect financial performance of Greek banks. *International Journal of Financial Services Management, 6*(2), 170-177.

Ghosh, A. (2015). Banking Industry Specific and Regional economic determinants of non-performing loans:evidence from U.S States. *Journal of Financial Stability, 20*, 93-104.

Greene, W. H. (2008). *Econometric Analysis* (6th Ed. ed.). Upper Saddle River: Pearson Prentice Hall.

Gurley, U. G., & Shaw, E. S. (1960). *Money in a Theory of Finance*. Brookings, Washington DC.

Hair, J., Money, A., Page, M., & Samouel, P. (2007). *Research Methods for Business.* London: Routledge.

Harelimana, J. B. (2017). Impact of Mobile Banking on Financial Performance of Unguka Microfinance Bank, Rwanda. *Journal of Management and Business Research, 17*(4), 1-14.

Henning, E., Rensburg, W. V., & Smit, B. (2004). *Finding Your Way in Qualitative Research.* SAGE.

Hsiao, C. (2003). *Analysis of Panel Data.* London: Cambridge University Press.

International Finance Corporation. (2017). *Comprehensive New Data Reassesses the MSME Finance Gap in Developing Countries.* Berlin: Global Partnership for Financial Inclusion.

International Finance Corporation. (2018). *Digital Access: The Future of Financial Inclusion in Africa.* World Bank Group.

InfoDev (2013). *Crowdfunding's Potential for the Developing World. infoDev, Finance and Private Sector Development Department*. Washington, DC: World Bank

Jia, K., He, Y., & Mohsin, M. (2022). Digital financial and banking competition network: Evidence from China. *Front Psychol., 13*, 1104120. doi: 10.3389/fpsyg.2022.1104120. PMID: 36793365; PMCID: PMC9922694.

Kalunda, E., & Ogada, A. (2019). Financial Inclusion Using Traditional Banking Channels and Its Effects on Financial Performance of Commercial Banks in Kenya. *The University Journal, 1*(3), 131-148.

Kaur, S.J., Ali, L., Hassan, M.K. et al. (2021). Adoption of digital banking channels in an emerging economy: exploring the role of in-branch efforts. *J Financ Serv Mark 26*, 107–121. https://doi.org/10.1057/s41264-020-00082-w

Kiragu, M. (2017). *Effects of E-Banking on the Financial Performance of Kenyan Banks.* Unpublished Bachelor Thesis. Vaasan Ammattikorkeakoulu, University of Applied Sciences.

Kenya Bankers Association. (2018) Banking Industry Sector Report 2017.

Kiemo, S., & Mugo, C. (2021). Banking Sector Consolidation and Stability in Kenya. *Journal of Applied Finance and Banking, 11*(3), 129-159.

Kigen, K.P. (2010). *The Impact of Mobile Banking on Transaction Costs of Microfinance Institutions.* Unpublished MBA Thesis, University of Nairobi, Nairobi.

King, M. (2016). *The End of Alchemy: Money, Banking, and the Future of The Global Economy* (2nd ed.). New York: W. W. Norton & Company.

Kipkemboi, K., & Bahia, K. (2019). *The Impact of Mobile Money on Monetary and Financial Stability in Sub-Saharan Africa.* GSMA Report.

Kristen, R., & Sengupta, R. (2016). Has the Relationship between Bank Size and Profitability Changed? *Economic Review*(Q II), 49-72. Retrieved from www.kansascityfed.org

Kithinji, N. L. (2018). *Effect of mobile lending on quality of bank loan portfolio: A case of selected Commercial banks in Kenya (*Doctoral dissertation, School of Business, University of Nairobi.

Kothari, C. R. (2004). *Research Methodology: Methods and Techniques* (2nd Edition ed.). New Delhi: New Age International.

Kumar, C. R. (2008). *Research Methodology.* APH Publishing Corporation.

Kung'u, A. N. (2015). *Competitive Strategies Adopted by Equity Bank Kenya Limited to Cope with Technological Changes*. MBA Thesis. University of Nairobi.

Lenka, S. K., & Barik, R. (2018). Has expansion of mobile phone and internet use spurred financial inclusion in the SAARC countries? *Financial Innovation*, 1-19. doi:10.1186/s40854-018-0089

Levich, R. (1985). "Empirical Studies of Exchange Rates: Price Behavior, Rate Determination and Market Efficiency," *in Handbook of International Economics*: Volume 2 ed. by R. W. Jones and P. B. Kenen . Amsterdam: North-Holland.

Liu, E.X. (2021). Stay Competitive in the Digital Age: The Future of Banks. *International Monetary Fund (IMF) Working paper*, Volume/Issue: Volume 2021: Issue 046. DOI: https://doi.org/10.5089/9781513570051.001

Lyytinen, K., Damsgaard, J. (2001). What's Wrong with the Diffusion of Innovation Theory?. In: Ardis, M.A., Marcolin, B.L. (eds) *Diffusing Software Product and Process Innovations*. TDIT 2001. IFIP — The International Federation for Information Processing, vol 59. Springer, Boston, MA. https://doi.org/10.1007/978-0-387-35404-0_11

Malhotra, P., & Singh, B. (2014). The Impact of Internet Banking on Bank Performance and Risk: The Indian Experience. *Eurasian Journal of Business and Commerce*, *2*(4), 43-62.

Malenya, W. M., & Kariuki, D. (2017, October 12). Characteristics of Microfinance Banking Services and Financial Inclusion in Kenya. *Journal of Management, 4*(4), 512-527.

Markides C. (2014), "Disruptive Innovation: In Need of Better Theory," *Journal of Product Innovation Management* 23(1), 19-25.

McGregor, R. T. (2013). *Mobile Banking: Increasing Access to Financial Services*. Master of Public Policy Unpublished Thesis in Georgetown University.

Miller, M. H. (1986, December). Financial Innovation: The Last Twenty Years and the Next. *Journal of Financial and Quantitative Analysis, 21*(4), 459-471.

McKinsey & Company (March, 2016). *Digital Globalization: The New Era of Global Flows.* McKinsey Global Institute. Retrieved from: https://www.mckinsey.com/~/media/

Misati, R., Osoro, J., Odongo, M., & Abdul, F. (2022). Does digital financial innovation enhance financial deepening and growth in Kenya? *International Journal of Emerging Markets.* DOI 10.1108/IJOEM-09-2021-1389

Misati, R., Kamau, A., Kipyegon, L., & Wandaka, L. (2020). Is the Evolution of Fintech complementary to Banks Performance in Kenya. *Kenya Bankers Association Working Paper Series*. Kenya Bankers Association.

Mugenda M. O. & Mugenda A. (2003). *Research Methods: Qualitative and Quantitative Approaches.* Nairobi: African Centre for Technology Studies.

Muhindi, A. K., & Ngaba, D. (2018). Effect of Firm Size on Financial Performance of Banks: Case of Commercial Banks in Kenya. *International Academic Journal of Economics and Finance, 3*(1), 175-190.

Mulwa, J. M., & Kosgei, D. (2016). Commercial Bank Diversification and Financial Performance: The Moderating Role of Risk. *Journal of Finance and Investment Analysis, 5*(2), 31-50.

Muriithi, J. G. (2016). *Effect of financial risk on financial performance of commercial banks in Kenya.* Unpublished Doctoral Thesis, Jomo kenyatta University of Agriculture and Technology, Kenya.

Muthiora, B. (2015). *Enabling Mobile Money Policies in Kenya: Fostering a Digital Financial Revolution.* London: GSMA.

Mwale, A. N., Jagongo, A. O., & Ndede, F. (2019). Effects of Internet Banking on Financial Performance of Tier One Commercial Banks in Kenya. *Journal of Entrepreneurship and Organization Management, 8*(1), 1-8.

Mwariri, P., M. & Awuor, E. (2020). Influence of Adoption of Mobile Banking Strategy on the Financial Performance of Micro-Finance Institution in Nanyuki Town, Kenya, *Journal of Finance and Accounting,* 4(4), 14-24.

Myers, M. D. (2009). *Qualitative Research in Business and Management.* Sage Publications, Thousand Oaks, CA.

Nazaritehrani, A., & Mashali, B. (2020). Development of E-banking channels and market share in developing countries. *Financ Innov 6*, 12. https://doi.org/10.1186/s40854-020-0171-z

Ogutu, M., & Fatoki, O. I. (2019). Effect of E-Banking on Financial Performance of Listed Commercial Banks in Kenya. *Global Scientific Journal, 7*(1), 722-738.

Ohiani, A.S. (2021), "Technology innovation in the Nigerian banking system: prospects and challenges", *Rajagiri Management Journal, 15*(1), 2-15. https://doi.org/10.1108/RAMJ-05-2020-0018

Olowokure, O., Tanko, M., & Nyor, T. (2015). Firm Structural Characteristics and Financial Reporting Quality of Listed Deposit Money Banks in Nigeria. *International Business Research, 9*(1), 106-122.

Ouma, S. A., Odongo, T. M., & Were, M. (2017). Mobile Financial Services and Financial Inclusion:Is it a boon for Saving Mobilization? *Review of Development Finance*. doi:http://dx.doi.org/10.1016/j.rdf.2017.01.001

Ozili, P. K. (2018). Impact of Digital Finance on Financial Inclusion and Stability. *Borsa Instanbul Review, 18*(4), 329-340.

Pazarbasioglu, C., Mora, A. G., Uttamchandani, M., Natarajan, H., Feyen, E., & Saal, M. (2020, April). *Digital Financial Services*. World Bank Group.

Rose, P. S. (1999). *Commercial bank management*. Boston, Irwin/McGraw-Hill.

Rosen. (2013). *Branchless Banking in Kenya- Does Mobile Banking and Agent Banking Have The Potential to Lift Welfare of Low-Income Individuals?* Lund University.

Rotich, T., Lishenga, J., & Mwangi, I. (2019). The Effect of Bank Size on Profitability of Commercial Banks in Kenya. *International Journal of Economics, Commerce and Management, 7*(12), 202-216.

Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research Methods for Business Students* (4th Edition ed.). Edinburg: Financial Times Prentice Hall.

Scholtens, B., & Wensveen, V. D. (2003). Theory of Financial Intermediation: What it Does(Not) Explain. *SUERF Studies,* SUERF -The European Money and Finance Forum.

Scott, S. V., Van, R. J., & Zachariadis, M. (2017). The Long term Effect of digital innovation on bank performance: An empirical study of SWIFT adoption in financial services. *Research Policy, 46*(5), 1030-1039.

Silber, W.L. (1983). The process of financial innovation. *Am Econ Rev* 73(2), 89–95

Statista, PwC and Galileo (2022). *Digital Banking in 2022: Trends and Statistics*. Accessed on January 28th, 2023, from: https://www.bankrate.com/banking/digital-banking-trends-and-statistics/#digital-trends

Tan, L. (2014). Correlational Study. In Thompson, W.F. (Ed.), *Music in the Social and Behavioral Sciences: An Encyclopedia* (pp. 269-271). Thousand Oaks: SAGE Publications.

Teece, D. (2009). *Dynamic Capabilities and Strategic Management: Organizing for Innovation and Growth.* New York: Oxford University Press.

Tiriongo, S., & Wamalwa, P. (2020, May). The Effect of Mobile Money on Banking Sector Stability in Kenya. *Kenya Bankers Association Center for Research on Financial Markets and Policy Working Paper Series*. Kenya Bankers Association.

Tufano, P. (2003). Financial Innovation. *Handbook of the Economic Finance, 1,* 307-336

Tunay, B. K., Tunay, N., & Akhisar, I. (2015). The Effects of Innovation on Bank Performance: The Case of Electronic Banking Services. *Journal of Social & Behavioral Sciences, 195,* 369-375. Retrieved from http://www.sciencedirect.com

UNEP, (2014), *New Economics Foundation (NEF)*. Retrieved from: www.unep.org/ green economy/financialinquiryUNEP

Wachira, V. K., Kalui, F., & Gathii, J. (2021). Digital Financial Innovation Services and their Impact on the performance of commercial banks in Kenya. *European Journal of Economics and Financial Research, 5*(3), 1-13.

Wadesango, N., & Magaya, B. (2020). The Impact of Digital Banking Services on Performance of Commercial Banks in Kenya. *Journal of Management Information and Decision Sciences, 23*(1), 343-353.

Waiganjo, C. W. (2018). *Effect of mobile banking investment on financial profitability - A Case of Tier one banks in Kenya* (Thesis). Strathmore University. Retrieved from http://suplus.strathmore.edu/handle/11071/5974

Wakaba, V., & Wepukhulu, J. M. (2019). Effect of Mobile Money Services on Kenya Financial Inclusion. *International Journal of Finance and Accounting, 4*(2), 1-18.

Wambari, P. A. M (2009), *Mobile banking in developing countries. A case study on Kenya*. Unpublished Master's Thesis, University of Nairobi.

Wecker, N, (December, 2012). "*Weigh the Benefits, Disadvantages of Attending a Non-ABA Law School*." American Bar Association. Retrieved from: https://www.americanbar.org/

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data* (2 ed.). MIT Press.

Zimmerman, J. M. (2016). Understanding how consumer risks in digital social payments can erode their financial inclusion potential. *International Journal of Electronic Finance, 2*(2), 149-169.

APPENDICES

Appendix 1: Survey Questionnaire

Organization Code:

Contact Person:

Years of Establishment:

Section A: Target Market Segment

Please respond from the overall perspective of the key markets in which your business operates

1) What customer segment is your focus (select all that apply)
   a) Retail [ ]
   b) MSME [ ]
   c) Corporate [ ]

Section B: Use of Digital Channels (e.g., M-Banking and Internet Banking) and Processes in Key Markets

1) Please select either or both the digital channels the bank use to reach and serve customers.
   ☐ Mobile Banking
   ☐ Internet Banking

   Mobile Banking

   a) To what extent has mobile banking (M-Banking) influenced the following aspects in your bank?

Statements	**To no extent**	**To a little extent**	**To a moderate extent**	**To a great extent**	**To a very great extent**
The M-banking platform has helped increase customers deposits and savings in our bank.					

The M-banking platform had enhanced payments and remittances					
The M-banking platform has enhanced loan disbursements.					
The number of bank accounts has increased due to adoption of M-banking.					
The number of transactions has increased due to adoption of M-banking.					

b). In your opinion, how would you rate the contribution of digital banking services in enhancing bank's financial performance through the following services. Please select one option for the statement.

Statement	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Optimization of customer acquisition					
Providing excellent customer experience					
Enhanced penetration of unexplored markets and retain existing market share					

Internet Banking

a) To what extent has internet banking influenced the following aspects in your bank?

Statements	To no extent	To a little extent	To a moderate extent	To a great extent	To a very great extent
The internet banking has improved interactions between customers and the bank.					
The internet banking platform has helped increase customers deposits and savings in our bank.					
The internet banking platform had enhanced payments and remittances					
The internet banking platform has enhanced loan disbursements.					
The number of bank accounts has increased due to adoption of internet banking.					
The number of transactions has increased due to adoption of internet banking.					

b). On overall to what extent has internet banking influenced financial performance of your bank?

To a very great extent [ ] To a great extent [ ] To a moderate extent [ ]

To a little extent [ ] To no extent [ ]

C) Digital Channels Adoption in delivery of customer services

i) what do you consider to be the key drivers for scale and uptake of digital financial services in your bank?

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ii) what do you consider to be the biggest obstacle to the expansion of digital financial services in the microfinance market or sector……

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iii) what values do digital financial services provide to the bank in terms of opportunities to grow operations, manage risks and deliver services?.....

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iv) What are the major challenges to digital financial strategies adopted by the bank that may have contributed to poor financial performance? (Select the possible challenges that applicable to your business)

Challenges	**Explanation (Remarks)**
a) Regulatory and /or supervisory challenges	
b) Meeting rapidly changing consumer needs	
c) Top Digital talent retention	
d) Infrastructure to meet new business requirements	
e) Budget and resource constraints	
f) Internal factors and change management process	

Appendix II: List of Microfinance Banks

1) Caritas Microfinance Bank Limited.
2) Century Microfinance Bank Limited.
3) Choice Microfinance Bank Limited.
4) Daraja Microfinance Bank Limited.
5) Faulu Microfinance Bank Limited.
6) Kenya Women Microfinance Bank Plc.
7) Maisha Microfinance Bank Limited.
8) Muungano Microfinance Bank Limited.
9) Rafiki Microfinance Bank Limited.
10) Key Microfinance Bank Limited.
11) SMEP Microfinance Bank Limited.
12) Sumac Microfinance Bank Limited.
13) U&I Microfinance Bank Limited.
14) Uwezo Microfinance Bank Limited

Source: Central Bank 2022 Report

Appendix III: National Commission for Science, Technology and Innovation Approval License

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION

Ref No: **437496**

Date of Issue: **12/April/2023**

RESEARCH LICENSE

This is to Certify that Mr.. Washington Muna Ondago of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: RELATIONSHIP OF DIGITAL FINANCIAL STRATEGIES AND FINANCIAL PERFORMANCE OF MICROFINANCE BANKS IN KENYA for the period ending : 12/April/2024.

License No: **NACOSTI/P/23/25153**

437496

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NATIONAL COMMISSION FOR
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Appendix IV: Ethical Approval Letter

Strathmore UNIVERSITY

28th March 2023

Mr Ondago Washington Muna,
Washington.Muna@strathmore.edu

Dear Mr Ondago,

RE: Relationship between Digital Financial Strategies and Financial Performance of Microfinance Banks in Kenya

This is to inform you that SU-ISERC has reviewed and **approved** your above SU-masters research proposal. Your application reference number is **SU-ISERC1644/23**. The approval period is from **28th March 2023 to 27th March 2024**.

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, and MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 48 hours of notification
iv. Any changes, anticipated or otherwise, that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 48 hours
v. Clearance for the export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

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

Yours sincerely,

for: **Dr Ben Ngoye,**
Secretary; SU-ISERC

STRATHMORE UNIVERSITY INSTITUTIONAL SCIENTIFIC AND ETHICAL REVIEW COMMITTEE
(SU-ISERC)
28-Mar-2023
Email:ethicsreview@strathmore.edu
P.O BOX 59857-00200
NAIROBI-KENYA

Cc: Mr Ambrose Rachier,
Chairperson; SU-ISERC

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VNVM SINT