FINANCIAL DEEPENING AND FINANCIAL PERFORMANCE OF MICROFINANCE BANKS IN KENYA

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D58/CTY/PT/29760/2014

A RESEARCH THESIS SUBMITTED TO THE DEPARTMENT OF ACCOUNTING AND FINANCE IN THE SCHOOL OF BUSINESS, ECONOMICS AND TOURISM, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR AWARD OF MASTER OF SCIENCE IN FINANCE DEGREE OF KENYATTA UNIVERSITY

NOVEMBER, 2025

DECLARATION

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

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DEDICATION

I dedicate this research thesis to my parents Patrick M. Muriuki and Ricarda W. Muriuki for nurturing me to become an individual of good values as well as providing financial support especially during earlier education levels up to Bachelor's degree. I also dedicate this research to my siblings: John, James, Victor and Emma for encouraging me to keep pushing for greater achievements.

ACKNOWLEDGEMENTS

I wish to first of all thank God almighty for good health and strength to keep focus throughout my academic endeavor and particularly in my research. Secondly, I thank Kenyatta University as well as the department of Accounting and Finance, for giving me an opportunity to acquire more knowledge in the field of Finance and to advance my personal development. Thirdly, I give appreciation to all my lecturers during my studies and more so to my supervisors, Dr. Eddie Simiyu and Mr. Gerald Atheru for giving me the necessary guidance to do research. Fourthly, I thank my classmates for providing support through discussions and encouragement in my studies.

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ABBREVIATIONS AND ACRONYMS

ARDL	Auto Regressive Distributive Lag
ATMs	Automated Teller Machines
CBK	Central Bank of Kenya
DS	Bank's Deposits
GDP	Gross Domestic Product
GFC	Global Financial Crisis
MFB	Microfinance Bank
MFI	Microfinance Institution
OPE	Open Economy
PSCE	Private Sector Credit Extension
SACCOs	Savings and Credit Cooperative Organizations
SECO	Swiss State Secretariat for Economic Affairs
U. K	United Kingdom
US	United States

OPERATIONAL DEFINITION OF TERMS

Competition: The contest between organizations that provide similar products or services to convert and retain customers, increase revenue and gain more market share.

Credit Accessibility: Can be stated as the ability and the will of the owner/manager of business to get credit.

Deposit Mobilization: Is a drive to accumulate deposits through the use of saving accounts and other channels such as agency banking for use in lending.

Financial Deepening: Is increased availing of a diverse spectrum of financial services to choose from, that is targeted to numerous levels of society. This definition takes a micro perspective and includes credit accessibility, deposit mobilization, financial innovation and micro insurance portfolio as the components of financial deepening.

Financial Innovation: The action of creating new processes, financial products and/or services characterized by advances in financial instruments, technology, and payment systems.

Financial Performance: An entity's ability and capacity to use the resources available effectively and to accomplish goals in line with its established goals.

Microfinance: A segment of the banking sector that provides services of a financial nature to persons or businesses who hardly get access to typical banking and associated services.

Microfinance bank: A financial institution that provides services of a financial nature to persons or businesses who hardly get access to typical banking and associated services.

Microinsurance Portfolio: Refers to a variety of insurance products created specifically to handle the risks and unique requirements of low-income customers.

Operational Efficiency: A business's ability to reduce input requirement while maximizing outputs.

ABSTRACT

Microfinance banks play a critical role in bridging the financial inclusion gap that exists in economies where the banking sector is over-dependent on commercial banks. A robust microfinance industry is important in ensuring there is a stable financial system. Lack of a strong financial performance affects microfinance banks' ability to cope with shocks. In Kenya, there is a very high competition in the microfinance sector which is characterized by the shifting profitability as well as market share. The current study strives towards determining the effect that financial deepening has on the financial performance of microfinance banks in Kenya. In this study, there are variables that are specific, which include: Credit Accessibility, Deposit Mobilization, Financial Innovation, Micro insurance Portfolio, Competition and Financial Performance. By applying the return on assets, this study measured financial performance of microfinance banks and was tied to the theories of financial deepening, financial intermediation and innovation diffusion. The study's population was all fourteen (14) microfinance banks in Kenya. However, the study used the census method to select a total of 12 microfinance banks that have been consistently operational for the period from 2015 to 2022. Thus, the unit of analysis comprised of the 12 microfinance banks while the observation unit was the annual financial reports from the Central Bank of Kenya. The study adopted a positivism research philosophy. It also employed an explanatory research design and a panel data approach to analyze how financial deepening relates with the financial performance of microfinance banks in Kenya. A data template was used to collect secondary data available on the Central Bank of Kenya's website. Analysis of the data was then done using the STATA statistical software (version 18) which helped the researcher to generate descriptive statistics comprising of means, standard deviation, minimum and maximum. The software also generated inferential statistics consisting of Pearson's correlation as well as static panel linear regression model that was used to analyze the effect of financial deepening on financial performance whereby charts and tables were used to demonstrate the results. Diagnostic tests of linearity, normality, autocorrelation, multicollinearity, stationarity and heteroscedasticity tests were conducted. The data was collected from audited reports to ensure validity and accuracy. The findings of the study disclosed that credit accessibility and financial innovation had a positive and significant effect on return on assets, whereas deposit mobilization and microinsurance portfolio had a negative and significant effect on return on assets. Additionally, the panel regression results found that interaction effect of competition had a significant moderating effect on the relationship between financial deepening and financial performance of microfinance banks, causing an increase in deposit mobilization and microinsurance portfolio but a decrease in credit accessibility and financial innovation. Competition was also found to be a suitable variable to moderate the relationship between financial deepening and financial performance. The study made a recommendation that management of microfinance banks should expand loan offerings to increase credit accessibility and introduce innovative deposit products to cater for the diverse needs of customers. The banks should also enhance portfolio diversification and reduce dependence on deposits due to maturity mismatching which leads to payment of high deposit interest rates. The Central Bank of Kenya as the market regulator should intervene and advocate for supportive regulatory frameworks that enable microfinance banks to compete favorably by reducing oligopolistic tendencies.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The banking sector is a major contributor to stabilization of financial systems and growth of the economy in any country. In Kenya, the banking sector consists of financial institutions including commercial banks, credit reference bureaus, foreign exchange bureaus as well as microfinance banks. This is as per the CBK Act 491. In the banking sector, the major players that contribute to financial deepening are commercial banks and microfinance banks. Microfinance banks (MFBs) play a major financial inclusion role by availing financial services to various groups and/or individuals who would not access the services. Financial performance of MFBs has been a concern for a number of years and has been declining over time. According to bank supervision reports in CBK from the years 2015 to 2022, MFBs performance has been declining over time. This is indicated by the profits before tax in 2015 of 592 million which decreased to a 377 million loss in 2016 which then increased to 2200 million in 2017 but decreased in the subsequent as follows; 1437 million loss in 2018, 339 million loss in 2019, 2240 million loss in 2020, 877 million loss in 2021 and 980 million loss in 2022.

Over a period of time, the microfinance industry has experienced rapid growth in various countries to develop into an important sub-sector of financial markets (Mia, Rangel, Nourani & Kumar, 2022). The trigger of growth of microfinance banks in regions of Europe, North America, Latin America, Asia and Africa was the effect of Grameen bank established by Professor Mohamed Yunis in Bangladesh (Amin & Uddin, 2018).

The actual breadth of outreach of microfinance banks in industrialized economies is comparatively low (Augustine Ele, Essien & Ndiyo, 2016). According to information provided in 'About Microfinance' website (www.aboutmicrofinance.com) in 2019, Microfinance in the United States is not very large (standing at a $21 million in terms of loan portfolio) compared to the global microfinance market, which is estimated at $30 billion. This is due to a well-developed US financial and deepened financial system with a number of financial alternatives and stringent regulatory framework. Despite the many financial alternatives and regulatory framework, there are 260 microfinance banks in the US which play a major role in financial deepening and financial inclusion. They originate only 15,000 loans per year in contrast to say Bangladesh which has 7 million customers among the three largest MFIs in the country (Amin & Uddin, 2018). Bangladesh has 739 MFIs as of the year 2022 according to the country's Microcredit Regulatory Authority (MRA). Bangladesh's wide presence of MFIs has resulted in a significant development of financial inclusion.

Microfinance institutions are also predominant in Europe especially the Eastern Europe region which comprises 23 countries (according to the United Nations). However, the sector is advancing rapidly in the region with regulated commercial banks, microfinance products and services, good returns and strong financial performance. The predominant theme is that the microfinance market is well diversified with a variety of microfinance products and services which determines how good the financial performance is for most MFIs as well as banks in the region. Countries with microfinance institutions range from Albania to Uzbekistan, showing microcredit assets of USD 10.6 billion (Imami, Rama & Polese, 2020). However, the region's impressive growth has captured a number of MFIs

ill-prepared with an overabundance of loans to clients and institutions with inadequate capacity to handle governance and transparency issues (Abrar, Hasan & Kabir, 2021).

Asia is considered the most developed continent in the world in terms of volume of activities by microfinance institutions (Iqbal, Nawaz & Ehsan, 2019). A study by Ishfaq, Khan, Shah and Jamil (2015) found that the majority of Microfinance Institutions globally are found in Asia, with a retention of the highest volume of savings and credit and indeed has more members to serve than any other continent. East Asia is particularly well served by MFIs. In terms of GNP, Bangladesh, Indonesia, Thailand and Vietnam had the highest loan volume. In contrast, India, Afghanistan, Myanmar, Pakistan, and China, have very low outreach (Khachatryan, K., Hartarska, V., & Grigoryan, A. (2017).

In Latin America, it is estimated that 70% of the population is still excluded from financial services offered by commercial banks, and therefore reliance on MFIs. Over time, these MFIs delivering microcredit and other financial services have evolved into MFBs. Consequently, the microfinance industry in Latin America has become a well-developed sector, particularly in Bolivia, Peru, Colombia and Nicaragua (Azofra, Olmo and Saiz, 2019).

Most of the microfinance activities in Africa are focused on the sub-Saharan region. It is one of the poorest regions in the world, where only 5 per cent to 25 percent of people have access to financial services. The region is substantially underserved by microfinance, with only 2 percent of the world's microfinance institutions (Abdulai & Tewari, 2017).

Research has provided a link between financial deepening and financial performance. According to Chinwe and Chika (2023), financial deepening is seen as way of developing and expanding financial intermediaries and their services, and is generally a way of increasing the delivery of financial assets within the financial system of a given country. In a narrow sense, financial deepening enhances and broadens financial systems by increasing the market depth, market liquidity, financial efficiency and diversification of financial offering through the banking system and the microfinance industry. Omina and Simiyu (2024) noted that financial deepening is an intermediation process by which a range of financial products and services are availed to a wide coverage of the financial system with a focus on risk coverage and diversification. It involves delivery of financial instruments such as deposits, loans, foreign exchange, bonds and debt securities. Financial deepening is different from financial expansion, conceptually financial expansion focuses on a firm's or economy's growth in size, market share and revenue and therefore the focus is on the firm or economy rather than the whole financial ecosystem. Gachiengo (2024) noted that financial deepening and financial expansion have a close relationship but have a level of distinction. Financial expansion refers to growth of the financial sector in regard to size including growth of financial institutions and growth of the economy, while financial deepening is more focused on quality and accessibility of services.

A number of studies have explored the nexus between financial deepening and financial performance. Otieno (2013) associated financial deepening to profitability and found financial deepening to have a favorable impact on profitability of banks. This was also noted by Olawumi, Lateef and Oladeji (2017) in Nigeria. Wang and Guan (2017) study

found competition to particularly have a favorable impact on profitability. This ultimately leads to more adept capital distribution hence more returns. Sulong and Bakar (2018) study also noted that financial deepening can boost capital by increasing transaction volumes and without large fluctuations in asset prices and exchange rates although it can increase volatility of capital inflows which has an effect of complicating macroeconomic management hence impacting financial performance of banks adversely. The findings in the researcher's paper suggested that increased financial deepening is an important driver towards profitability in banking. Bank deposits and savings from customers are used as investment instruments by banks since they have less risks and high returns. Hence, this increases the financial returns of banks and results in increased profits (Muia, 2017).

According to a study by Karimo and Ogbonna (2017), financial deepening also boosts mobilization, consolidating and directing savings into a productive pool of capital. This also leads to increased savings and growth of levels of investment. Hence, a study by Ho, Huang, Shi and Wu (2018) also noted that it leads to an increase in the Returns on Investments (ROE), which is an important measure of financial performance in banks. Growth of microloan activities carried out by commercial banks are likely to subject MFBs to a higher level of competition or borrowers (Addisalem, 2015).

In Kenya, Microfinance is dominated by institutions that operate under the Association of Microfinance institutions of Kenya and those that are regulated by the CBK. Microfinance institutions that are regulated by the CBK are required to meet the minimum capital requirement and other prudential guidelines as set out by the CBK, such as asset quality and liquidity. According to the annual reports on bank supervision in the years

2014 to 2022, MFBs' performance has been declining over time. This is indicated by the profits before tax in 2015 of 592 million which decreased to a 377 million loss in 2016 which then increased to 2200 million in 2017 but decreased in the subsequent as follows; a 1437 million loss in 2018, 339 million loss in 2019, 2240 million loss in 2020, 877 million loss in 2021 and 980 million loss in 2022.

1.1.1 Financial Deepening

Financial deepening is increased availing of a range of financial services to choose from, that is targeted to numerous levels of society. Therefore, financial deepening can stimulate higher investments, faster growth and more rapidly raise living standards (Alrabadi & Kharabsheh, 2016). When liquid money is more accessible in an economy, it is more likely to experience increased growth rate and sustainability (Rousseau & Wachtel, 2017). According to Nguyen (2019), financial deepening can also be characterized by the credit for households that is offered by banks as part of GDP.

A microfinance industry that is thriving, is crucial in ensuring the banking industry remains stable. Poor financial performance impacts negatively on the capacity of MFBs to absorb any possible negative shocks. Better financial performance enables lenders to at least break even hence institutions can survive for a long period and not over depend on donor financial aid or subsidies received from the government.

Financial deepening has a positive influence in promoting availability of crucial financial services such as easy accessibility to bank loans for customers. A study by Musau, Muathe and Mwangi (2018) argued that banks that charge fair interest rates on their

credits are able to attract more people to access loans which translates to increased customer base. As a result, this will increase the financial returns of the banks when the loans are repaid and increase the profits of the banks which in the end will improve their performance.

Microcredit is crucial in the operational activities of a microfinance bank. The higher the amount of loans given to lenders the more the source of income that the bank has. Recent literature that looked into how loan growth related with financial performance of banks as was observed by Otieno, Nyagol and Onditi, (2016). Dang, Nguyen and Tran (2022), Kalu, Shieler and Amu (2018), Gul et al, (2017) and Afolabi (2020) provide empirical evidence that Credit and ROA do relate positively.

Deposits are an integral part of financial deepening. Naceur and Goiaed (2001) sought to find out what determines banks' performance in Tunisia for the period between 1980 and 1995. Based on the empirical evidence obtained, the leading banks in terms of performance are those who manage to keep a high level of deposits which in turn enable the bank to invest in more profitable ways.

Tuyishime, Memba and Mbera (2015) looked into how deposit mobilization impacts financial performance. The researchers based their study on commercial banks in Rwanda and noted that deposits are a crucial tool used by commercial banks to increase their profitability through the advance of deposits mobilized to their clients in the form of loans that generate interest for commercial banks. In addition, the recent adoption of innovative banking technology has increased deposits without high costs compared to traditional

methods of collecting deposits by use of term deposits as well as services offered to those who are unbanked. This in turn, has resulted in improved financial performance.

Al-Azzam (2019) study on the importance of MFIs' deposit mobilization in Ethiopia, noted that financial sustainability in microfinance institutions can be achieved by boosting institutional capital through deposit mobilization, since it helps keep the cost of capital low. To bring this into effective realization and enhance financial sustainability, the study recommended that microfinance institutions should focus more on increasing demand deposits while ensuring that the interest rate spread is narrower. As a result, this will attract more financial borrowers and increase demand on loans and this will help these banks attain self-sufficiency.

Mwangi (2013) study which looked into the financial innovation's effect on financial performance for MFBs in Kenya, did suggest that financial innovation is yet to achieve the full potential. Moreover, the efforts of microfinance banks to develop their products has also not yet been fully incorporated in the different financial innovations strategies that have a notable influence on financial performance. Therefore, to boost rapid adoption of financial innovation in the important strategies, DT-microfinance banks should improve their organizational strategies to ensure that financial innovations are part of their comprehensive strategy. They should also implement financial literacy and capability programs that will emphasize on the importance of financial innovations to financial borrowers.

Further, Issahaku, Dary and Ustarz (2013) study on the impact of financial innovation for MFIs in Ghana also suggested that a rise in product innovations as well as market

innovation, have an effect on the loan repayment rate and interest rate of bank deposits. This leads to a conclusion that financial innovations do affect financial performance of MFBs. However, the study recommended that it is crucial for MFBs to diversify their sources of funding to enhance innovation as well as decrease risks.

Kenyoru (2013) sought to identify the various forms of financial innovation in Kenya and the impact they have on financial deepening. The study found that being innovative does not impact the level of financial deepening. The conclusions did not corroborate those of Cracknell (2012) who sought to find how policy innovations may influence monetary access. The study did suggest the need to develop the right innovations to boost financial deepening.

Omondi (2017) found microinsurance to be crucial in the promotion of a favorable financial performance especially for those who provide policy. Microinsurance is largely aimed at insurance enhancement in Kenya. It is a concept developed from the broader field of microfinance which mostly targets people who have low income. Existing literature on the growth of micro insurance uptake identifies a number of factors on the part of micro insurance providers which includes limited financial resources, lack of proper management, use of outdated technologies, stiff competition among the policy providers and unfavorable government policies among others. Lack of public awareness and poor access to micro insurance products are stated to be main causes limiting insurance penetration in the Kenyan economy (Yaron, 1997). However, the insurance providers have a significant role in improving insurance uptake through financing and other promotional activities. A study by Asemelash (2002) found microinsurance to have

a positive impact on performance which was favorable on individual enterprises. This has led to more investment due to lower risks as a result of microinsurance. From another perspective, Madole (2013) concluded that factors such as a firm's experience, accessibility to products as well as liquidity, do affect the uptake of micro insurance.

Waweru (2014) observed that Bancassurance provides numerous opportunities for a bank to maximize their income at a low cost. It is much easier for a bank to sell insurance products to its customers due the vast knowledge about the financial status of its customers as a result of transactional details. In addition, banks are able to approach customers at much ease and persuade them to take up an insurance product. Customers usually trust banks more compared to the trust for an insurance company (Kumar, 2006). Bancassurance gives major advantages to banks since it opens opportunities to new markets for growth with minimal or no competition as well as very high-level income from fees (fee income) on investment since they charge high premiums. Furthermore, banks get additional insurance against asset loss by providing insurance services to customers for their own products e.g., personal loan insurance against disability or death. According to Kumar (2006), the best way to analyze the importance of fee income from insurance on the Statement of Financial Position of a bank is by measuring it against the interest margins. For example, Commercial Insurance on large and complex projects can earn a substantial fee income as insurance premiums. Subsequently, the fee income can be used to partly offset the reduction of interest in a competitive lending environment. Bancassurance also enhances a banks' financial statement through customer retention. Kumar (2006) noted that a bank selling a ten-year annual investment keeps the customer

with the bank for the next ten years. As a result, the bank gets an important opportunity to capitalize on potentially getting additional business with the customer.

1.1.2 Financial Performance

Financial performance is the capacity and ability of an entity to use its resources in an efficient manner, which enables it to achieve its goals as aligned to its established plans (Ando, Matsumoto & Matsumoto, 2017). According to Ogunsiji and Ladanu (2017), performance in an organization can also be achieved through proper coordination of tasks that help the organization to work efficiently and effectively. On the other hand, Cheah, Ho and Li (2021) examined organization's performance in relation to cost and profitability while Abdulai (2019) asserted that the performance of an organization are outcomes that are influenced by market successes or when market positions are attained and significant changes occur overtime.

Further, Olawale, Ilo and Lawal (2017) noted that the approach used to measure financial performance can be of a financial or a non-financial nature. Non-financial measures include customer satisfaction, environmental and social performance, employee satisfaction, effectiveness as well as relevance. Financial measures include: profitability, return on assets, return on investment, market share etc. In line with the above literature and due to the nature of microfinance banks, this study will focus more on financial performance hence will use financial measures.

Akenga (2017) argues that financial performance is a firm's capacity to make profits consistently and in the long term from its customers through savings and investments.

This was also observed in a study by Kimathi & Mungai (2018). On the other hand, the total assets of financial institutions are an important indicator of their performance especially in determining their capital position and market shares when being listed in the securities exchange.

A thriving microfinance industry is very crucial in ensuring there is a stable banking system. Lack of a vibrant financial performance impacts negatively on the capacity of MFBs to absorb adverse shocks, which as a result affects wealth (Yenesew, 2014). A great financial performance helps lenders to make profit to at least recover cost and builds institutions that remain stable for a long period of time without over dependence on aid.

There are various indicators that are used in measuring the performance of MFBs. Return on Assets was applied to measure the financial performance of MFBs in this study. According to the CBK reports in the period between 2015 and 2022, microfinance banks in Kenya have reported a decreasing trend in their profits especially after 2015 where the profit before tax was 592 million which decreased to a 377 million loss in 2016 which then increased to 2200 million in 2017 but decreased in the subsequent as follows; a 1437 million loss in 2018, 339 million loss in 2019, 2240 million loss in 2020, 877 million loss in 2021 and 980 million loss in 2022. The return on assets (ROA) reported a decline where for instance, the percentage ROA in 2018 was -2% while that of 2019 was -0.4%. Similarly, the Return on Equity (ROE) reported a decline whereby in 2018 the percentage of ROE was 13.8% and that of 2019 was -3%. This study will measure financial performance using ROA.

1.1.3 Microfinance Banks in Kenya

The microfinance sector in Kenya has experienced very high competition which is observed from the existing shift in market share as well as profitability. In a study by Okombo (2015), it was observed that competition is among the MFBs and other major players within the financial sector. According to the CBK report (2022) MFBs are fourteen (14) in total and are regulated by the CBK since they raise capital through the use of customer deposits (Alastair, 2015). Microfinance banks receive demand deposits from customers which banks use to generate capital which is then available as credit to borrowers (Alastair, 2015). According to the annual reports on bank supervision from the years 2024 to 2022, out of the fourteen (14) MFBs, three (3) had community MFB licenses while eleven (11) had licenses nationwide.

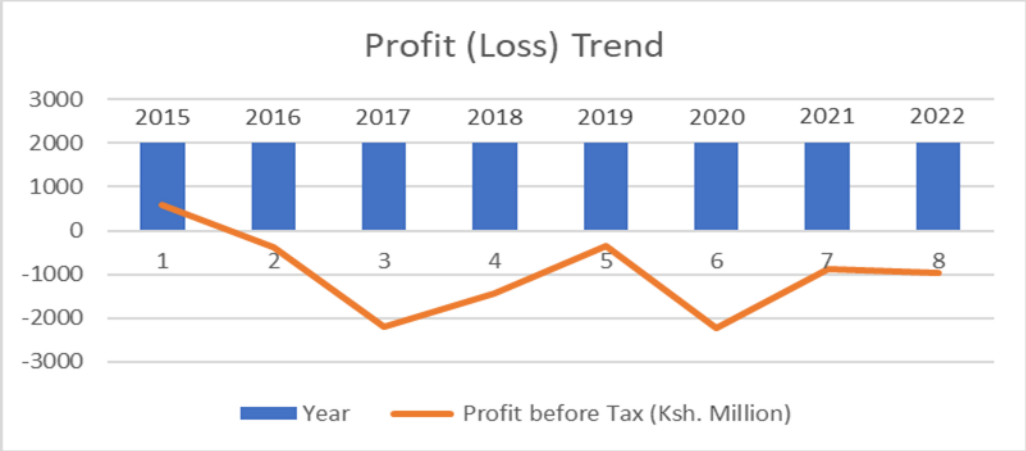
The Microfinance Act (2006) defines a deposit taking microfinance to be a business where the entity considers itself as accepting deposits on a daily basis. A weighted composite index is used to determine the entity's market share, and constitutes: assets, active loan accounts, amount of deposits, active deposit accounts, as well as capital. MFBs are categorized into either large, medium or small. An MFB bank is considered to be large when it has a market share of at least 5 percent, medium when it has a market share of at least 1 percent but less than 5 percent and small when its market share is less than 1 percent. At the end of year 2022, the number of large MFBs were four (4), seven (7) were medium and three (3) were small, with a market share of 81.9 percent together, 16.4 percent and 1.7 percent respectively.

From May 2, 2008 when the Microfinance Act became operational, a framework was set out for the microfinance industry in Kenya. The framework would provide a legal base (including licensing) as well as provide regulation and supervision to the MFBs. The Act enables MFBs to mobilize deposits from the general public.

MFBs are intermediaries and do complement commercial banks, as opposed to being competitors due to the fact that they offer a vital service to a large part of the proportion in Kenya that lacks access to commercial banks. Therefore, microfinance plays a major role in financial deepening which enables a significantly high proportion of the population to access financial services.

The general trend on financial performance of microfinance banks has been on a declining trend as highlighted by figure 1.1.

Figure 1.1: Financial Performance Trend of Microfinance Banks



1.1.4 Financial deepening and Financial Performance of Microfinance Banks

Financial deepening involves activities of institutions in financial markets which raises the level of accessibility of various financial instruments and services. A study by Chepkiyeng (2017) looked at how credit accessibility as well as financial innovation are related to financial performance in the context of financial institutions, with a focus on commercial banks in Kenya, Macharia and Mungai (2021) further evaluated the effect of financial deepening and financial performance of commercial banks with interest rates, government policies, bank deposits and bank credit as key variables. Olowumi, Lateef and Oladeji (2017) focused on financial deepening and bank performance in Nigeria. Idowu and Samuel (2023) focused on financial deepening and performance of commercial banks in Nigeria with a focus on money supply, private credit and deposit.he

Otieno (2013) did suggest that a developed financial institution expands accessibility of various services that it provides to customers, whereas a financial system that is not mature forces an institution to borrow in order to fund its operations thus experiencing slow economic growth.

As a result of improved customer base as well as broadening of financial services, financial deepening leads to high financial.

Wang and Guan (2017) study suggested that a robust financial deepening does determine effectiveness and profitability due to stiffer competition. Ultimately, a more robust distribution of capital is experienced which broadens returns and productivity through the high capacity of large financial institutions for intermediation. Sulong and Bakar (2018)

study also noted that financial deepening can promote capital flow by increasing transaction volumes while keeping asset prices and exchange rates stable.

1.1.5 Competition

Ajisafe and Akinlo (2014) looked into whether there is a relationship in commercial banks between competition and efficiency, using Nigeria in the study's scope for the period between the year 1990 to 2009, whereby data was drawn from Nigeria's commercial banks. Conclusions made were that competition and efficiency in commercial banks related positively and significantly.

With a higher number of microfinance service providers over time, the outcome has caused market saturation which means increased competition. This was observed in a study by Buseretse (2015). Numerous MFIs have managed to achieve encouraging loan repayment rates but those that earn profits are relatively few (Al-Azzam, 2019)

In Kenya, a very high level of competition has been noted whereby the market share and profitability has shifted. For instance, the market share index of the medium MFBs increased from 6.6% in 2016 to 7% in 2017 to 9.8% in 2018 to 13.9% in 2019 to 17.9% in 2020 and to 18.9% in 2021. However, for the large and small MFBs, the market share index has been decreasing with (90%, 3.4%) in 2016, (89.7%, 3.3%) in 2017 to (87.6%, 2.5%) in 2018 to (84.6%, 1.6%) in 2019 to (81%, 1.4%) in 2020 and to (80.2%, 0.9%) in 2021. In 2022, the market share index for large, medium and small MFBs was 81.9 percent, 16.4 percent and 1.7 percent respectively.

Omuok (2015) did a study on how competition impacts the performance of MFIs in Kenya and collected data which was analyzed to establish the causality of financial performance. Using a population of twelve (12) DTMFIs licensed by the CBK as of the year 2014, a census approach was incorporated where all the twelve (12) DTMFIs were included. The study found that the degree of competition can alter the efficiency. Higher competition could mean lowering costs and boosting efficiency. However, the study focused only on competition but did not make other considerations that may affect the performance of MFBs hence the need to address gaps identified in previous studies that were done.

1.2 Statement of the Problem

As observed by Yenesew (2014), there have been rapid changes in the microfinance sector particularly in regard to financial performance. According to CBK Bank Supervision Annual reports (2015, 2016, 2017, 2018, 2019, 2020, 2021 and 2022), MFBs performance has been declining over time. This is indicated by the profits before tax in 2015 of 592 million which decreased to a 377 million loss in 2016 which then increased to 2200 million in 2017 but decreased in the subsequent as follows; 1437 million loss in 2018, 339 million loss in 2019, 2240 million loss in 2020, 877 million loss in 2021 and 980 million loss in 2022.

It is important that we expand the scope of financial deepening to determine a more robust relationship that explains how financial deepening impacts the financial performance of Microfinance banks. Studies have previously been done to demonstrate this relationship across different parts of the world. For instance, the study by Mata, Shah, Sohail and

Correira (2023) looked into financial development in respect to its relationship with efficiency of various microfinance institutions in Bangladesh for a period of ten years from 2008 to 2018, the key variables being credit risk, market risk, liquidity risk, lending strategy and financial outreach. Harelimana (2017) did a study to look into the effect that mobile banking has in relation to financial performance of Unguka bank from Rwanda, the study only focused on operation costs a measure of investment in financial innovation in the financial sector. Shkodra (2019) did a study that looked into the financial performance of MFIs in Kosovo. Six independent variables were used, including Yield, Size, Age, Network, Inflation, and GDP. A study by Okonkwo (2019) looked into results brought by deepening in relation to growth of Nigeria's economy between the year 1981 and 2016. Another study done by Afolabi in the year 2020 did look into how credit risk affects financial performance of microfinance banks. However, this left a geographical gap since they were conducted outside Kenya. In addition, the data collected in some of the studies was not quite recent like the case of Igwebuike, Udeh and Okonkwo (2019) study which was carried out from 1981 to 2016. The study by Shkodra (2019) also failed to focus on financial deepening, but instead only discussed MFIs' performance.

In the Kenyan context, a number of studies did explore the interaction between deepening and performance. A study by Chepkiyeng (2017) looked at how credit accessibility as well as financial innovation are related to financial performance in the context of financial institutions. However, the study did not consider other important components of financial deepening including the effect of competition as a major driver of financial performance. In addition, the study's scope was not aimed at addressing microfinance banks as a subsector but rather financial institutions as a whole, which include commercial banks.

Ndegwa (2018) focused on looking into how capital adequacy affects financial performance of the various MFBs but did not include factors such as competition which is an important driver of financial performance of MFBs.

Another study by Macharia and Mungai (2021) examined how financial deepening affects performance whereby the independent variables were made up of the rate of interest together with policies from government, deposits received by the bank as well as credits while financial performance was measured using ROA. However, this study did not consider other important elements of financial deepening like financial innovations and competition. Again, the use of only not profits as a measure of financial performance provides limited results especially when it comes to financial deepening. The study's population was based on commercial banks as opposed to microfinance banks. Moreover, a study by Bakang (2015) looked into how financial deepening affects economic growth. The main focus was on the effects of liquid liabilities, bank credits, commercial banks assets and bank deposits on the Gross Domestic Product (GDP) rather than on performance of MFBs in Kenya.

Other studies in Kenya included Ongore (2013) whose study was interested in looking into how adequacy of capital, quality of assets, efficiency of management as well as liquidity drive financial performance. King'ori, Kioko and Shikumo (2017) focused on capital levels, operational efficiency, credit risk, liquidity risk as well as firm size which are major drivers of financial performance of microfinance banks. Obenge (2018) focused on credit accessibility, financial innovations as well as bank size as the main factors that impact on financial performance. None of these studies focused on financial deepening.

Most of them did not consider the effect of competition as a moderating variable and the studies did not consider the use of dynamic panel model regression model. Therefore, to address this gap, this study looked into how financial deepening is a driver of financial performance of MFBs in a more robust manner.

1.3 Objectives of the Study

This study was steered by the following objectives.

1.3.1 General Objective

The main objective of this study was to establish the effect of financial deepening on financial performance of microfinance banks in Kenya.

1.3.2 Specific Objectives

In this study, the specific objectives to be achieved were:

i. To examine the effect of credit accessibility on financial performance of microfinance banks in Kenya.
ii. To determine the effect of deposit mobilization on financial performance of microfinance banks in Kenya.
iii. To assess the effect of financial innovation on financial performance of microfinance banks in Kenya.
iv. To establish the effect of micro insurance portfolio on financial performance of microfinance banks in Kenya

v. To establish the moderating effect of competition on the association between financial deepening and financial performance of microfinance banks in Kenya.

1.4 Research Hypothesis

This study sought to test the following hypotheses:

H_{01}: Credit Accessibility has no significant effect on the financial performance of microfinance banks in Kenya.

H_{02}: Bank deposit mobilization has no significant effect on the financial performance of microfinance banks in Kenya.

H_{03}: Financial innovation has no significant effect on the financial performance of microfinance banks in Kenya.

H_{04}: Bank microinsurance portfolio has no significant effect on the financial performance of microfinance banks in Kenya.

H_{05}: Competition has no significant moderating effect on the association between financial deepening and financial performance of microfinance banks in Kenya.

1.5 Significance of the Study

The focus of this study is quite significant to various stakeholders: CBK policymakers, banking institutions, academicians, scholars, and researchers. This study's findings are likely to be of great significance to CBK's policy makers especially in streamlining policy implementation. The study may also help to formulate and implement financial reforms

that boost financial deepening leading to better financial performance of MFBs in Kenya. Policymakers can subsequently focus on long term policies which are instrumental in long term growth.

On the other hand, this study may benefit the management of microfinance banks by providing more knowledge about different ways in which financial deepening may affect financial performance of MFBs. Lastly, this study has importance to scholars and researchers for further scholarly studies in bridging the gap existing in the field of finance. Academicians, scholars as well as researchers will appreciate the vast knowledge from this study and be able to update the existing body of knowledge.

1.6 Scope of the Study

The current study aims at establishing the financial deepening's effect in relation to financial performance while considering all the fourteen (14) MFBs in Kenya. Different indicators of financial deepening were used including; bank deposits, bank loans, bank micro insurance portfolio and bank security investment portfolio. Measure of financial performance of microfinance banks was the ROA while incorporating an explanatory research technique. Panel data was used to do an analysis of a relationship found between deepening and performance of MFBs. Secondary data was retrieved from annual reports of the CBK for the period between the year 2015 and 2022. A template was used for the purpose of collecting data whereby the financial records of the CBK website were included.

1.7 Limitation

The limitation is that the researcher used secondary data which may not be as accurate as use of primary data from each of the Microfinance banks. The study depended on data from the CBK. In addition, two of the fourteen microfinance banks did were not fully operational during the full period of research scope hence sampling had to be done despite the use of a small population.

1.8 Organization of the Study

This study comprised of five (5) chapters whereby a detailed background of the study was covered in the first chapter as well as a statement of the problem, research objectives, research hypothesis, significance, scope and limitations of the study. The second chapter consisted of the theoretical model, overview of the examined literature and the methodological approach to be used by the study. The third chapter included the research design, target population, sample size and sampling technique, data collection methods, data analysis techniques and moral considerations. The fourth chapter comprised of data findings, descriptive statistics, diagnostic tests, correlation analysis and panel regression model. The fifth chapter consisted of conclusions, recommendations and suggestions for more research.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter performs a review of related literature whereby the first part of the review provides the basic backgrounds of the concepts via the theoretical foundations. The chapter then discusses the empirical review where the findings from previous studies are expounded and various relationships recorded. It also focuses on conceptualizing the relationships in the study in a diagrammatic format. The chapter then critiques the reviewed studies to identify knowledge gaps that form the basis for the current study.

2.2 Theoretical Literature

Alavi, Archibald, McMaster, Lopez and Cleary (2018) indicate that an adequate study aligns its objectives to a theoretical background, an approach that helps researchers to challenge and expound on existing forms of knowledge. This research was set on theories in financial development, financial deepening, innovation diffusion, modern portfolio as well as agency.

2.2.1 Financial Deepening Theory

This was developed by Mac Kinnon and Shaw (1973) who argued in favor of promoting liberalization of the financial sector as a mechanism of improving growth which then boosts financial deepening. According to McKinnon (1973) and (2010), the theory is characterized by increased use of financial intermediation in addition to monetization of the economy. Therefore, the theory leads to a conclusion that credit accessibility increases financial deepening.

According to Shaw (1973), financial deepening is the buildup of financial assets more than the accumulation of non-financial wealth. This is collaborated by a study by Gries, Kraft and Meierrieks (2011) who suggested that financial deepening is observed where financial markets and instruments relate with each other to lower transactional and/or operational costs.

Financial deepening does stimulate economic growth due to a presence of efficient markets (Apergis, Filippidis & Economidou, 2007). In addition, financial deepening makes use of savings for investment projects as well as increase the marginal productivity of capital through intermediation (Obafemi, Oburota & Amoke, 2016). This theory supports credit accessibility as one of the components of financial deepening.

2.2.2 Financial Intermediation Theory

This theory was developed from 1960 by Gurley and Shaw. It is anchored on informational asymmetry as well as the agency theory. Principally, financial intermediaries are made by market imperfections such as high cost of transaction, inadequate information required at the right time and the method used for regulation.

Gurley and Shaw presentation of the financial intermediation theory is a deviation from Arrow-Debreu's notion of existence of a perfect market environment. According to Arrow-Debreu world, the conditions that should be fulfilled include: prices are not influenced by a single participant; the existing conditions for borrowing are no different for all participants; there are no discriminatory fees; at the level of participants there is no competitive advantage; all financial securities are uniform, distinct and transactional;

information is obtained without costs; complete information is accessible immediately regarding the facets that do influence the value of the financial instruments presently and in future. However, most of these conditions are non-existent in view of the real world which means that market imperfections generated as a result of informational asymmetry causes the emergence of transactional costs. Therefore, financial intermediaries came up to eliminate some of the costs (if not all). Diamond and Dybvig (1983) considered banks to be a collection of people who deposit and avoid a liquidity risk by saving. Leland and Pyle (1977) suggested that financial intermediaries are characterized by dissemination of information while Diamond (1984) suggested that financial intermediaries operate as agents of savers to boost the economies of scale. While savers have the option to withdraw their funds at any time, there is a possibility of making viable investments with the help from intermediaries. In the lender and borrower relationship, the main aspect to look at is the function of the lender, keeping an eye on granted loans and the problem of adverse selection. In the lender and depositors' relationship, special attention is given to factors which the latter considers when a decision is made to recall their deposits before the expected date.

The second approach found in financial intermediation, is anchored on the cost of transaction as outlined by Benston and Smith Jr. in 1976 and later by Fama in 1980. This perspective does not contradict the theory of perfect markets but is instead based on technological variation. Intermediaries are made up of individual creditors or debtors who make use of economies of scale. Transaction also incorporates costs for research, assessment and keeping and observation.

The third approach of financial intermediaries is anchored on the particular method used for regulation. This approach was promoted by the work done by Guttentag and Lindsay (1968) and later by Merton (1995). This method influences liquidity of intermediaries. A study by Coetzee (2016) suggested that regulations regarding the intermediaries' capital, does influence their progression. Institutional view is that financial intermediaries are commercial entities whose aim is maximization of profit. The profit maximization is made when the total incomes are highest and total costs are at the lowest. Interest earned by savers has to be increased by intermediaries to amass more resources through increased deposits.

This theory has been applied in recent studies, including Chepkiyeng (2017) on the effect of financial deepening on financial institutions in Kenya, Botchwey, Awadzie, Agbenyezi (2022) in their research of financial deepening and stock market performance in selecting sub-saharan countries as well as Hope, Ehimare and Osuma (2020) in their research of impact of financial deepening on economic growth in Nigeria.

This theory supports deposit mobilization as a concept of saving.

2.2.3 Innovation Diffusion Theory

This is a theory that was put forward by Rogers (1962) and attempts to conclusively explain a spread of ideas through the masses. Diffusion is a process by which innovation is communicated over time among parties in a particular social setup whereby the newness of ideas gives it a unique attribute. This process is made up of a number of actions over time whereby a new idea is evaluated to decide if the new idea becomes a

practice in the long term. Uncertainty does exist when choosing if a new alternative to the past is to be adopted hence the need for a process that addresses newness and implementation of innovation. Innovation is therefore applied to convince savers to make deposits.

This theory was applied by Kisaka, Ndii, Muriki and Muio (2015) on the relationship between mobile banking deepening and financial performance of Commercial Banks in Kenya, Muthinja (2016) on financial innovation and bank performance in Kenya based on branchless banking models.

This theory therefore supports innovation as a component of financial deepening.

2.2.4 Modern Portfolio Theory

The Modern portfolio theory (MPT) is a method for portfolio management to reduce risk, which traces its origins to a 1952 paper by Nobel Prize winner Harry Markowitz. Markowitz (1952) argues that investors are inclined towards diversification of portfolio which enables optimization of expected returns at a certain level of risk. In this case, assets that are less correlated assets are invested in while those that are correlated are consolidated with those that have an inverse relationship in order to reduce risk. It is key to note that even if historical data is important, one cannot fully rely on the past to predict future outcomes. MPT assumes that investors who have a choice to invest in more than one portfolio, will prefer the less risky one. Therefore, investors are risk averse and will only take a higher risk if there is a higher expected return. Although investors view the

risk trade-off differently due to how each of them avoids risk, the trade-off is the same overall.

This theory was applied by Muthui and Wephukulu (2018) in the study of the effect of portfolio diversification on financial performance of commercial banks listed at NSE, Kenya, Obonyo (2022) on the effect of portfolio diversification on financial performance of commercial banks in Kenya.

This theory supports micro insurance as a component of financial deepening.

2.2.5 Agency Theory

This theory was put forward in 1976 by Jensen and Meckling with an argument that organization's management decisions determine how the entity performs. Jensen and Meckling (1976), studied insider ownership, dividend policy and debt policy for public companies from different sectors in the United States of America. The main agency problems that were identified comprised of how to align the conflicting goals of principals and agents as well as how to ensure the performance of agents is as per the expectations of principals.

Management must see to it that what the stakeholders (including the owners) strive to achieve is a priority to work towards. Achievable goals and investment decisions should be made by the management to improve financial performance hence maximize the owner's wealth. This assertion was collaborated by Laffort & Martimost (2008) whose emphasis was that management has to ensure efficient use of resources to meet its goals and increase the firm size. A similar argument was put forward by Maksimovic & Phillips

(2002) and Lamont & Polk (2002) who took a view that control over the firm's resources lies in management and layers in the administration should not be too many since this would affect efficiency. This theory supports financial performance.

2.3 Empirical Literature

Empirical literature looked into studies done to find out if financial deepening has an effect on financial performance.

2.3.1 Credit Accessibility and Financial Performance of Microfinance banks

Ndung'o, Olweny, Memba (2016) sought to examine the effect that credit access has on financial performance of SACCOs. The population used in the study comprised 181 SACCOs that are registered in Kenya to take deposits at the end of year 2014 and three licensed CRBs in Kenya. Stratified random sampling was used in the study, where SACCOs were grouped into five respective strata which were then randomly selected. The study sampled 135 of the 181 licensed deposit taking SACCOs since these were the only licensed deposit taking SACCOs by 2014.

The conclusion was that there was a significant and positive relationship between credit access and financial performance.

Chesang (2017) sought to find out if access to credit has an effect on financial performance of SMEs in the county of Nairobi. The population of interest was 1570 SMEs (Nairobi County Registrar, 2016). The unit of analysis was the SME owners, one from each SME in cases where there is more than one owner. The study employed the simple random sampling technique in selecting respondents and questionnaires used to collect primary data.

The study found credit access to have a significant relationship with performance. Nshimirimana, Githui, Muhavani (2021) sought to find out if credit financing has an effect on financial performance of small and medium enterprises in Nairobi central business district, Kenya. The study's population comprised of 1,842 registered SMEs which are registered in the central business district of Nairobi, and used a sample size of 184 SMEs. Primary data was collected by interviewing the top owners or top managers, from the SMEs by making use of a structured questionnaire.

The study's findings revealed that access to credit had a positive and significant effect on the financial performance

Gesaka (2013) did a study on financial deepening's effect on implementation of Youth Enterprise Development Fund (YEDF). The study used an explanatory curriculum using secondary data, whereby the study's results showed that the percentage growth of loans extended by YEDF continued to increase between 2008 and 2012. In addition, the results showed that the budget guidelines for development affected loans extended by YEDF by about seventy-eight per cent.

Akomolafe (2014) did a study to find out if the concept of financial deepening does relate with economic growth. The researcher's scope was limited to Nigeria's economy between 1980 and 2010. The study did incorporate two variables which included M2 money supply and total bank loans for financial deepening where the GDP was used as an indicator of economic growth. The long term and short-term relationships between variables were investigated using Johansen co-integration and vector error correction model (VECM). The Granger causality test was applied as well, to determine the direction

of one variable has influence of the direction of another. Bakang (2015) examined financial deepening to find out if it has an effect on economic growth for Kenya's banking sector. Using data for the period between 2000 and 2013, the survey utilized quartile data where loans in the private sector, liquid liabilities, deposits as well as assets were used to assess financial deepening. Real GDP is a metric used to assess economic progress. According to the survey data, the financial deepening components all have statistical relevance on GDP effect. However, this study did reveal a conceptual gap as it was directed to economic growth which is at a macro level as opposed to looking at the effect at a micro level.

Rahman and Mustafa (2015) did a study and found that liquidity of the stock market is a predictor of financial deepening in nineteen (19) chosen industrial nations and twenty-one (21) developed countries between 1988 and 2013. The results show that stock exchange turnover in certain developing and industrialized countries increases returns on the stock market compared to stock exchange liquidity. Therefore, outcomes in developing countries are less robust than in developed countries. This study however did not demonstrate any effect on financial institutions such as Microfinance banks.

Macharia (2015) looked into determining whether performance of commercial banks is impacted by financial deepening. The researcher looked at the Kenyan context and included four independent variables to constitute financial deepening. Interest rate, Government Policies, Bank deposits and Bank Loans were the components of deepening in the research. A descriptive research design was preferred in the study as was the case in Arvind & Vijay (2013). This was also appropriate as the study used quantitative data

to expose the characteristics of various research aspects. Macharia (2015) did include a population of all Kenya's commercial banks, which were forty-three (43) at the time of research hence no sampling was required. The research concluded that out of all the independent variables, only interest rates directly and significantly influence the bank performance. Particularly, government policies best explained bank performance. Bank credit, bank deposits and interest rate also explained the performance in that order of influence. However, none of the studies was aligned to the effect that this has on financial performance of MFBs. This study will aim at providing insights and conclusions that are focused on microfinance banks to address this gap.

2.3.2 Bank deposit mobilization and Financial Performance of Microfinance banks

A study by Tuyishime, Memba and Mbera (2015) was interested in finding out if deposit mobilization has an effect on financial performance for commercial banks. The study used a census method to look at Equity Bank Rwanda Ltd where data from every member was relevant as suggested in a study by Sekaran (2003). The population has all twenty-seven (27) staff members of the bank because all the staff members directly dealt with deposits mobilization within the bank.

Ndegwa and Omagwa (2018) sought to examine if deposit mobilization has an effect on financial performance of deposit-taking MFIs, with a focus on the Nairobi central business district, Kenya. The study had a population of 45 branch managers and 45 financial officers to form the respondents. Also, the total sample size was 90 respondents.

The study found deposit mobilization did not have a significant effect on the financial performance of MFIs.

The study's conclusion was that mobilization of deposits affects financial performance positively and revealed that introducing innovative banking technology is likely to lead to an increase in deposits at low cost. It was observed that Equity Bank Rwanda offered agency banking which made it easy for customers (even those not previously banking with the bank) to access financial services. Due to mobilization of deposits at low costs, there was a direct effect on the financial performance. The study however excluded microfinance banks when looking at the banking sector.

Mbugua (2012) did a study using a design for descriptive research to find out if deposit taking has an impact on financial performance, in the context of MFIs. The design was a framework which is used in carrying out research and provides detailed procedures that are needed to obtain required information for solving research problems. This was in line with the observations by Birks and Malhotra (2003). Using a population of all MFIs in Kenya that take deposits, the conclusion was that there was a significant deterioration in financial performance as a result of deposit taking which means that deposit taking did impact financial performance adversely. However, the study did not consider competition to be one of the variables that affect financial performance.

A study by Andele (2013) looked into whether financial deepening has an effect on profitability. The study focused on commercial banks in Kenya. Using descriptive and explanatory designs, the study considered all commercial banks the population where results of the study presented a strong argument to conclude that banking productivity is

boosted by increased financial deepening in banks total deposits. However, the study did not consider financial deepening in microfinance banks, yet as is the case of commercial banks, these are also deposit taking institutions.

Kavulya (2015) sought to find out how deposit mobilization affects performance. Deposit taking savings and credit cooperative societies in Kenya were considered in the study's scope. The population used was tier 1 commercial banks, and sample size was all the tier 1 banks which were eight at the time of study.

The study found that deposit mobilization and performance are positively and significantly related.

Obenge (2018) sought to find out if there is an impact from financial deepening on Kenyan Commercial bank's performance. Using a population of all commercial banks at the time of study, the study concluded that credit accessibility and financial innovation are important in determining efficiency and effectiveness of commercial banks but the latter had statistically insignificant impact on performance because technology in Kenya has not been utilized to full potential. However, the study did not consider competition.

Chepkiyeng (2017) sought to find out if financial performance of financial institutions is affected by financial deepening, using a causal research design. Fifty (50) financial institutions in Kenya were used in the study for the sample size, out of which seventy eight percent of sampled institutions gave a response. In its conclusion, the study found that ROA is impacted by financial innovation, deposit mobilization and credit

accessibility. The study did not give any conclusions on whether competition has any effect on financial performance.

2.3.3 Financial Innovation and Financial Performance of Microfinance banks

Kenyoru (2013) did a study to look into whether expansion of the finance sector is affected by financial innovation, whereby the number depositors with institutions such as commercial banks for every one thousand adults were considered. The number of mobile money transactions and value as well as number of agency banking transactions were the components of financial innovation. Data collection covered a period between 2007 and 2012. According to the study, bank performance was not significantly affected by financial innovation. Ochanda (2014) did a study using one hundred SMEs in Nairobi County, Kenya to find out if performance was affected by financial deepening. Financial innovation and credit access were the components of financial deepening in the study and found that the effect on growth was favorable.

Katutu (2019) sought to examine if financial innovation has an effect on the financial performance of commercial banks in Kenya. The target population and sample size comprised all the eight (8) tier one commercial banks in Kenya.

The study's finding was that financial innovation does have a significant positive effect on the financial performance of commercial banks in Kenya.

Ngigi (2012) sought to examine financial innovation and whether it has an effect on the financial performance of Kenya's commercial banks. The study considered all forty-three

commercial banks in the country as at 30th June 2012. No sampling was done due to the small population size and aggregation of secondary data used in the study.

The study found financial innovation in payment systems to result in improved financial performance of commercial banks and the larger banking sector as a whole.

Kurgat and Tibbs (2018) sought to establish whether there is a relationship between financial innovation and the financial performance of commercial banks. The target population for the research included 215 employees drawn from 43 commercial banks in Kenya. The sample size was 170 employees.

The study concluded that with innovation, financial performance of banks is impacted significantly.

Chepkiyeng (2017) did a study using fifty financial institutions in Kenya to draw conclusions on whether financial performance is affected by financial. As described by Cooper & Schindler (2006), a stratified sampling method was used in selection of a sample size since the financial institutions are heterogeneous. In this case, the technique ensured every sector was represented in the sample to fairly generalize and compare the findings. The study found that financial performance was impacted positively by financial innovation. Using financial institutions in general may not provide a more robust conclusion that is specific to microfinance banks. This study aims to fill this gap.

Obenge (2018) did a study to determine whether financial deepening has an impact on Kenyan commercial bank's performance. Data that was collected was secondary in nature, for the period between 2013 and 2017 as obtained from CBK, the CMA and NSE.

From the study's findings, the researcher suggested that there was an insignificant impact due to the fact that most of the banks in Kenya had not fully utilized new. The findings also concluded that innovation that boosts credit access means that firms are able to have increased income. Goddard et al (2004) did a study that corroborated the findings. The same conclusions were suggested by Bikker and Hu (2002).

However, none of the studies demonstrated that financial performance specifically in microfinance banks is impacted by an increase in financial innovation hence the need to fill this gap in this study.

2.3.4: Microinsurance Portfolio and Financial Performance of Microfinance banks

A study by Alshebami, Morsi, Raza and Aziz (2020) examined the risks, benefits and opportunities that microinsurance has provided to MFIs. The study noted that the development of insurance schemes with the aim of protecting customers against financial or property loss has led to an increase in MFIs investing in different microinsurance products, so as to meet the needs of their customers. However, even with the increase in demand for microinsurance products, the study revealed that most MFIs lack the skills and resources to develop or manage the wide range of the microinsurance products. Thus, exposing them to financial risks that threaten their profitability and net income. Therefore, the study recommended that MFIs should consider forming partnerships with established insurers so as to offer better insurance services to their customers without having to bear the insurance risks. Nonetheless, the study consisted of a conceptual gap since it did not bring out the effect of having a robust microinsurance portfolio on the financial performance of MFBs.

Another study by Trujillo, Rodriguez - Lopez and Muriel - Patino (2014) investigated the challenges experienced by MFIs in providing micro-insurance products to the low-income group in Latin America with a case study of Brazil, Colombia, Mexico and Peru countries. Analyzing secondary data from the annual reports obtained from MFIs within the three countries, the study revealed that MFIs lack the essential knowledge necessary to create products that are financially viable while ensuring correct distribution and providing value to customers. On the other hand, the low-income population was found to have different lifespans, morbidity patterns, and health needs as a result of having an increased average number of dependents in their household. The study recommended that insurance regulatory authorities should make significant efforts to ensure they distinguish micro-insurance from standard insurance. They should also establish appropriate and regulatory reforms of tiered levels to distinguish between community and commercial insurers where tax systems are not the same. This study was limited to secondary data and discussed mainly on the challenges experienced by MFIs in providing microinsurance without demonstrating their effect on their performance. This indicated a contextual and conceptual gap in the study.

A study by Paramasivan and Rajaram (2016) investigated the relevance of a microinsurance portfolio in public and private insurance companies. Using the India context, the study notes that micro insurance is both an individual policy and a group endowment where most of the insurers have differentiated their products by providing life protection both when a person is alive and after death, different pension schemes, medical and non-medical schemes, as long as the group members meet the acceptable size of more than 200 members. The medical schemes provided include accident coverage

and permanent disability benefit during the premium paying term only, or for the full term. As a result, the study concluded that the introduction of the many micro health insurance programs has had strong enrollment rates within their targeted group, demonstrating the existence of demand, but from the perspective of policymakers, these programs have also facilitated easy access to healthcare by the poor. Therefore, this has been found as a significant factor in improvement of performance in both private sector as well as public sector. The study introduces a contextual and geographical gap, since it does not look into whether micro-insurance portfolio affects financial performance in MFBs especially in the Kenyan context.

Another study by Yao (2013) examined the implications of the viable micro-insurance programmes on the emerging micro-insurers in Pakistan. The study's aim was to determine how sustainable the micro-insurance programmes were for the first few years after inception. The study brought a suggestion that clients with higher claims are likely to continue to subscribe to the cover again in future periods. The study also discovered that although an adverse selection and declining sustainability trend was observed, existing customers who renew their policies have much lower claim frequencies as well as claim amounts relative to first time customers taking the insurance cover. Thus, the study concluded that there are factors influencing the demand for insurance among renewing clients that could result in a better risk portfolio and increase their sustainability. However, this study is found to have a methodological gap since it only used data from a single micro health insurance program which the study's results were likely to be biased due to their limited nature. In addition, it consists of a conceptual gap since it did explain if financial performance in MFBs is impacted by microinsurance.

Further, a study by Olaosebikan and Adams (2014) sought to examine the ideal MFI's organizational structure in order to maximize the economic gains of micro-insurance by MFIs. The study employed organizational economics theory and used the case-study research design of low-income countries like Gambia. The findings from the study were that credit unions' mutual (cooperative) structure were found to probably be the most economical and efficient organizational structure for lowering information asymmetry, agency concerns as well as transaction costs. The indication was also that microinsurance is likely to reduce the risk of loan defaults and debt costs while raising returns from savings and concluded that micro-insurance promotes the financial intermediation in developing countries, thereby assisting in the advancement of economic growth. What came out from findings was the effect of micro insurance on financial management rather than on financial performance.

Wondirad (2020) did a study aimed at investigating the impact mobile insurance has on financial performance. The study was done in the Kenyan context and took up the systematic review of studies done earlier whereby a case study approach was done for Kenya's M-insurance market. The results demonstrate that use of both products (loyalty and compensated) and models (strategic and transactional) is practiced in Kenya's M-insurance industry. The study also revealed that M-insurance significantly improved MFI performance particularly in outreach and portfolio quality. Additionally, M-insurance was also found to have significantly boosted customer investment, incomes, and increased access to credit for MFI clients. As a result, the study recommended that MFIs collaborate with mobile network providers, insurers, and other stakeholders, in order to be financially and socially sustainable. However, the study was limited to one product

under the micro-insurance products that are recently being offered by MFIs. This study will aim to examine different micro insurance products.

2.3.5 Competition and Financial Performance of Microfinance banks

Ajisafe and Akinlo (2014) did a study to examine if there is an existing relationship between competition and efficiency of commercial banks. Using secondary data from commercial banks in Nigeria for the period 1990 to 2009, an analysis was done and the results found a relationship did exist between competition and level of efficiency. This relationship was significant and positive.

Omuok (2015) did a study to find out if financial performance in deposit taking microfinance institutions is affected by competition in the Kenyan context. Data was collected and analyzed using a population of twelve (12) Deposit Taking MFIs and adopted a census approach where all the twelve (12) institutions were considered in the study, and concluded that the degree of competition is relevant for the efficiency which is also characterized by presence in more regions to provide easier access to financial services. However, the study focused only on competition without incorporating other major factors that may determine how well MFBs perform, hence the need to carry out a study that seeks to fill the gap identified in previous studies.

2.4 Summary of Literature Review and Research Gap

Table 2.1: Summary of Literature Review and Research Gap

Author	Title & Objectives	Key Findings	Research Gaps	How the current study filled the Gaps
Mbugua (2012)	To determine if deposit taking has got any impact on financial performance in the Kenyan context for MFIs.	As a result of taking deposits, the study found that financial performance has a significant decline.	The study used a design for descriptive research and no effect on financial performance.	Explanatory research design was used to examine whether financial performance of MFBs is affected by competition.
Gesaka (2013)	To establish whether financial deepening has an effect on implementation of the Youth Enterprise Development Fund (YEDF).	The results showed that the percentage growth of loans extended by YEDF continued to increase between 2008 and 2012.	The study did not focus on microfinance banks. It also did not use panel data methodology.	Panel data methodology was used to address the research gap.
Bakang (2015)	To examine if economic growth is	The study used data from the year 2000 to	The study did bring out a gap as it did not	To address this, the study restricted its

	impacted by financial deepening in the Kenyan context.	2023 where findings were that loans offered, bank assets and liquid liabilities had relevance on GDP.	look at the effect on a micro level.	findings to financial performance that is specific to MFBs in Kenya.
Tuyishime, Memba and Mbera (2015)	To investigate if deposit mobilization has an effect on financial performance for commercial banks. The case study was on Equity Bank - Rwanda.	The study found financial performance to be affected by deposit mobilization in a positive manner.	This study used primary data and a census sampling method to select the sample size.	The current study obtained secondary data from the CBK supervisory report for analysis and drawing conclusions.
Paramasiva n and Rajaram (2016)	To investigate microinsurance portfolio in public and private insurance companies in India.	The study concluded that the introduction of the many micro health insurance programs has had strong	The study was based on insurance companies in India while relying on primary data.	This study limited itself to using secondary data on MFBs in Kenya.

		enrollment rates within their targeted group.		
Chepkiyeng (2017)	To determine whether financial deepening has an impact on financial performance of financial institutions in Kenya.	The study found financial innovation to have a positive relationship with financial performance.	The study used stratified random sampling and generalized all financial institutions including insurance companies and commercial banks	To fill this gap, this study limited itself to collecting secondary data from the fourteen MFBs in Kenya.
Obenge (2018)	To determine the impact of financial deepening on Kenyan commercial bank's performance.	The results of the study indicated that financial innovation had a positive but statistically insignificant impact on the banks' performance.	The study used secondary data of commercial banks for a period of five years between the year 2013 and 2017	This study used more current secondary data from CBK report for a period of years between 2015 and 2022.
Wondirad (2020)	To examine the impact of	The study results revealed	The study relied on	This study considered

	mobile insurance on the financial performance of MFIs in Kenya.	that M-insurance significantly improved MFI performance particularly in outreach and portfolio quality.	previous studies conducted by other scholars to draw their findings. It also focused on one product under the microinsuranc e portfolio.	secondary data collected from CBK reports and considered the different products under a micro-insurance portfolio.
Macharia and Mungai (2021)	To determine the effect of financial deepening on financial performance of commercial banks in Kenya	The study found that interest rates do not significantly affect financial performance pf banks.	The study did not give consideration for financial innovation as a major component of financial deepening	This study considered broader components of financial deepening such as innovation and credit accessibility which play a key role in boosting financial performance for an entity.

Obonyo (2022)	To determine the effect of portfolio diversification on financial performance of commercial banks in Kenya	The study found diversification through investment on mortgage and government securities to have a positive and significant effect on financial performance	The study did not consider important factors that have an impact on financial performance of banks, such as deposit mobilization.	This study looked at more micro level components of financial deepening to find a relationship with financial deepening.
Idowu and Samuel (2023)	To determine the effect of financial deepening on performance of commercial banks in Nigeria	The study found a relationship in the long run between credit allocation and performance.	The study did not incorporate important aspects such as innovation as a component of financial deepening	This study considered innovation as an important component of financial deepening and established an important relationship with financial performance.
Chinwe and Chika (2023),	To determine the effect of financial deepening on	The study found that money supply and market	The study focused on money supply and	This study looked into broader components of financial

	economic growth in Nigeria	capitalization have a positive and significant effect on economic growth	capitalizations main components of financial deepening but did not consider other important aspects such as innovation	deepening such as innovation which play a key role in boosting financial performance on an entity, which included MFBs
Gachiengo (2024)	To determine if financial deepening has an effect on growth of SMEs in Kenya's Kiambu County	The study found interest rates to have a negative and significant effect on growth of SMEs	The study focused on a small subsector of the financial sector by looking at SMEs in a part of Kenya	This study looked into a wider scope by looking at the effect of financial deepening in Kenya as a whole.

Source: Researcher (2023)

2.5 Conceptual Framework

A conceptual framework, according to Kivunja (2018), is a collection of broad concepts and theories that help with the definition of the research topic, the creation of research objectives and questions, and the choice of pertinent sources to support the framework. Additionally, it is a diagrammatic form that shows how the independent factors affect the dependent variable (Varpio, Paradis, Uijtdehaage & Young, 2020). In this study, financial deepening was made up of credit accessibility, deposit mobilization, financial innovation and micro-insurance portfolio while the dependent variable was the financial performance of microfinance banks in Kenya.

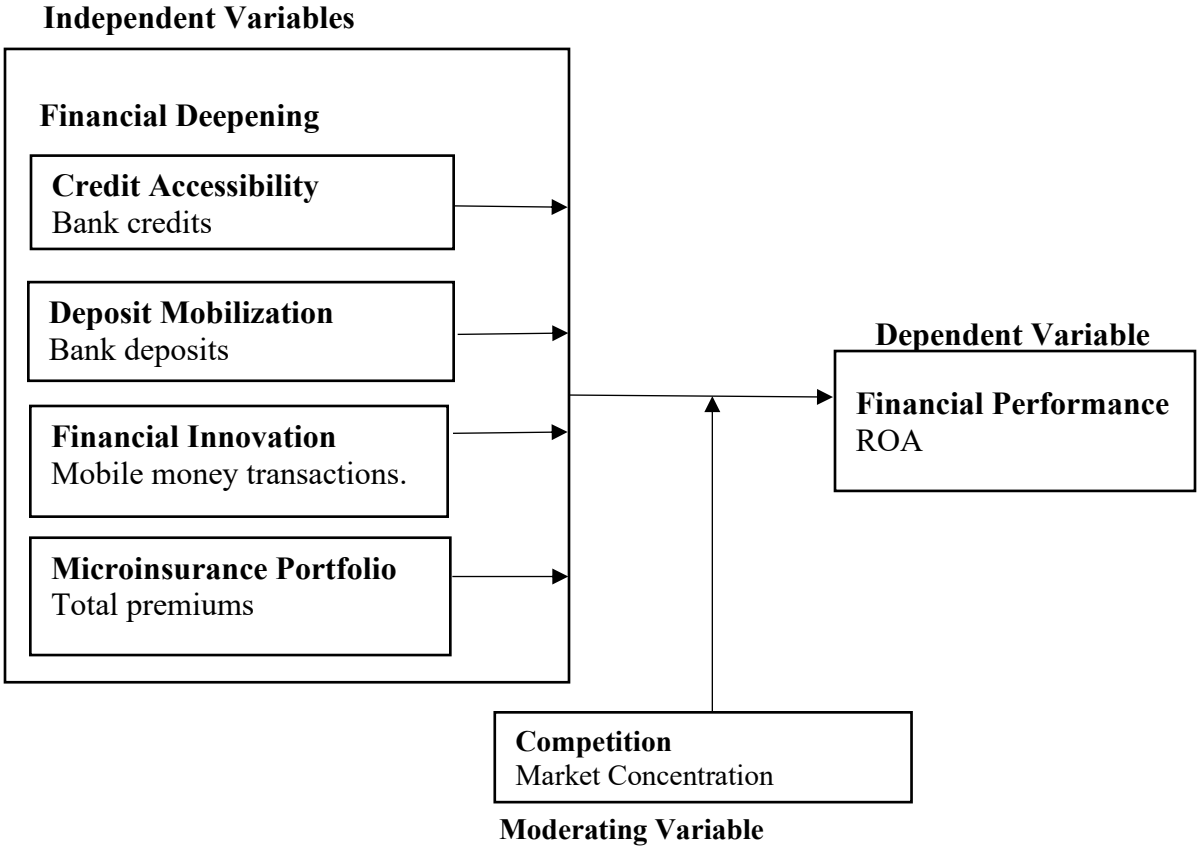


Figure 2.1: Conceptual Framework

Source: Researcher (2023)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter defined the research methods for application in this study and included; the research philosophy, research design, target population, sample and sampling technique, data collection instruments, reliability and validity of the research instruments, data analysis and presentation techniques.

3.2 Research Philosophy

This is a bedrock in which the research knowledge of a study is built upon. It involves the set of beliefs that research is based on, especially in regards to how data relating to a phenomenon is collected, analyzed and assimilated. It can be described from either the ontological or epistemological point of view (Cazeaux, 2017). The ontological view refers to the source and nature of knowledge and what the target audience is really able to know and understand while the epistemological view describes how knowledge can be obtained and its different limitations. Positivism, interpretivism and realism have been identified as the main research philosophies that operate on different ontological and epistemological assumptions. However, this study followed the positivist philosophy (Žukauskas, Vveinhardt & Andriukaitienė, 2018).

The presumption of positivist research is that knowledge exists outside of the subject matter being investigated. In other words, the subject of the study can only be done objectively, and it cannot take into account personal beliefs or opinions (Kennedy, 2017). Thus, the researcher only records data collected and does not interpret according to their

own beliefs. The positivism philosophy also believes that there is only one reality and every meaning is universal across all subjects. According to Bauer (2017), understanding research philosophy enables researchers to be more innovative and investigative in their work. Further, it also enables researchers and scholars with various methodologies to work together thus avoiding irrelevant and inappropriate information. Therefore, using this philosophical approach, this study made it possible to transform beliefs and assumptions into a reality that enables a researcher to establish if financial performance of Microfinance banks is affected by financial deepening, in the Kenyan context.

3.3 Research Design

This is defined as the research framework or strategy used for investigating a certain subject, with the aim of finding results or information for entrenched research questions through gathering, interpreting, analyzing and presenting data (Dannels, 2018). It helps researchers to conduct different research with a systematic approach and can be widely categorized as either quantitative or qualitative research design. According to Sileyew (2019), the two broad categories are further divided into the types of research designs which include; descriptive, explanatory /causal and experimental research designs. The descriptive research design emphasizes on the 'what' and not on the 'why' of the subject area. In this respect, the main focus of this methodology is the description of the nature of the demographic element without necessarily focusing on the 'why' a particular phenomenon is occurring. However, the explanatory research design enables the researcher to obtain a broad notion and to discover the why and what of a subject under investigation. Thus, it is a research design that is responsible for finding the 'why' of the

events through the establishment of cause-effect relationships (Rahi, 2017). The current study adopted the explanatory research design as it proposes to use different research tools to explain the cause and effect that financial deepening has, on the financial performance of microfinance banks.

3.4 Empirical Model

The study utilized the panel regression model to analyze the effect of financial deepening on financial performance of microfinance banks in Kenya and is presented as follows;

Direct effect model which gives a relationship between the effect of financial deepening (independent variables) and financial performance (dependent variable)

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \varepsilon_{it} \quad \text{Model 3.4.1}$$

Where;

Y_{it} = financial performance was measured using the ROA of microfinance banks for the period from 2015 to 2022.

β_0 = is the intercept

$\beta_1 - \beta_4$ = are the regression coefficients of X_{it} and Z_{it}

X_{1it} = represents bank credits, as determined by the total value of credits in the period t.

X_{2it} = represents bank deposits, as determined by the total value of deposits in the period t.

X_{3it} = financial Innovation which was obtained from the revenue generated from Mobile money transactions, internet banking and ATM deposits in the period t.

X_{4it} = micro-insurance Portfolio, which was obtained from the value of Premiums in the micro insurance portfolio.

Moderating effect model or interaction effect model

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \varepsilon_{it} \quad \text{Model 3.4.2}$$

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 Z_{it} + \varepsilon_{it} \quad \text{Model 3.4.3}$$

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 Z_{it} + \beta_6 X_{1it} * Z_{it} + \beta_7 X_{2it} * Z_{it} + \beta_8 X_{3it} * Z_{it} + \beta_9 X_{4it} * Z_{it} + \varepsilon_{it} \quad \text{Model 3.4.3}$$

Where;

Y_{it} = Financial performance that was measured using the ROA of microfinance banks for the period from 2015 to 2022.

β_0 is the intercept

$\beta_1 - \beta_4$ are the regression coefficients of X_{it} and Z_{it}

X_{1it} represents bank credits, as determined by the total value of credits in the period t.

X_{2it} represents bank deposits, as determined by the total value of deposits in the period t.

X_{3it} Financial Innovation which was obtained from the revenue generated from Mobile money transactions, internet banking and ATM deposits in the period t.

X_{4it} Micro insurance Portfolio, which was obtained from the value of Premiums in the micro insurance portfolio.

Z_{it} = Competition, which was obtained as market concentration

$X_{1it} * Z_{it}$ = interaction of credit accessibility and competition

$X_{2it} * Z_{it}$ = interaction of deposit mobilization and competition

$X_{3it} * Z_{it}$ = interaction of financial innovation and competition

$X_{4it} * Z_{it}$ = interaction of microfinance portfolio and competition

ε_{it} = Error term

Table 3.1: Operationalization of variables

Variable Name	Variable Indicator	Measurement	Scale
Dependent Variable			
Financial Performance	ROA	Net Income / Total Assets	Ratio
Independent Variable			
Credit Accessibility	Bank credits	Loans / Bank Deposits	Ratio
Deposit Mobilization	Bank Deposits	Value of bank deposits / Total Assets	Ratio
Financial Innovation	Mobile money transactions	Value of mobile money transactions/Total Income	Ratio
Microinsurance Portfolio	Premiums	Value of premiums / Total deposits	Ratio
Moderating Variable			
Competition	Bank concentration	Herfindahl-Hirschman Index (market size index)	Index

3.5 Target Population

This entails the whole group of elements that were included in the research since they meet the criteria for inclusion as sample of the study. Asiamah, Mensah & Oteng-Abayie, (2017) adopted this approach. The target population of this study consisted of all the fourteen (14) microfinance banks in Kenya as at 2022 as licensed by the Central Bank of Kenya.

Table 3.2 Classification of Kenya's MFBs

Large (4)	Kenya Women MFB, Falulu MFB, Rafiki MFB and Caritas MFB
Medium (7)	SMEP MFB, Sumac MFB, U&I MFB, Branch MFB, Maisha MFB, Salaam MFB and LOLC MFB.
Small (3)	Muungano MFB, Choice MFB and Daraja MFB

Source: CBK 2022

3.6 Sample Size and Sampling Technique

The study applied an inclusion-exclusion criteria focusing on the period 2015-2022, 12 microfinance banks were in existence during this study period, therefore census method was applied on 12 microfinance banks that have been consistently operational for the period from 2015 to 2022. Therefore, the unit of analysis in this study comprised of the 12 microfinance banks in Kenya while the unit of observation was the annual financial reports from the CBK for the period 2015 and 2022.

The sample size consisted of 12 microfinance banks in Kenya registered under the Microfinance Act (2006) and were operational for the entire period from 2015 to 2022. Sampling is the procedure or technique applied while selecting a sample of the population to be included in the research study (Singh, 2018). The researcher will use census technique. The study's technique was preferred since the population target was not considered too large. It was also preferred for this study since it provides a true measure of the population with no sampling errors. Further, the inclusive and exclusive criteria will also be used, the inclusive criteria used was data of the microfinance banks which was obtained from the annual financial reports of CBK and was limited to the period from 2015 to 2022. However, microfinance banks that lacked complete data for the entire 8 years or were not in operation during the same period, formed the exclusion criteria.

3.7 Data Collection Instruments

This study made use of secondary data which is obtained from financial reports that are published, and statements on the CBK website for the years 2015 to 2022. The secondary data was collected using a secondary data template in Appendix I.

3.8 Reliability and Validity of the Data Collection Instruments

Reliability is used in measuring the extent to which a data instrument will yield the same score when administered in different times, locations, or populations and do not differ in relevant variables. This was noted by Mueller & Knapp (2018). In addition, validity is the magnitude to which the findings obtained from the analyzed data represent the observation which is under review (Andrade, 2018). For validity of the secondary data template, the researcher consulted his supervisors and lecturers to reliably guide the

researcher to develop valid instruments with regard to the face validity, construct validity as well as content validity. In addition, reliability of the secondary data template was determined using Cronbach's alpha which measures internal consistency of values in relation to the study variables obtained from the CBK financial reports. It is expressed as a correlation coefficient, and its value ranges from 0 to +1. By convention, alpha should be 0.70 or higher which will also be used in this study to determine reliability of the values regarding the study variables that is provided by the CBK financial reports (Gollagi, Kotagi & Pareek, 2020).

3.9 Data Analysis and Presentation

In this study, panel data was collected then STATA software was used for analysis within a panel regression model. The statistical analysis comprised of descriptive analysis as well as inferential analysis. The former explained the demographics of data collected, and included the lowest and highest value of the study's variables as well as the mean and standard deviation for the period between 2015 and 2022. It also included the trends of the variables during the period which were presented in graph or pie charts. The deduced statistics had Pearson's correlation and regression analysis to find a relationship between the dependent and independent variables. In addition, the regression results were relied on to test the study's research hypothesis and determine whether the independent variables (credit accessibility, deposit mobilization, financial innovations and micro-insurance portfolio) have an effect significantly on financial performance of microfinance banks in Kenya. Moreover, it was used to determine whether competition has a

moderating effect on financial deepening and financial performance of the microfinance banks.

3.9.1 Diagnostic Tests

Before performing the actual analysis, the study was scrutinized for any instances of violating assumptions of the panel regression model. These tests did include:

3.9.2 Multicollinearity Test

According to Daoud (2017), multicollinearity is an abnormally high of intercorrelation among the independent variables, making it difficult to discern between the effects of independent variables. To detect multicollinearity in the independent variables, the variance inflation factor (VIF) was used. VIF shows the degree of correlation between a variable and the rest of predictors in the model and affects the variance of a partial regression coefficient. A simple test for collinearity is the variance inflation factor for each regression coefficient (Oke, Akinkunmi & Etebefia, 2019). When VIF is less than 5, there is an indication of low correlation of the predictor with the rest of predictors. A value between 5 and 10 does indicate a moderate correlation and whether the VIF is more than 10, the correlation of model predictors is high and therefore not tolerable.

3.9.3 Heteroskedasticity Test

The heteroskedasticity test was conducted to determine the variance of error terms and find whether they are the same across all the values of the independent variables. Presence of heteroscedasticity is a critical challenge when applying regression analysis, including

the analysis of variance, as it can nullify statistical tests of significance that presuppose that the modeling errors are uncorrelated and uniform, and that their variances do not change with the effects being modeled. The study tested for heteroscedasticity using the Breusch-Pagan method (Astivia & Zumbo, 2019). Heteroskedasticity is the absence of homoscedasticity.

Where the Breusch-Pagan test gives a p-value less than significant level of 0.05, the null hypothesis that the variance of the error term is constant is rejected and therefore it's concluded that heteroskedasticity exists.

3.9.4 Normality Test

According to Kim and Park (2019), the main purpose of carrying out the normality test is to find out whether a set of data is well designed with a normal distribution as well as to work out how precisely the random variable does influence the data set to be normally and effectively distributed. In statistical terms, the researcher can assess the effectiveness of fitting a normal model to the information or data. If the data is effectively described, the model fit is then deemed to be good in relation to the distribution norms without necessarily assessing other underlying variables. To test for normality, Shapiro-Wilk test was used. It involves computing a test statistic based on the correlation between the ordered data values and the corresponding expected values from a normal distribution. The test generates a p-value, which indicates the probability of observing the data if it were sampled from a normal distribution (Osborne & Waters, 2019). The null hypothesis for this test is that the data follows a normal distribution. If the p-value associated with the test statistic is greater than the chosen significance level (p= 0.05), then the null

hypothesis is not rejected and it concludes that the data follows a normal distribution. If the p-value is less than the selected significance level, the null hypothesis is rejected, indicating that the data significantly deviates from normality (Sulewski, 2020).

3.9.5 Linearity Test

Chen et al. (2019) assert that two variables are considered to be linearly related when they vary in relation to one another. For linear regression to be conducted, the variables (independent and dependent) should relate in a linear manner. This study used scatter plots and graphs to draw a conclusion on if the study variables have a linear relationship.

3.9.6 Stationarity Test

This test was done due to the fact that this study used panel data that is time series. A regression analysis is stationary if a time series' variance or mean is small. In this study, the panel root testing was conducted using the Levin–Lin–Chu test. Additionally, the non-stationary variables were differentiated and used in the analysis of this study (Zhang & Zhao, 2017).

If the p-value is less than 0.05 the null hypothesis is rejected and this suggests that the panel data in stationary.

3.9.7 Hausman Test

This test was done to determine whether the panel regression model is a fixed effects or a random effects model (Sheytanova, 2015). For a random effects model, the assumption is that the error term has no correlation with the predictors hence enabling variables that

are invariant to time, to play an explanatory variable role. On the other hand, a fixed effects model looks at the relationship between predictor and outcome variables in a study and eliminates the effect of characteristics of time invariance. This helps to examine the predictors' net effect on the outcome variable. The null hypothesis shows that the error terms do not have a correlation with predictor variables. Therefore, if the null hypothesis is accepted, it means the selected model is a random effects model while if rejected, it means the selected model's effect is fixed, therefore if the p-value is less than 0.05 significance level the fixed effect model is selected and if the p-value is above 0.05 the random effect model is selected.

3.10 Research Ethical Consideration

The researcher ensured that the ethical standards were adhered by making sure that all information obtained on the secondary data template is from the fully acknowledged CBK website. Furthermore, the researcher also made sure to incorporate references to the work of other researchers and properly cite them, in order to avoid plagiarism.

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter provides a detailed discussion of the findings obtained from the panel data analysis. This comprised of descriptive statistics, diagnostic tests as well as inferential statistics including correlation and regression analysis results. The regression results were also used to test for the research hypotheses and a summary table was provided at the end of the chapter.

4.2 Descriptive statistics

This section captures descriptive statistics of the study variables which mainly comprises the number of observations, the minimum, the maximum, the mean and the standard deviation values that were accounted for in the period between 2015 to 2022. The results are as shown in table 4.1 below.

Table 4.1: Descriptive Statistics Results

Variables	Obs	Minimum	Maximum	Mean	Std. Deviation
ROA	96	-0.5422	0.038	-0.08371	0.132113
Credit Accessibility	96	0	8.4375	1.2233	1.16096
Deposit Mobilization	96	0.0462	2.5556	0.555478	0.335065
Financial Innovations	96	0.0079	0.6944	0.114433	0.152296
Microinsurance Portfolio	96	0.0008	1.5857	0.125788	0.192692

The results in table 4.1 did revealed that the mean value for ROA was -0.08371 where the maximum value of ROA was 0.038 while the minimum value was -0.5422. The standard deviation of 0.132113 showed how the values of ROA were varied across the 12 microfinance banks in the period between 2015 and 2022. The mean of ROA (-0.08371) was less than the standard deviation (0.132113) indicating dispersion away from the mean, meaning that some of the microfinance banks had very large positive ROA and the others consistently were in the loss-making territory (negative ROA). The results corroborate those of Ndolo (2015) study which also used ROA as a key measure of the financial performance, based on firms that were listed in NSEs. The results contradict findings from MFIs in Ethiopia, Hassan and Batra (2018) which indicate that return on assets of between 4.92% and 6.13% for the period 2010-2018, further supported by Ertiro and Mohamed (2020) who indicated an average a mean of 6% and standard deviation of 0.05 for the period 2011-2018 for Ethiopian MFIs.

The findings also indicated that the mean for credit accessibility ratio was 1.2233. Credit accessibility ratio had a maximum value of 8.4375 and a minimum value of 0. The standard deviation of 1.16096 accounted for the variations between the maximum and minimum values of credit accessibility ratio. The mean was higher than standard deviation meaning that credit accessibility had no outliers and concentrated around the mean, the variation among the MFBs was not very different. This means the MFBs were lending more than the deposits, indicating reliance on external financing. These findings corroborate those of Molla and Kaur (2025) in Ethiopian MFIs whose mean was 2.166 and standard deviation of 1.308, also indicating reliance on external financing in lending. This contradicts the findings by Tehulu (2022) on credit expansion among the MFIs

which indicated significant variability on credit expansion among MFIs in sub-Saharan Africa. The results also contrast those of commercial banks in Kenya whose loan to deposit ratio averaged 70% (0.7) for the period 2015-2022 (CBK report, 2022).

Additionally, the results found that the average for deposit mobilization ratio was 0.555478, while the maximum value was 2.5556 and the minimum value was 0.0462. The standard deviation of 0.3351 revealed how the values of deposit mobilization ratio varied across the 12 microfinance banks in the period between 2015 and 2022. The average was above the standard deviation indicating deposits revolve around the mean, meaning that there was not much difference in deposits between the microfinance banks. The results concurred with those of Chepkiyeng (2017) study which examined deposit mobilization in commercial banks in Kenya and was found to influence ROA of banks. In comparison to commercial banks in Kenya for the period 2015-2022, deposits account for between 69.5% (0.695) and 75.8% (0.758) of total assets. (CBK, 2022), indicating that microfinance banks had more deposits than the total assets as compared to commercial banks.

The findings also disclosed that the mean for financial innovations ratio was 0.1144 where the maximum value of financial innovations ratio was 0.6944 while the minimum value was 0.0079. The standard deviation of 0.1523 accounted for the variations between maximum and minimum values of financial innovations ratio. The mean (0.1144) was below the standard deviation (0.1523) indicating that some microfinance banks leveraged on technology to enhance transactions compared to others. These results were in agreement with those of Kenyoru (2013) research which revealed that financial

innovations such as the number and value of mobile money transactions have contributed to expansion of the financial sector. Obialor (2022) in a study of financial innovation on performance of deposit taking MFBs in Nigeria, noted that mobile payments had a mean of 1,216.681 million and a standard deviation of 1,541.895 million indicating a significant variation among the MFBs in Nigeria in usage of financial innovations (mobile money payments). Mwaura (2024) noted that mobile banking transactions volume and cost varied with a mean of 46.15 and a standard deviation of 19.85%, and transaction cost mean 32.87 and standard deviation of 0.09% respectively indicating large volume of transactions in mobile banking in commercial banks compared to MFIs.

Moreover, the results revealed that the mean for microinsurance portfolio ratio was 0.1258 where the maximum value of microinsurance portfolio ratio was 1.5857 while the minimum value was 0.0008. The standard deviation of 0.1927 showed how the values of microinsurance portfolio ratio varied across the 12 microfinance banks and in the period between 2015-2022. The mean (0.1258) was below the standard deviation (0.1927) indication that some microfinance banks focused on financial product diversification through microinsurance offers compared to others. These results corroborate those of Yao (2013) which assessed total premiums of existing customers and consistency in renewing their policies and the results were found to contribute to performance of MFBs.

4.3 Diagnostic Tests

This section performed a scrutiny for any instances of violating the assumptions of the panel regression model. Various tests were used, including: Normality, Linearity, Multicollinearity, Heteroskedasticity, Stationarity and Hausman test.

4.3.1 Normality Test

Normality was tested using the Kolmogorov–Smirnov test because the total number of innovations were above fifty. The null hypothesis for this test was that the population was distributed normally.

Table 4.2 Kolmogorov–Smirnov test

	Shapiro-Wilk		
Variables	**Statistic**	**Df**	**Sig.**
ROA	0.755	96	0.231
Credit Accessibility	0.618	96	0.271
Deposit Mobilization	0.797	96	0.126
Financial Innovation	0.613	96	0.27
Microinsurance Portfolio	0.544	96	0.258

The results in table 4.2 reveal that the p-value for all the study variables was greater than the chosen alpha level (0.05), hence the null hypothesis was accepted. The conclusion was that there was evidence indicating the data tested had a normally distributed population (Elkin et al., 2021).

4.3.2 Linearity Test

To test for linearity between the independent and the dependent variables, the study generates scatter plots.

The results in figure 4.1 below showed the scatter plot for ROA and credit accessibility where the data points generally follow the straight line of best fit and tend to move upward from left to right. This suggests a linear and positive relationship between ROA and credit accessibility. It also indicates that a linear model was appropriate for analysis.

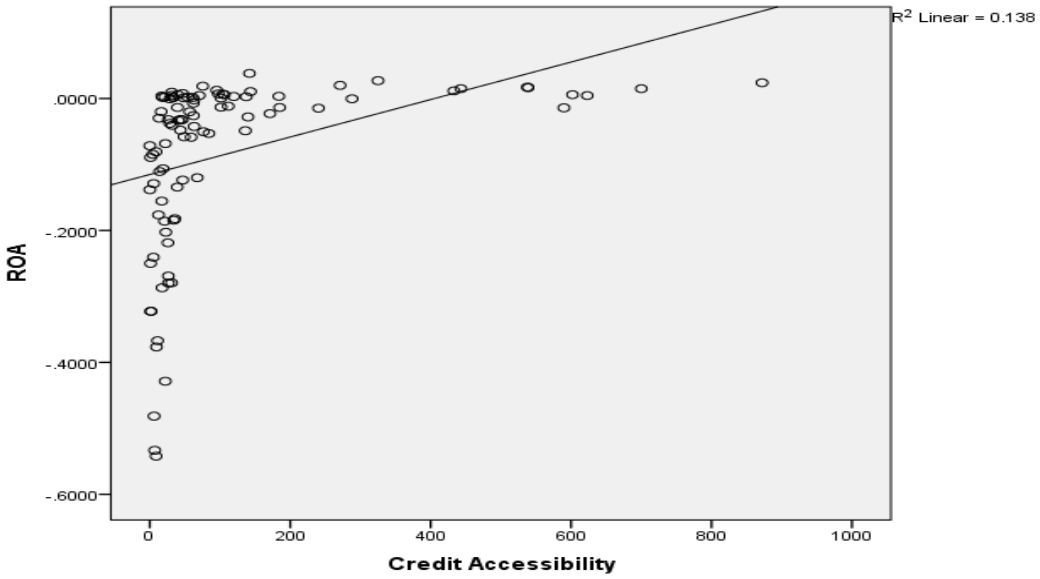


Figure 4.1: Scatter plot for ROA and Credit Accessibility

The findings in figure 4.2 below shows the scatter plot for ROA and deposit mobilization where the data points appear to follow the straight line of best fit and tend to move downwards from left to right. This means that the relationship between ROA and deposit mobilization is linear and negative. It also indicates that a linear model was appropriate for analysis.

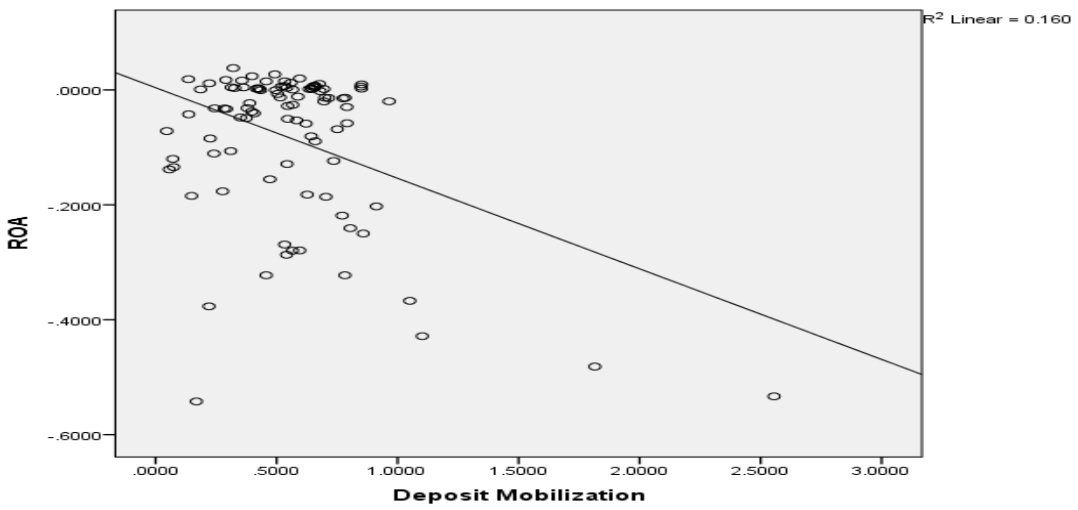


Figure 4.2: Scatter plots for ROA and Deposit Mobilization

The findings in figure 4.3 below illustrate the scatter plot for ROA and financial innovations where the data points appear to follow the straight line of best fit and tend to move downwards from left to right. This gives an indication that ROA and financial innovations had a linear and negative relationship. It also indicates that a linear model was appropriate for analysis.

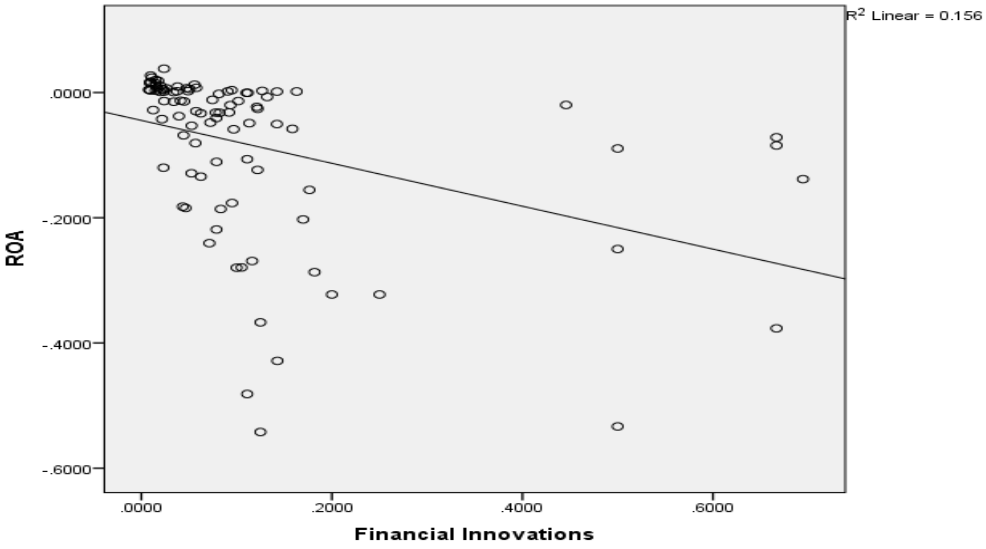


Figure 4.3: Scatter plots for ROA and Financial Innovations

The findings in figure 4.4 below illustrates the scatter plot for ROA and microinsurance portfolio where the data points generally follow the straight line of best fit and tend to move downwards from left to right. This implies that the relationship between ROA and microinsurance portfolio is linear and negative. It also indicates that a linear model was appropriate to be analyzed.

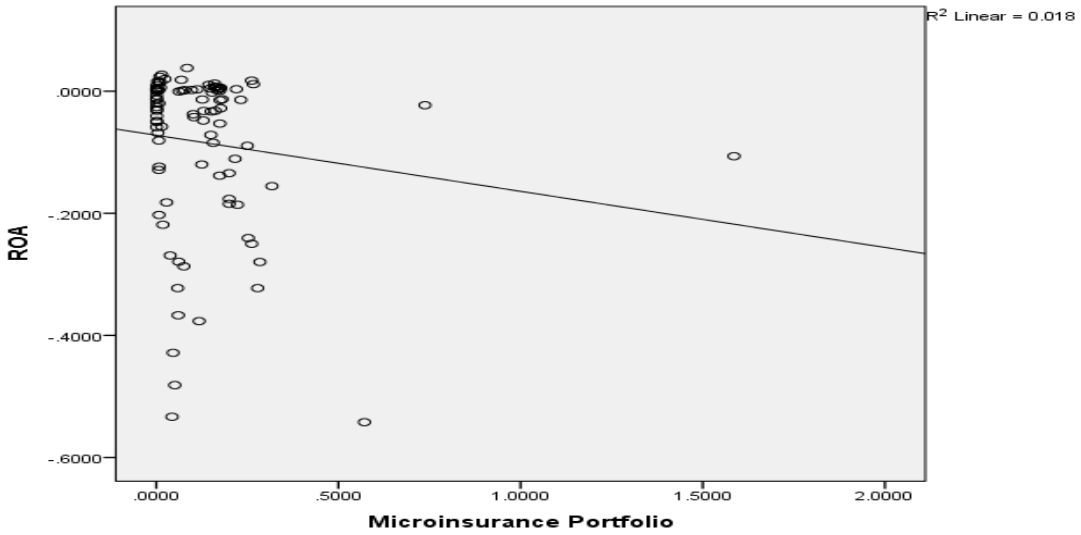


Figure 4.4: Scatter plots for ROA and Microinsurance Portfolio

4.3.3 Multicollinearity Test

The study used variance inflation factor (VIF) to determine if multicollinearity is present in the research data. Multicollinearity exists if Tolerance values are below 0.2 and VIF values are more than 5.

Table 4.3: Multicollinearity Test

Model		Collinearity Statistics	
	Variables	Tolerance	VIF
1	(Constant)		
	Credit Accessibility	0.206	4.397
	Deposit Mobilization	0.264	4.092
	Financial Innovations	0.461	2.496
	Microinsurance Portfolio	0.463	2.149

The findings in table 4.3 revealed that Tolerance values for all study variables were above 0.2 and VIF values being less than 5, thus it was concluded that there wasn't any problem of multicollinearity in the study and hence acceptable for analysis (Ullah et al.,2019).

4.3.4 Heteroscedasticity Test

The study used Breusch - pagan test to determine if there is presence of heteroscedasticity in the study variables. The test's null hypothesis is that there is no presence of heteroscedasticity (homoscedasticity) while the alternative hypothesis is that there is presence of heteroscedasticity (Martin, 2023).

Table 4.4: Heteroscedasticity Test

H_o: Constant variance			
Statistics	Df	Stat value	p-value
Chi-squared	12	19.8172	0.0706

Table 4.4 showed that the constant variance (Chi^2=19.8172) is insignificant (p=0.0706). Therefore, the study does not reject the null hypothesis. It also concludes that there is

lack of heteroscedasticity in the data while variability of the errors (residuals) remains constant across the independent variables' levels, thus the data was suitable to perform further regression analysis.

4.3.5 Stationarity Test

A stationarity test was performed using the Levin–Lin–Chu test. The null hypothesis (H_0) was that the panel data was non-stationary (unit root) while the alternative hypothesis (Ha) was that panel data was stationary. The stationarity results were presented in table 4.5 as shown below.

Table 4.5: Stationarity Test at Level

Variables	T-statistic	P-value	Null Hypothesis	Conclusion
ROA	-10.2786	0.0000	Reject null hypothesis	ROA data is stationary
Credit Accessibility	-2.6683	0.0038	Reject null hypothesis	Credit accessibility data is stationary
Deposit Mobilization	-3.2507	0.0006	Reject null hypothesis	Deposit mobilization data is stationary
Financial Innovation	3.2919	0.9995	Accept null hypothesis	Financial Innovation data is non-stationary
Microinsurance Portfolio	-27.0707	0.0000	Reject null hypothesis	Microinsurance portfolio data is stationary

It is observed that unlike all other variables, financial innovation is non-stationary at level. However, table 4.6 below shows the stationary test results when conducted at 1st difference and the findings indicated that financial innovation is stationary at 1st difference. This was supported by the t-statistics value -10.8466 and the p-value 0.000 which was significant. Thus, the null hypothesis was rejected.

Table 4.6: Stationary Test at 1st Difference

Variables	T-statistic	P-value	Null Hypothesis	Conclusion
Financial Innovation	-10.8466	0.0000	Reject null hypothesis	Financial Innovation data is stationary

4.3.6 Hausman test

To select the appropriate model, the Hausman test was applied in distinguishing between fixed effect panel regression model and the random effect regression model.

The null hypothesis was that the random effect model is appropriate (p-value >0.05), while the alternative hypothesis was that the fixed effect model is appropriate (p-value <0.05).

Table 4.7: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	60.923777	5	0.0000

The results in table 4.7 showed that the p-value of 0.000 is less than the critical value 0.05. Thus, the study rejected the null hypothesis and concluded that fixed effect is the preferred modeling approach in this research study.

4.4 Correlation Results

The Pearson R correlation analysis was carried out to determine the degree as well as direction of linear relationship between the study's variables. The results are as shown in table 4.8.

Table 4.8: Correlation Results

Variables		ROA	Credit Accessibility	Deposit Mobilization	Financial Innovations	Microinsurance Portfolio
ROA	Pearson Correlation	1	.371**	-.399**	-.395**	-0.334
	Sig. (2-tailed)		0.000	0.000	0.000	0.000
Credit Accessibility	Pearson Correlation	.371**	1	-0.135	-.322**	-0.059
	Sig. (2-tailed)	0.000		0.19	0.001	0.571
Deposit Mobilization	Pearson Correlation	.399**	-0.135	1	0.083	-.212*
	Sig. (2-tailed)	0.000	0.19		0.424	0.038
Financial Innovations	Pearson Correlation	395**	-.322**	0.083	1	0.054
	Sig. (2-tailed)	0.000	0.001	0.424		0.6
Microinsurance Portfolio	Pearson Correlation	-0.334	-0.059	-.212*	0.054	1
	Sig. (2-tailed)	0.000	0.571	0.038	0.6	

The findings of the correlation results in table 4.8 reveal that credit accessibility had a positive significant relationship with ROA (r=0.327, p=0.000). The results concurred

with those of Bakang (2015) which revealed that loans in the private sector obtained in the period between 2000 to 2013 had a positive and statistical relevance on GDP.

The results also found that deposit mobilization and ROA were negatively and significantly correlated to each other (r= -0.399, p= 0.000). The results concurred with those of Mbugua (2012) study which concluded that MFI's deposit taking has a negative relationship with financial performance. Additionally, Andele (2013) study argued that banking productivity is positively boosted by increased financial deepening in banks total deposits.

Moreover, financial innovations had a positive and significant association with ROA (r=0.395, p=0.000). These results were in agreement with those of Obenge (2018) which concluded that financial innovation that boosts credit access had a positive and significantly influenced total income of commercial banks in Kenya.

Additionally, the microinsurance portfolio had a negative significant relationship with ROA (r=-0.334, p=0.000). These results concurred with those in a study by Trujilo, Rodriguez- Lopez and Muriel- Patino (2014) which indicated lack of essential knowledge on the customer demands of microinsurance products in low-income populations in Latin America negatively affected the performance of MFIs. Consequently, the findings were in disagreement with Wondirad (2020) study which discovered that M-insurance significantly improved MFI performance particularly in outreach and portfolio quality.

4.5 Regression Analysis and Test of Research Hypotheses

Fixed effect regression model was used in determining the effect of credit accessibility, deposit mobilization, financial innovations and microinsurance portfolio on ROA of microfinance banks in Kenya. Results of the fixed effect regression model between credit accessibility, deposit mobilization, financial innovations, microinsurance portfolio and ROA before moderation were presented in table 4.9

Table 4.9: Overall Fixed Effect Regression Model before Moderation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.047596	0.024226	-1.964763	0.0529
CREDITACCESSIBILITY	2.099801	0.290959	7.216828	0.0077
DEPOSITMOBILIZATION	-0.067961	0.031006	-2.191867	0.0312
FINANCIALINNOVATIONS	0.253128	0.083278	3.03954	0.0032
MICROINSURANCEPORTFOLIO	-0.014514	0.004264	-3.403583	0.0011

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.731103	Mean dependent var	-0.083706
Adjusted R-squared	0.680685	S.D. dependent var	0.132113
S.E. of regression	0.074654	Akaike info criterion	-2.200887
Sum squared resid	0.445860	Schwarz criterion	-1.773496
Log likelihood	121.6426	Hannan-Quinn criter.	-2.028128
F-statistic	14.50077	Durbin-Watson stat	1.325915
Prob(F-statistic)	0.000000		

The findings in table 4.9 revealed that the coefficient of determination (R-square) is 0.7311. This shows that in general credit accessibility, deposit mobilization, financial innovations and microinsurance portfolio account for 73.11% of variations in ROA for microfinance banks in Kenya. The other 26.89% of variations in ROA are accounted for by other variables that were not examined in this study. This also implies that these

explanatory variables provide an adequate explanation for ROA and the goodness of fit model was satisfactory.

Also, the results did reveal that the overall regression model was statistically significant and the explanatory variables were good predictors of ROA. This was also supported by the calculated F-statistic of 14.50077 which is larger than the f-critical value of 3.942 and the reported p-value of (0.000) was less than 0.05 significance level.

The table 4.9 displayed the regression coefficient results which show that credit accessibility has a positive as well as significant effect on ROA (β=2.0998, t-value=7.216828 >1.96, P-Value=0.0077<0.05). This implies that a unit increase in credit accessibility can result in a corresponding increase in ROA by 2.0998 units. The findings concurred with those of Macharia (2015) which targeted commercial banks in Kenya and assessed data on bank credits and found it to significantly influence the commercial banks' performance.

The regression model for credit accessibility and ROA is presented as follows;

$Y_{it} = \beta_0 + \beta_1 X_{1it} + \varepsilon_{it}$ ……Equation 4.1

Where;

Y_{it} =Financial Performance (ROA)

β_0 =-0.047596

β_1 = 2.0998

X_{1it} = Credit Accessibility

Financial Performance= -0.047596. This research hypothesis H_{01} was rejected since the p-value for credit + 2.0998 Credit Accessibility……Equation 4.2

Hypothesis Testing for the relationship between Credit Accessibility and ROA

H_{01}: Credit Accessibility does not have significant effect on the financial performance of microfinance banks in Kenya.

This research hypothesis H_{01} was rejected since the p-value for credit accessibility was less than 0.05. It can then be concluded that credit accessibility significantly affects financial performance of microfinance banks in Kenya. This also implies that microfinance banks in Kenya benefit from a rise in access to bank credits.

The second objective of the study was to find out the effect that deposit mobilization has on the financial performance of microfinance banks in Kenya. The results indicate that the regression coefficient of deposit mobilization had a negative significant effect on ROA (β=-0.068, t-value=-2.192>-1.96, P-value= 0.0312<0.05). This signals that a 0.068 unit decrease in ROA may be expected for every unit increase in deposit mobilization. The results corroborate those of Mbugua (2012) research which concluded that deposit taking in MFIs led to a significant deterioration in financial performance as a result of deposit taking which means that deposit taking did impact financial performance adversely. The consequence of this is that the findings were in disagreement with those of Tuyishime, Memba and Mbera (2015) study which found that deposit mobilization positively and significantly influenced Equity bank's performance in Rwanda.

The regression model for deposit mobilization and ROA is presented as follows;

$Y_{it} = \beta_0 + \beta_2 X_{2it} + \varepsilon_{it}$ ……Equation 4.3

Where;

Y_{it} = Financial Performance (ROA)

β_0 = -0.047596

β_2 = -0.068

X_{2it} = Deposit Mobilization

Financial Performance= -0.047596 – 0.068 Deposit Mobilization……Equation 4.4

Hypothesis Testing for the relationship between Deposit Mobilization and ROA

H_{02}: Deposit Mobilization does not have significant effect on the financial performance of microfinance banks in Kenya.

The research hypothesis H_{02} above was rejected because the p-value for deposit mobilization was less than 0.05. It can then be concluded that deposit mobilization significantly affects financial performance of microfinance banks in Kenya. This can also mean that financial performance of microfinance banks in Kenya does not necessarily rise as a result of an increase in deposit mobilization. Additionally, this negative effect may be caused by increased deposit mobilization that results in riskier lending practices, such as lending to high-risk borrowers without adequate assessment, and leads to higher defaults and non-performing loans. Hence, negatively affects ROA despite a rise in deposits. These results also concur with those of Chepkiyeng (2017) study which established that deposit mobilization might increase the deposit base, however if the

interest rates offered on deposits exceed the returns earned from lending activities, the profitability of banks decreases significantly leading to lower percentage in ROA.

The study's third objective was to find out the effect that financial innovation has on the financial performance of microfinance banks. The regression coefficient results showed that financial innovations had an effect on ROA which was positive as well as significant (β=0.253, P-Value=0.032<0.05, t-value=3.04>1.96). This gives a suggestion that a unit increase in financial innovation can result in a corresponding increase in ROA by 0.253 units. These findings corroborated those of Chepkiyeng (2017) research which revealed that in Kenya, the financial performance of fifty financial institutions were positively impacted by financial innovations. However, these findings disagreed with those of Kenyoru (2013) research which concluded that bank performance was not significantly affected by financial innovation.

The regression model for financial innovations and ROA is as shown below;

$Y_{it} = \beta_0 + \beta_3 X_{3it} + \varepsilon_{it}$ ……Equation 4.5

Where;

Y_{it} = Financial Performance (ROA)

β_0 = -0.047596

β_3 = 0.253

X_{3it} = Financial Innovations

Financial Performance= -0.047596 + 0.253 Financial Innovations……Equation 4.6

Hypothesis Testing for the relationship between Financial Innovation and ROA

H_{03}: Financial innovations do not have significant effect on the financial performance of microfinance banks in Kenya.

The research hypothesis H_{03} above was rejected since the p-value for financial innovations was less than 0.05. A conclusion can be made that financial innovations significantly affect the financial performance of microfinance banks in Kenya. Financial Innovations like mobile banking, digital lending platforms, and online banking have been proven to help banks reach a wider audience, including remote or underserved areas. These innovative technologies have also assisted banks to streamline most of their operations, reduce costs, and improve efficiency. Therefore, financial innovations are a strategy that can positively contribute to improved financial performance of microfinance banks in Kenya.

The findings in table 4.8 displayed the regression coefficient results which show that microinsurance portfolio has a negative but significant effect on ROA (β=-0.0145, p=0.011<0.05, t-value=-3.404>-1.96). This implies that a 0.0145 unit decrease in ROA may be expected for every unit increase in the microinsurance portfolio. These findings corroborated those of Alshebami, Morsi, Raza and Aziz (2020) study which found that increased demand of microinsurance products negatively affected profitability and net income of banks due to lack of adequate skills and resources to diversify the microinsurance portfolio. Consequently, Paramasivan and Rajaram (2016) study revealed that introduction of the many micro health insurance programs was a positive and significant factor that can influence performance of the public and the private insurance sectors.

The regression model for credit accessibility and ROA is as shown below;

$Y_{it} = \beta_0 + \beta_4 X_{4it} + \varepsilon_{it}$ ……Equation 4.7

Where;

Y_{it} = Financial Performance (ROA)

β_0 = -0.047596

β_4 = -0.0145

X_{1it} = Microinsurance Portfolio

Financial Performance=-0.047596 – 0.0145 Microinsurance Portfolio…Equation 4.8

Hypothesis Testing for the relationship between Microinsurance Portfolio and ROA

H_{04}: Microinsurance portfolio does not have significant effect on the financial performance of microfinance banks in Kenya.

The research hypothesis H_{04} above was rejected because the p-value for microinsurance portfolio was less than 0.05. It can then be concluded that microinsurance portfolio significantly affects financial performance of microfinance banks in Kenya. This can also mean that financial performance of microfinance banks in Kenya does not necessarily improve as a result of an increase in microinsurance portfolio. This negative effect of microinsurance portfolio can be attributed to inadequate assessment of risks associated with the microinsurance products offered which can lead to adverse selection or moral hazard. Additionally, ineffective claims management processes can lead to increased operational costs, reputational damage, and potential financial losses for the microfinance bank (Alshebami, Morsi, Raza & Aziz, 2020).

The overall regression model results showed that credit accessibility's effect was positive as well as significant on ROA (β=2.0998, t-value=7.216828 >1.96, P-Value=0.0077<0.05). Deposit mobilization's effect was negative and significant on ROA (β=-0.068, t-value=-2.192>-1.96, P-Value=0.0312<0.05). Financial innovations' effect was positive and significant on ROA (β=0.253, P-Value=0.032<0.05, t-value=3.04>1.96). Microinsurance portfolio's effect was negative and significant on ROA (β=-0.0145, p=0.011<0.05, t-value=-3.404>-1.96).

Therefore, the overall regression model of the study before moderation is as follows;

$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \varepsilon_{it}$……Equation 4.11

Where;

Y= Financial Performance (ROA)

β_0 = -0.047596

β_1 = 2.0998

β_2 = -0.068

β_3 = 0.253

β_4 = -0.0145

X_{1it}, X_{2it}, X_{3it}, X_{4it} = Credit Accessibility, Deposit Mobilization, Financial Innovations and Microinsurance Portfolio respectively

Financial Performance = -0.047596 + 2.0998 credit accessibility -0.068 deposit mobilization + 0.253 financial innovations -0.0145 microinsurance portfolio + Ɛ……Equation 4.12

4.6 Overall Regression Analysis Results after Moderation

Results of fixed effect regression model between credit accessibility, deposit mobilization, financial innovations, microinsurance portfolio, market size index which is the measure of competition and ROA after moderation were presented in table 4.10 and 4.11.

Table 4.10: Overall Fixed Effect Regression Model Results of Explanatory and Moderating Variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.104576	0.132653	-0.788344	0.4329
CREDITACCESSIBILITY	3.4514	0.512558	6.733594	0.0231
DEPOSITMOBILIZATION	-0.043793	0.031483	-1.391005	0.1682
FINANCIALINNOVATIONS	0.253128	0.083278	3.03954	0.0032
MICROINSURANCEPORTFOLIO	-0.054144	0.046454	-1.165548	0.2473
MARKETSIZEINDEX	0.007981	0.018807	0.424343	0.6725
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.766573	Mean dependent var		-0.083706
Adjusted R-squared	0.715698	S.D. dependent var		0.132113
S.E. of regression	0.070442	Akaike info criterion		-2.300681
Sum squared resid	0.387047	Schwarz criterion		-1.819865
Log likelihood	128.4327	Hannan-Quinn criter.		-2.106327
F-statistic	15.06775	Durbin-Watson stat		1.254117
Prob(F-statistic)	0.000000			

The regression results in table 4.10 revealed that the coefficient of determination (R-square) is 0.7666 after including market size index which is the measure of the moderating variable competition. This implies that credit accessibility, deposit mobilization, financial innovations, microinsurance portfolio and market size index

explains 76.66% of the variations in ROA of microfinance banks in Kenya. The remaining 23.34% of the variations in ROA are accounted for by other variables that were not examined in this study. This also implies that these explanatory and moderating variables provide a suitable explanation for ROA and the goodness of fit model was satisfactory.

The results also did reveal that the overall regression model is statistically significant and the explanatory and moderating variables were good predictors of ROA. This was according to the calculated F-statistic of 15.068 which is larger than f-critical value of 3.942 and the reported p-value of (0.000) was less than 0.05 significance level.

Moreover, the regression coefficient results also gave an indication that credit accessibility had a positive and significant effect on ROA (β=3.451, p=0.0231). Deposit mobilization had a negative and insignificant effect on ROA (β=-0.044, p=0.168). Financial innovations had a positive and significant effect on ROA (β=0.253, p=0.0032). Microinsurance portfolio had a negative and insignificant effect on ROA (β=-0.054, p=0.247). Market size index had a positive but insignificant effect on ROA (β= 0.008, p=0.673).

According to the regression model 3.4.3 outlined in chapter three, the regression model of the explanatory and moderating variables is presented as follows;

$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 Z_{it} + \varepsilon_{it}$…… Equation 4.12

Where;

Y= Financial Performance (ROA)

$\beta_0 = -0.105$

$\beta_1 = 3.541$

$\beta_2 = -0.044$

$\beta_3 = 0.253$

$\beta_4 = -0.054$

$\beta_5 = 0.008$

X_{1it}, X_{2it}, $X_{3it,}$ X_{4it} = Credit Accessibility, Deposit Mobilization, Financial Innovations and Microinsurance Portfolio respectively

Z_{it} = Competition, which was measured by market size index

Financial Performance = -0.105 + 3.541 credit accessibility - 0.044deposit mobilization + 0.253financial innovations – 0.054 microinsurance portfolio + 0.008competition + Ɛ……Equation 4.13

Furthermore, the findings in table 4.11 showed the results of the interaction composites between market size index and the four independent variables which were used to test the moderating effect brought by competition on the relationship between financial deepening and financial performance of microfinance banks.

Table 4.11: Overall Fixed Effect Regression Model Results of the Interaction between (Market size Index and the Independent Variables)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.501646	0.190923	2.627471	0.0104
CREDITACCESSIBILITY	0.000218	0.000341	0.639386	0.5245
DEPOSITMOBILIZATION	-0.711741	0.198565	-3.584423	0.0006
FINANCIALINNOVATIONS	1.520195	0.489309	3.106820	0.0027
MICROINSURANCEPORTFOLIO	-2.857816	0.599876	-4.764008	0.0000
MARKETSIZEINDEX	-0.083076	0.030965	-2.682922	0.0090
MARKETSIZEINDECREDITACCESSIBILITY	-3.153322	5.160591	-0.611039	0.5430
MARKETSIZEINDEXDEPOSITMOBILIZATION	0.107487	0.036635	2.934001	0.0044
MARKETSIZEINDEXFINANCIALINNOVATI...	-0.275473	0.090321	-3.049916	0.0032
MARKETSIZEINDEXMICROINSURANCEP...	0.412079	0.087200	4.725692	0.0000

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.813339	Mean dependent var	-0.083706
Adjusted R-squared	0.763563	S.D. dependent var	0.132113
S.E. of regression	0.064240	Akaike info criterion	-2.461756
Sum squared resid	0.309504	Schwarz criterion	-1.900805
Log likelihood	139.1643	Hannan-Quinn criter.	-2.235010
F-statistic	16.33991	Durbin-Watson stat	1.168741
Prob(F-statistic)	0.000000		

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.085864	0.011158	-7.695341	0.0000
MARKETSIZEINDEXFINANCIALDEEPENING	1.1795067	4.363957	0.270284	0.0078

The regression results after moderation show the coefficient of determination (R-square) increased from 0.7311 to 0.8133. This implies that in addition to the study variables, interaction composites explain 81.33% of the variations in ROA of Kenya's MFBs. The remaining 18.67% of the variations in ROA are accounted for by other variables that were not examined in this study. This also implies that the interaction composites provide an adequate explanation for ROA and the goodness of fit model was satisfactory.

The findings also showed that the overall regression model is statistically significant and the interaction composites were good predictors of ROA. This was according to the calculated F-statistic of 16.34 which is larger than f-critical value of 3.942 and the reported p-value of (0.000) was less than 0.05 significance level.

Moreover, the regression coefficients result also showed that the interaction composite between market size index and credit accessibility had a negative and insignificant effect on ROA (β=-3.153, p=0.543). The interaction composite between market size index and deposit mobilization had a positive as well as a significant effect on ROA (β=0.107, p=0.004). In addition, the interaction composite between market size index and financial innovations had a negative and significant effect on ROA (β=-0.275, p=0.003). The interaction composite between market size index and microinsurance portfolio had a positive as well as a significant effect on ROA (β= 0.412, p =0.000). Additionally, the interaction composite between market size index and financial deepening was also found an effect which was positive as well as a significant on ROA (β= 1.180, p=0.0078). Thus, this means that competition significantly moderated the relationship between financial deepening and financial performance of microfinance banks in Kenya.

These findings concurred with those of Omuok (2015) study which concluded that the degree of competition significantly affects the financial performance of Kenya's deposit taking microfinance institutions. However, these results also disagreed with those of Ajisafe and Akinlo (2014) study which found that there exists no relationship between competition and level of efficiency, which is a measure of performance of Kenya's commercial banks.

Therefore, the regression model after moderation is as shown below;

$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 Z_{it} + \beta_6 X_{1it} * Z_{it} + \beta_7 X_{2it} * Z_{it} + \beta_8 X_{3it} * Z_{it} + \beta_9 X_{4it} * Z_{it} + \varepsilon_{it}$……Equation 4.14

Where;

Y= Financial Performance (ROA)

$\beta_0 = 0.502$ $\beta_5 = -0.083$

$\beta_1 = 0.0002$ $\beta_6 = -3.153$

$\beta_2 = -0.712$ $\beta_7 = 0.107$

$\beta_3 = 1.520$ $\beta_8 = -0.275$

$\beta_4 = -2.858$ $\beta_9 = 0.412$

X_{1it}, X_{2it}, X_{3it}, X_{4it} = Credit Accessibility, Deposit Mobilization, Financial Innovations and Microinsurance Portfolio respectively

Z_{it} = Competition, which was measured by market size index

$X_{1it} * Z_{it}$ = interaction composite between credit accessibility and competition

$X_{2it} * Z_{it}$ = interaction composite between deposit mobilization and competition

$X_{3it} * Z_{it}$ = interaction composite between financial innovations and competition

$X_{4it} * Z_{it}$ = interaction composite between microinsurance portfolio and competition

Financial Performance = 0.502- 0.0002 credit accessibility -0.712deposit mobilization + 1.520financial innovations -2.858microinsuranceportfolio -0.083competition -3.153creditaccessibility*competition + 0.107depositmobilization*competition -0.275financialinnovations*competition +

0.412microinsurance portfolio*competition +

Ɛ……...Equation 4.13

Hypothesis Testing for the moderating effect on relationship between financial deepening and financial performance of microfinance banks in Kenya.

H_{05}: Competition has no significant moderating effect on the association between financial deepening and financial performance of microfinance banks in Kenya.

The research hypothesis **H_{05}** was rejected since the majority of the p-value obtained in the interaction composites of market size index and financial deepening was less than 0.05. Hence, it can be concluded that competition has a significant moderating effect on the relationship between financial deepening and the financial performance of Kenya's microfinance banks.

4.7 Summary of the Research Hypotheses

Table 4.12 below presents the summary of the research hypotheses where it outlines the p-values and the conclusions made.

Table 4.12: Summary of Research Hypotheses

Null Hypothesis	P value	Conclusion
H_{01}: Credit accessibility does not have significant effect on financial performance of microfinance banks in Kenya.	0.0077	The null hypothesis was rejected because the p-value 0.0077 was less than 0.05. Thus, the conclusion was that credit accessibility has a positive significant effect on the financial performance of microfinance banks.
H_{02}: Deposit mobilization has no significant effect on financial performance of microfinance banks in Kenya.	0.0312	The null hypothesis was rejected because the p-value 0.0312 was less than 0.05. Deposit mobilization has a negative significant effect on the financial performance of microfinance banks.
H_{03}: Financial innovation has no significant effect on the financial performance of microfinance banks in Kenya.	0.0032	The null hypothesis was rejected because the p-value 0.0032 was less than 0.05. Financial innovation has a positive significant effect on the financial performance of microfinance banks.
H_{04}: Microinsurance portfolio does not have significant effect on the financial performance of microfinance banks in Kenya.	0.0011	The null hypothesis was rejected because the p-value 0.0011 was less than 0.05. It was thus concluded that the microinsurance portfolio has a negative significant effect on the financial performance of microfinance banks.
H_{05}: Competition has no significant moderating effect on the relationship between financial deepening and financial performance of microfinance banks in Kenya	0.0078	The null hypothesis was rejected because the p-value 0.0078 was less than 0.05. Competition has a significant moderating effect on the relationship between financial deepening and the financial performance of microfinance banks.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section presents a summary of the study's findings which were arranged in relation to the research objectives. It also discusses conclusions drawn from the study's findings and highlights the recommendations based on those findings. Lastly, this chapter provides suggestions for further research.

5.2 Summary of Findings

5.2.1 Credit Accessibility and Financial Performance of Microfinance Banks in Kenya

The study's first objective was to examine the effect that credit accessibility has on the financial performance of microfinance banks in Kenya. According to the descriptive results, the credit accessibility ratio's maximum value was 8.4375 and the minimum value was 0. This means that credit accessibility is among the strategies employed by microfinance banks in Kenya in order to enhance financial deepening through increasing access to their bank loans and improve their performance mainly through boosting their interest income and overall revenues.

The correlation results also revealed that credit accessibility's relationship with ROA ($r=0.327$, $p=0.000$) was positive and significant. Similarly, the regression results also found that credit accessibility had a positive as well as significant effect on ROA ($\beta=2.0998$, t-value=7.216828 >1.96, P-Value=0.0077<0.05) meaning that for every unit

improvement in credit accessibility banks can benefit from an increase in their financial performance by 2.0998 units. These regression results also lead to the rejection of the null hypothesis **H_{01}:** Credit Accessibility does not have significant effect on the financial performance of microfinance banks in Kenya. Thus, it was established that in Kenya, credit accessibility has a significant effect on the financial performance of microfinance banks.

5.2.2 Deposit Mobilization and Financial Performance of Microfinance Banks in Kenya

The study's second objective was to determine the effect of deposit mobilization on financial performance of microfinance banks in Kenya. The descriptive results reveal that the deposit mobilization ratio's maximum value was 2.5556 whereas the minimum value was 0.0462. According to these results it appears that deposit mobilization is still not an exclusively utilized strategy by microfinance banks in Kenya in order to enhance its financial deepening. This may be due to limiting demographic factors that hinder their ability to reach a broader segment of customers and weak product offering that can attract customers to make more deposits with them.

The correlation findings also disclosed that deposit mobilization's relationship with ROA ($r=-0.399$, $p=0.000$) had a negative and significant effect. Additionally, the regression results also found that deposit mobilization had a negative and significant effect on ROA ($\beta=-0.068$, t-value=-2.192>-1.96, P-value= 0.0312<0.05). This implies a decrease in financial performance of Kenya's microfinance banks by 0.068 units for every unit improvement in deposit mobilization. This may mainly arise in case of instances of

riskier lending practices, such as lending to high-risk borrowers without adequate assessment, and leads to higher defaults and non-performing loans. These regression results also lead to the null hypothesis rejection **H_{02}:** Deposit mobilization does not have significant effect on the financial performance of microfinance banks in Kenya. Hence, it was determined that in Kenya, deposit mobilization has a significant effect on the financial performance of microfinance banks.

5.2.3 Financial Innovations and Financial Performance of Microfinance Banks in Kenya

The study's third objective was to assess the effect of financial innovation on financial performance of microfinance banks in Kenya. The descriptive results indicated that the maximum value of financial innovations ratio was 0.6944 while the minimum value was 0.0079. This showed that microfinance banks in Kenya have to a good extent adopted financial innovations as a strategy to enhance financial deepening and also mainly to remain competitive in the banking sector which is faced with stiff competition and advanced technological improvements.

The correlation results also found that financial innovations had a positive as well as significant relationship with ROA ($r=0.395$, $p=0.000$). Moreover, the regression results also found that financial innovations had a positive as well as significant effect on ROA ($\beta= 0.253$, P-Value=0.032<0.05, t-value=3.04>1.96). This means that for every unit improvement in financial innovation banks can benefit from an increase in their financial performance by 0.253 units. These regression results also lead to the rejection of the null hypothesis **H_{03}:** Financial innovation has no significant effect on the financial

performance of microfinance banks in Kenya. Thus, it was established that financial innovations have a significant effect on the financial performance of microfinance banks in Kenya.

5.2.4 Microinsurance Portfolio and Financial Performance of Microfinance Banks in Kenya

The study's fourth objective was to establish the effect of microinsurance portfolio on financial performance of microfinance banks in Kenya. The descriptive findings revealed that the maximum value of microinsurance portfolio ratio was 1.5857 while the minimum value was -0.008. These results show that microinsurance portfolio is not an exclusively utilized strategy by microfinance banks (MFBs) in Kenya to enhance financial deepening. This may be attributed to the factors such as complexities in designing satisfactory microinsurance products for its customers, resource constraints, regulations hurdles and ineffective risk assessment and management strategies.

The correlation findings also outlined that the microinsurance portfolio had a negative and significant relationship with ROA ($r=-0.334$, $p=0.000$). In addition, the regression results also found that the microinsurance portfolio had a negative and significant effect on ROA ($\beta= -0.0145$, $p=0.011<0.05$, t-value=-3.404>-1.96). This implies a financial performance decrease of 0.0145 units for every unit improvement in microinsurance portfolios especially if Kenya's microfinance banks fail to comprehensively implement effective risk assessment and management strategies of microinsurance products and design products that meet customer demands. These regression results also lead to null hypothesis rejection **H_{04}:** Microinsurance portfolio does not have significant effect on

the financial performance of microfinance banks in Kenya. Hence, it was established that in Kenya, microinsurance portfolio has a significant effect on the financial performance of microfinance banks.

5.2.5 Moderating Variable Competition, Financial Deepening and Financial performance of Microfinance Banks in Kenya

The fifth objective of the study was to establish the moderating effect of competition on the association between financial deepening and financial performance of microfinance banks in Kenya. The regression results after moderation revealed that the interaction composite between market size index and financial deepening was also found to have a positive as well as a significant effect on ROA (β= 1.180, p=0.0078). Thus, this implied that competition had a significant moderating effect on the relationship between financial deepening and financial performance of microfinance banks in Kenya.

5.3 Conclusions

The findings obtained from this study led to the conclusion that financial deepening has a significant effect on the financial performance of microfinance banks in Kenya. It can also be concluded that in Kenya, credit accessibility had a positive as well as a significant effect on the financial performance of microfinance banks. Thus, in order to enhance financial deepening, microfinance banks in Kenya must be more intentional in their strategies that facilitate increased access to bank loans so as to boost their interest income and overall revenues and performance.

Moreover, the study can also conclude that deposit mobilization had a negative and significant effect on the financial performance of microfinance banks in Kenya. However, financial deepening through deposit mobilization can be improved if microfinance banks invest in effective risk assessment and management practices in their lending practices and offer products that can attract customers to make more deposits with them.

In addition, a conclusion can also be made, that financial innovations do have a positive as well as a significant effect on the financial performance of microfinance banks in Kenya. Thus, it can also be concluded that if microfinance banks aim to increase their financial deepening through financial innovations including mobile money, they also have to keep up with the dynamics in advanced technological improvements and improve their customers' experience.

Additionally, the research also concluded that the microinsurance portfolio had a negative and significant effect on financial performance of microfinance banks. However, a microinsurance portfolio can be an essential factor that promotes financial deepening in MFBs if these banks tailor their microinsurance products to their customer demands, tackle challenges in resource constraints and regulations and effectively assess and manage microinsurance risks.

Furthermore, the study also concluded that the moderating variable competition had a positive and significant moderating effect on financial performance of microfinance banks in Kenya.

5.4 Recommendations

From the study findings, credit accessibility has a positive significant effect on financial performance. Therefore, the study recommends that to increase financial inclusion, the management of microfinance banks should expand its loan offerings to cater for the diverse needs of customers, including agricultural, small business, and personal loans so as to attract a wider customer base seeking different types of financial support, to capture the underserved segments of majorly micro, small and medium businesses.

Deposit mobilization has a negative statistical significance with financial performance which is an indication of increase in deposit mobilization having a negative effect on the financial performance of MFBs. These could be due to assess-liability mismatch and maturity mismatch therefore reducing the interest rate spread. On maturity mismatch, the MFBs were relying on short term deposits in order to lend on a long-term basis. The study therefore recommends that the MFBs' management should try to match the maturity period of the short-term deposits and their lending to reduce the maturity mismatch and asset-liability mismatch. The MFBs were paying more on deposits and receiving less on lending. They should also implement robust risk assessment frameworks to maintain a balance between credit accessibility and minimizing default risks, as they will ensure sustainable lending practices.

Financial innovation has a positive significant effect on financial performance. This means the innovative products that MFBs were introducing had a positive effect on financial performance. The study therefore recommends that product portfolio managers, product innovation managers and the ICT managers should work together to produce

more innovative products. MFBs engage in more technological innovations and product innovation which may enhance the ROA. They should also introduce innovative deposit products that offer competitive interest rates and flexible deposit terms that incentivize customers to deposit more funds with the microfinance banks. This will also strengthen mobile money integration and digital banking services by offering user-friendly mobile banking applications that allow for easy transactions, fund transfers, loan applications, and account management.

Microinsurance portfolio has a negative significant effect on financial performance. Therefore, the study recommends that investment banks' management should consider the use of bancassurance as a model of increasing insurance uptake instead of the microinsurance being stand-alone products, which may increase economies of scope i.e., the banking product and insurance product being marketed as a single price. Policymakers (association of MFBs in Kenya and the CBK) in the microfinance sector should intervene and advocate for supportive regulatory frameworks that enable microfinance banks to offer microinsurance products more effectively while adhering to regulatory requirements.

Policymakers should also introduce financial incentives or support mechanisms for microfinance banks to invest in technological improvements aimed at enhancing financial innovation.

5.5 Suggestions on areas for further research

The explanatory variables of this study including credit accessibility, deposit mobilization, financial innovations and microinsurance portfolio accounted for 73.11%

of changes in financial performance of MFBs. Thus, the remaining 26.89% can be accounted for by further studies examining the effect of other factors such as investment diversification. In addition, the explanatory variables of this study including credit accessibility, deposit mobilization, financial innovations, microinsurance portfolio while including the moderating variable competition explained 81.33% of the variations in financial performance of MFBs in Kenya. In order to account for the remaining 18.67% of the variations in financial performance of MFBs, further studies should consider examining the influence of external macroeconomic factors such as changes in the interest rate, inflation and economic growth on the relationship between financial deepening measures and financial performance. Moreover, future studies can also consider other theories aside from the three discussed to provide different concepts and ideas related to financial deepening and financial performance in the financial sector and other sectors.

REFERENCES

Abdulai, A. F. (2019). Social capital and innovation performance in firms. *Innovation and social capital in organizational ecosystems*, 81-97.

Abdulai, A., & Tewari, D. D. (2017). Trade-off between outreach and sustainability of microfinance institutions: evidence from sub-Saharan Africa. *Enterprise development & microfinance*, *28*(3), 162-181.

Abrar, A., Hasan, I., & Kabir, R. (2021). Finance-growth nexus and banking efficiency: The impact of microfinance institutions. *Journal of Economics and Business*, *114*, 105975.

Adesola, A., & Ewa. U. (2020). Deposit Money Banks Services and Economic Growth in Nigeria. *International Journal of Finance and Accounting,* 9(2), pp. 31-41. Doi: 10.5923/j.ijfa.20200902.02.

Afolabi, T. S. (2020). Credit risk and financial performance: Evidence from microfinance banks in Nigeria.

Akenga, G. (2017). Effect of liquidity on financial performance of firms listed at the Nairobi Securities Exchange, Kenya. *International Journal of Science and Research*, *6*(7), 279-285.

Akinmade, B., Adedoyin, F. F., & Bekun, F. V. (2020). The impact of stock market manipulation on Nigeria's economic performance. *Journal of Economic Structures*, *9*(1), 1-28.

Akotch, W. F. (2018). Determinants of growth in the banking industry in Kenya. *DBA Africa Management Review*, *8*(1).

Al-Ajlouni, A., Al-Hakim, D., & Suliaman, M. (2018, April). Financial technology in banking industry: Challenges and opportunities. In *e International Conference on Economics and Administrative Sciences ICEAS2018*.

Al-Azzam, M. D. (2019). Financing microfinance institutions: subsidies or deposit mobilization. *Applied Economics*, *51*(15), 1621-1633.

Alrabadi, D. W. H., & Kharabsheh, B. A. (2016). Financial deepening and economic growth: The case of Jordan. *Journal of Accounting and Finance*, *16*(6), 158.

Alshebami, A. S., Morsi, S. A., Raza, M., & Aziz, A. (2020). Exploring the potential of microinsurance for challenging the vulnerabilities in poverty sector of Yemen: An empirical study from demand-side perspectives. *International Journal of Disaster and Business Continuity*, *11*(1), 1288-1302.

Amel-Zadeh, A., Barth, M. E., & Landsman, W. R. (2017). The contribution of bank regulation and fair value accounting to procyclical leverage. *Review of Accounting Studies*, *22*(3), 1423-1454.

Amin, M. F. B., & Uddin, S. J. (2018). Microfinance-economic growth nexus: A case study on Grameen Bank in Bangladesh. *International Journal of Islamic Economics and Finance (IJIEF)*, *1*(1), 25-38.

Anarfo, E. B., & Abor, J. Y. (2020). Financial regulation and financial inclusion in Sub-Saharan Africa: Does financial stability play a moderating role? *Research in International Business and Finance*, *51*, 101070.

Ando, K., Matsumoto, K., & Matsumoto, Y. (2017). Business Performance of Firms Using Debt. *Public Policy Review*, *13*(2), 167-182.

Andrade, C. (2018). Internal, external, and ecological validity in research design, conduct, and evaluation. *Indian journal of psychological medicine*, *40*(5), 498-499.

Anyanwu, A., Gan, C., & Hu, B. (2018). Government domestic debt, private sector credit, and crowding out effect in oil-dependent countries. *Private Sector Credit, and Crowding Out Effect in Oil-Dependent Countries (July 15, 2018)*.

Asiamah, N., Mensah, H. K., & Oteng-Abayie, E. F. (2017). General, target, and accessible population: Demystifying the concepts for effective sampling. *The Qualitative Report*, *22*(6), 1607.

Asiligwa, M., & Rennox, G. (2017). The Effect of internal controls on the financial performance of commercial banks in Kenya. *Journal of Economics and Finance*, *8*(3), 92-105.

Asongu, S. A., Le Roux, S., & Tchamyou, V. S. (2019). Essential information sharing thresholds for reducing market power in financial access: a study of the African banking industry. *Journal of Banking Regulation*, *20*(1), 34-50.

Astivia, O. L. O., & Zumbo, B. D. (2019). Heteroskedasticity in Multiple Regression Analysis: What it is, How to Detect it and How to Solve it with Applications in R and SPSS. *Practical Assessment, Research, and Evaluation*, *24*(1), 1.

Augustine Ele, A. S. O. R., ESSIEN, M. E., & NDIYO, N. (2016). The Impact of Microfinance Banks on Small Scale Businesses in Cross River State: A Case Study of Calabar Metropolis.

Awad, I. M., & Al Karaki, M. S. (2019). The impact of bank lending on Palestine economic growth: an econometric analysis of time series data. *Financial Innovation*, *5*(1), 1-21.

Awad, I. M., & Al Karaki, M. S. (2019). The impact of bank lending on Palestine economic growth: an econometric analysis of time series data. *Financial Innovation*, *5*(1), 1-21.

Babarinde, G. (2020). Growth effects of foreign direct investment and financial deepening in Nigeria (1981-2018). *Business Excellence and Management*, *10*(4), 49-67.

Bakang, L. N. (2015). Effects of Financial Deepening on Economic Growth in Kenya. *International Journal of Business and Commerce*. 4(7), 1-50.

Bakang, M. L. N. (2015). Effects of financial deepening on economic growth in Kenya. *International journal of business and commerce*, *4*(7), 1-50.

Baltagi, B. H., & Li, Q. (1991). A joint test for serial correlation and random individual effects. *Statistics & Probability Letters*, *11*(3), 277-280.

Bauer, T. (2017). Research Philosophy and Method. *Responsible Lobbying*, 69-84.

Berg, A., McMurry, T., & Politis, D. N. (2012). Testing time series linearity: traditional and bootstrap methods. *Handbook of Statistics*, *30*, 27-42.

Breusch, S. T., & Pagan, A. (1979). *A Simple Test for Heteroscedasticity and Random*.

Brůha, J., & Kočenda, E. (2018). Financial stability in Europe: Banking and sovereign risk. *Journal of Financial Stability*, *36*, 305-321.

Buseretse, V. A. (2015). *The effect of liquidity on profitability of microfinance banks in Kenya* (Doctoral dissertation, University of Nairobi).

Camba Jr, A. C., & Camba, A. L. (2020). The dynamic relationship of domestic credit and stock market liquidity on the economic growth of the Philippines. *The Journal of Asian Finance, Economics, and Business*, *7*(1), 37-46.

Casson, R. J., & Farmer, L. D. (2014). Understanding and checking the assumptions of linear regression: a primer for medical researchers. *Clinical & experimental ophthalmology*, *42*(6), 590-596.

Cazeaux, C. (2017). *Art, research, philosophy* (p. 202). Taylor & Francis.

CBK. (2017). *Monetary Policy Statement, December 2017. Issued pursuant to Section 4B of the Central Bank of Kenya Act, Cap 491*. https://www.centralbank.go.ke/uploads/monetary_policy_statements/2039096141_41st%20Monetary%20Policy%20Statement,%20December%202017.pdf

CBK. (2020). *Monetary Policy Committee Report, April 2020. Twenty-Fourth Bi-Annual Report of The Monetary Policy Committee.*

https://www.centralbank.go.ke/uploads/monetary_policy_reports/969436680_24th%20Monetary%20Policy%20Committee%20Report,%20April%202020.pdf

Chakraborty, S. (2019). Financial deepening. *Arthaniti: Journal of Economic Theory and Practice*, *18*(2), 111-137.

Chang, C. H., Pal, N., & Lin, J. J. (2019). Testing First Order Autocorrelation: A Simple Parametric Bootstrap Approach to Improve Over the Standard Tests. *American Journal of Mathematical and Management Sciences*, *38*(3), 261-276.

Cheah, S. L. Y., Ho, Y. P., & Li, S. (2021). Search strategy, innovation and financial performance of firms in process industries. *Technovation*, *105*, 102257.

Chen, T., Park, C., Meng, H., Zhou, D., Silva-Martinez, J., Geiger, R. L., & Chen, D. (2019). A low-cost on-chip built-in self-test solution for ADC linearity test. *IEEE Transactions on Instrumentation and Measurement*, *69*(6), 3516-3526.

Chunikhin, S. A., Kuzmin, E. A., & Pushkareva, L. V. (2019). Studying the banking industry's stability through market concentration indices. *Entrepreneurship and Sustainability Issues*, *6*(4), 1663.

Cobb, C. W., & Douglas, P. H. (1928). A theory of production. *The American Economic Review*, *18*(1), 139-165.

Coetzee, J. (2016). Financial intermediation theory. *Bank management in South Africa: A risk-based perspecfive*, 3-28.

Corbae, D., & D'Erasmo, P. (2019). *Capital requirements in a quantitative model of banking industry dynamics* (No. w25424). National Bureau of Economic Research.

Cornée, S., Fattobene, L., & Migliorelli, M. (2018). An overview of cooperative banking in Europe. *New cooperative banking in Europe*, 1-27.

Dang, T. T., Nguyen, H. T., & Tran, N. D. (2022). Impact of Microfinance Institutions' Lending Interest Rate on Their Financial Performance in Vietnam: A Bayesian Approach. In *International Econometric Conference of Vietnam* (pp. 359-374). Springer, Cham.

Danisman, G. O., & Tarazi, A. (2020). Financial inclusion and bank stability: Evidence from Europe. *The European Journal of Finance*, *26*(18), 1842-1855.

Dannels, S. A. (2018). Research design. In *The reviewer's guide to quantitative methods in the social sciences* (pp. 402-416). Routledge.

Daoud, J. I. (2017, December). Multicollinearity and regression analysis. In *Journal of Physics: Conference Series* (Vol. 949, No. 1, p. 012009). IOP Publishing.

Deloitte. (2021, March 8). *South Africa*. Deloitte Insights. https://www2.deloitte.com/us/en/insights/economy/emea/africa-economic-outlook.html

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American statistical association*, *74*(366a), 427-431.

Dong, Y., Girardone, C., & Kuo, J. M. (2017). Governance, efficiency and risk taking in Chinese banking. *The British Accounting Review*, *49*(2), 211-229.

Drukker, D. M. (2003). Testing for serial correlation in linear panel-data models. *The stata journal*, *3*(2), 168-177.

Durbin, J., & Watson, G. S. (1971). Testing for serial correlation in least squares regression. III. *Biometrika*, *58*(1), 1-19.

Ermakova, E. P., & Frolova, E. E. (2019). Legal regulation of digital banking in Russia and foreign countries (European Union, USA, PRC). *Perm U. Herald Jurid. Sci.*, *46*, 606.

Ertiro, M. A., & Mohammed, L. J. (2022). Factors affecting the financial performance: A case of microfinance institutions in Ethiopia. Journal of Finance and Accounting, 10(1), 64-77.

Feigenberg, Benjamin; Field, Erica M.; Pande, Rohan (2010). "Building Social Capital Through MicroFinance". NBER Working Paper No. 16018. doi:10.3386/w16018.

Gachiengo, E. W. (2024). Financial Deepening and Growth of Small and Medium Enterprises in Kiambu County Kenya (Doctoral dissertation, Kenyatta University).

Galazova, S. S., & Magomaeva, L. R. (2019). The transformation of traditional banking activity in digital.

Ghildiyal, V., Pokhriyal, A. K., & Mohan, A. (2015). Impact of financial deepening on economic growth in Indian perspective: ARDL bound testing approach to cointegration. *Asian Development Policy Review*, *3*(3), 49-60.

Githuku, W. A., & Kinyuru, R. N. (2018). Digital banking and customer relationship in banking industry in Kenya. *International Academic Journal of Human Resource and Business Administration*, *3*(2), 14-32.

Gogo, P. (2019). *The Effect Of Financial Deepening On Economic Growth In The East Africa Community Bloc* (Doctoral dissertation, UoN).

Gollagi, S. G., Kotagi, V., & Pareek, P. K. (2020). Reliability Test (Cronbach Alpha Test) for Variables Selection in Secure SDLC. *Journal of Advancement in Parallel Computing*, *3*(1).

Gul, F. A., Podder, J., & Shahriar, A. Z. M. (2017). Performance of microfinance institutions: does government ideology matter? *World Development*, *100*, 1-15.

Hachem, K. (2018). Shadow banking in China. *Annual review of financial economics*, *10*, 287-308.

Hakwaashika, R. N. (2019). *Investigating the relationship between private sector credit extension and economic growth: A case study of Namibia* (Master's thesis, Faculty of Commerce).

Halunga, A. G., Orme, C. D., & Yamagata, T. (2017). A heteroskedasticity robust Breusch–Pagan test for Contemporaneous correlation in dynamic panel data models. *Journal of econometrics*, *198*(2), 209-230.

Haque, F., & Brown, K. (2017). Bank ownership, regulation and efficiency: Perspectives from the Middle East and North Africa (MENA) Region. *International Review of Economics & Finance*, *47*, 273-293.

Hasan, A., & Batra, G. (2018). Performance analysis of microfinance institutions in Ethiopia. International Journal of Business and Management, 7(4), 55-66.

Hermes, N., Lensink, R., & Meesters, A. (2018). Financial development and the efficiency of microfinance institutions. In *Research Handbook on Small Business Social Responsibility*. Edward Elgar Publishing.

Ho, C. Y., Huang, S., Shi, H., & Wu, J. (2018). Financial deepening and innovation: The role of political institutions. *World Development*, *109*, 1-13.

Ibe, C. C., & Obialor, C. B. (2022). Effect of Financial Innovation on the Performance of Deposit Money Banks in Nigeria. International Journal of Trend in Scientific Research and Development (IJTSRD), 6(6).

Ibrahim, R. A. (2017). *The relationship between financial deepening and economic growth in Kenya* (Doctoral dissertation, University of Nairobi).

Igwebuike, C., UDEH, S. N., & Okonkwo, O. (2019). Effects of financial deepening on economic growth of Nigeria (1981-2016). *International Academy Journal of Business Administration Annals*, *7*(1), 54-67.

Imami, D., Rama, K., & Polese, A. (2020). Informality and access to finance during socialism and transition–the case of the rotating savings and credit schemes. *Journal of Evolutionary Economics*, *30*(5), 1367-1383.

Iqbal, S., Nawaz, A., & Ehsan, S. (2019). Financial performance and corporate governance in microfinance: Evidence from Asia. *Journal of Asian Economics*, *60*, 1-13.

Ishfaq, S., Khan, I., Shah, T. A., & Jamil, R. A. (2015). The Role of Microfinance in Poverty Reduction: Evidence from South Asia. *International Journal of Management, Accounting and Economics*, *2*(10), 1191-1199.

Issahaku, H., Dary, S. K., & Ustarz, Y. (2013). Financial characteristics and innovations in microfinance institutions in Ghana.

Kalu, E. O., Shieler, B., & Amu, C. U. (2018). Credit risk management and financial performance of microfinance institutions in Kampala, Uganda. *Independent journal of management & production*, *9*(1), 153-169.

Kamande, E. G. (2017). *The effect of bank specific factors on financial performance of commercial banks in Kenya* (Doctoral dissertation).

Kamenchu, I. J., Wahome, B. M., & David, M. (2019). Effect of Financial Deepening on Economic Growth in East Africa Community Countries. *African Development Finance Journal*, *3*(1), 161-172.

Kamenchu, I. J., Wahome, B. M., & David, M. (2019). Effect of Financial Deepening on Economic Growth in East Africa Community Countries. *African Development Finance Journal*, *3*(1), 161-172.

Karimo, T. M., & Ogbonna, O. E. (2017). Financial deepening and economic growth nexus in Nigeria: Supply-leading or demand-following? *Economies*, *5*(1), 4.

Kariuki, F. (2020). Sustainability in the financial sector in Kenya. *Available at SSRN 3646976*.

Kennedy, A. M. (2017). Macro-social marketing research: philosophy, methodology and methods. *Journal of Macromarketing*, *37*(4), 347-355.

Khachatryan, K., Hartarska, V., & Grigoryan, A. (2017). Performance and capital structure of microfinance institutions in Eastern Europe and Central Asia. *Eastern European Economics*, *55*(5), 395-419.

Khan, U. (2019). Does fair value accounting contribute to systemic risk in the banking industry? *Contemporary Accounting Research*, *36*(4), 2588-2609.

Kim, N. (2016). A robustified Jarque–Bera test for multivariate normality. *Economics Letters*, *140*, 48-52.

Kim, T. K., & Park, J. H. (2019). More about the basic assumptions of t-test: normality and sample size. *Korean journal of anesthesiology*, *72*(4), 331-335.

Kimathi, C. M., & Mungai, J. (2018). Financial distress and profitability of tier three commercial banks in Kenya. *American Journal of Finance*, *3*(1), 46-66.

Kipchumba, C. J. (2017). *Stock Market Development and Economic Growth Nexus: Empirical Evidence from Kenya* (Doctoral dissertation, University of Nairobi).

Kipkoech, K. A. (2020). *Diaspora Remittances and Economic Growth in Kenya* (Doctoral Dissertation, Kenyatta University).

Koech, A. K. (2019). *Effects Of Acquisition on Performance of Distressed Commercial Banks in Kenya a Case of Chase Bank Kenya Limited* (Doctoral dissertation, United States International University-Africa).

Korkmaz, S. (2015). Impact of bank credits on economic growth and inflation. *Journal of Applied Finance and Banking*, *5*(1), 51.

Lobo, G. J. (2017). Accounting research in banking: A review. *China Journal of Accounting Research*, *10*(1), 1-7.

Macharia, C. W., & Mungai, J. (2021). Financial deepening and financial performance of commercial banks in Kenya. *Journal of Finance and Accounting*, *5*(1).

Malhotra, P., & Singh, B. (2010). An analysis of Internet banking offerings and its determinants in India. *Internet Research*.

Malla, B. K. (2017). Credit portfolio management in Nepalese commercial banks. *Journal of Nepalese Business Studies*, *10*(1), 101-109.

Martin, V., Hurn, S., & Harris, D. (2013). *Econometric modelling with time series: specification, estimation and testing*. Cambridge University Press.

Meyer, J. (2019). Outreach and performance of microfinance institutions: the importance of portfolio yield. *Applied Economics*, *51*(27), 2945-2962.

Meyers, L. S., Gamst, G., & Guarino, A. J. (2016). *Applied multivariate research: Design and interpretation*. Sage publication.

Mia, M. A., Rangel, G. J., Nourani, M., & Kumar, R. (2022). Institutional factors and efficiency performance in the global microfinance industry. *Benchmarking: An International Journal*.

Migliorelli, M. (Ed.). (2018). *New Cooperative Banking in Europe: Strategies for Adapting the Business Model Post Crisis*. Springer.

Miles, J. (2014). Tolerance and variance inflation factor. *Wiley StatsRef: Statistics Reference Online*.

Miralles-Quirós, M. M., Miralles-Quirós, J. L., & Redondo-Hernández, J. (2019). The impact of environmental, social, and governance performance on stock prices: Evidence from the banking industry. *Corporate Social Responsibility and Environmental Management*, *26*(6), 1446-1456.

Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive statistics and normality tests for statistical data. *Annals of cardiac anaesthesia*, *22*(1), 67.

Mohieldin, M., Hussein, K., & Rostom, A. (2019). On financial development and economic growth in Egypt. *Journal of Humanities and Applied Social Sciences*.

Molla, M. T., & Kaur, R. (2025). Association of risk management practices and financial performance of microfinance institutions in Ethiopia: A two-step system generalized method of moments approach. PLoS One, 20(7), e0321415.

Momany, D. K. (2018). *Influence of financial regulation in Kenya on financial inclusion: A case study of the banking industry in Kenya* (No. 25). KBA Centre for Research on Financial Markets and Policy Working Paper Series.

Mostak, M., & Sushanta, M. (2015). Is financial inclusion good for bank stability? *International evidence*.

Mueller, R. O., & Knapp, T. R. (2018). Reliability and validity. In *The reviewer's guide to quantitative methods in the social sciences* (pp. 397-401). Routledge.

Muhindi, K. A., & Ngaba, D. (2018). Effect of firm size on financial performance on banks: Case of commercial banks in Kenya. *International Academic Journal of Economics and Finance*, *3*(1), 175-190.

Muia, S. W. (2017). *The effect of financial innovations on financial performance of commercial banks in Kenya* (Doctoral dissertation, KCA University).

Mulu, M. J. (2012). The Effect of Commercial Bank Loans on the Economic Growth of Kenya. *Signature*, *63*, 72503.

Muriithi, J. G., & Waweru, K. M. (2017). Performance of Commercial Banks in Kenya. *International Journal of Finance & Banking Studies (2147-4486)*, *6*(3), 39-50.

Muriithi, S. M., & Louw, L. (2017). The Kenyan banking industry: Challenges and sustainability. In *Managing knowledge and innovation for business sustainability in Africa* (pp. 197-222). Palgrave Macmillan, Cham.

Murunga, S. L. (2018). *Effect Of Financial Deepening On Economic Growth In Kenya* (Doctoral dissertation, University of Nairobi).

Murunga, S. L. (2018). *Effect Of Financial Deepening On Economic Growth In Kenya* (Doctoral dissertation, University of Nairobi).

Musau, S., Muathe, S., & Mwangi, L. (2018). Financial inclusion, GDP and credit risk of commercial banks in Kenya. *International journal of Economics and Finance*, *10*(3), 181-195.

Mwangi, A. K. (2013). *The effect of financial innovation on financial performance of deposit taking micro-finance institutions in Kenya* (Doctoral dissertation, University of Nairobi).

Mwaura, S. N. (2024). Mobile Banking and Financial Performance of Tier One Commercial Banks in Kenya (Doctoral dissertation, Kenyatta University).

Naghshpour, S., & Iii, H. L. D. (2018). The impact of commercial banking development on economic growth: a principal component analysis of association between banking industry and economic growth in Eastern Europe. *International Journal of Monetary Economics and Finance*, *11*(6), 525-542.

Nazlioglu, S., & Karul, C. (2017). A panel stationarity test with gradual structural shifts: Re-investigate the international commodity price shocks. *Economic Modelling*, *61*, 181-192.

Ng'ang'a, L. (2016). *Relationship between financial deepening and economic growth in Kenya* (Doctoral dissertation).

Nguyen, Q. H. (2019). Growth model with financial deepening and productivity heterogeneity. *The Japanese Economic Review*, *70*(1), 123-140.

Nyachwaya, Z. O. (2022). *Effect Of Portfolio Diversification On Financial Performance Of Commercial Banks In Kenya. The Moderating Role Of Capital Adequacy* (Doctoral dissertation, Kisii University).

Nyanaro, E., & Elly, D. (2017). The Relationship between Stock Market Performance and Economic Growth in the East African Community. *African Development Finance Journal (ADFJ)*, *1*(1).

Oduor, J., Ngoka, K., & Odongo, M. (2017). Capital requirement, bank competition and stability in Africa. *Review of Development Finance*, *7*(1), 45-51.

Ogege, S., & Boloupremo, T. (2014). Deposit money banks and economic growth in Nigeria. *Financial Assets and Investing*, *5*(1), 41-50.

Ogunsiji, A. S., & Ladanu, W. K. (2017). A theoretical study of performance measures in the strategic and corporate entrepreneurship of firms. *International Journal of Life Sciences (IJLS)*, *1*(1), 49-57.

Oke, J., Akinkunmi, W. B., & Etebefia, S. O. (2019). Use of correlation, tolerance and variance inflation factor for multicollinearity test. *GSJ*, *7*(5).

Okeke, I. C., & Akunna, R. C. (2023). EFFECT OF FINANCIAL DEEPENING ON ECONOMIC GROWTH IN NIGERIA (1986-2020). *Journal of Contemporary Issues in Accounting*, *4*(2), 51-67.

Olaosebikan, O., & Adams, M. (2014). Prospects for micro-insurance in promoting micro-credit in sub-Sahara Africa. *Qualitative Research in Financial Markets*.

Olawale, L. S., Ilo, B. M., & Lawal, F. K. (2017). The effect of firm size on performance of firms in Nigeria. *Aestimatio: The IEB International Journal of Finance*, (15), 68-87.

Olawumi, S. O., Lateef, L. A., & Oladeji, E. O. (2017). Financial deepening and bank performance: A case study of selected commercial banks in Nigeria. *Journal of Mathematical Finance*, *7*(3), 519-535.

Omollo, B. A., Muturi, W. M., & Wanjare, J. (2018). Effect of Debt Financing Options on Financial Performance of Firms Listed at the Nairobi Securities Exchange, Kenya. *Research Journal of Finance and Accounting*, *9*(10), 150-164.

Omondi, F. O. (2015). *The effect of financial deepening on economic growth in Kenya* (Doctoral dissertation, University of Nairobi).

Osman, E. G. A. (2014). The impact of private sector credit on Saudi Arabia Economic Growth (GDP): An Econometrics model using (ARDL) Approach to Cointegration. *Am Int J Soc Sci*, *3*(6), 109-117.

Otekunrin, A., Nwanji, T., Fagboro, D., Olowookere, J., & Ibitoye, S. (2021). Performance of Firm and Board Attributes Nexus: Using Hausman Test Analysis. *International Journal of Financial Research*, *12*(4).

Otieno, S., Nyagol, M., & Onditi, A. (2016). Relationship between Credit risk management and financial performance: empirical evidence from microfinance banks in Kenya. *Research Journal of Finance and Accounting*, *7*(6), 115-138.

Ozili, P. K. (2018). Banking stability determinants in Africa. *International Journal of Managerial Finance*.

Pan, L., & Mishra, V. (2018). stock market development and economic growth: Empirical evidence from China. *Economic Modelling*, *68*, 661-673.

Paramasivan, D., & Rajaram, S. (2016). Micro Insurance Portfolio of Public and Private Sector Insurance Companies.

Paul, U. C. (2020). The Causal Relationship between Private Sector Credit Growth and Economic Growth in Bangladesh: Use of Toda-Yamamoto Granger Causality test in VAR Model.

Prada-Ramallal, G., Roque, F., Herdeiro, M. T., Takkouche, B., & Figueiras, A. (2018). Primary versus secondary source of data in observational studies and heterogeneity in meta-analyses of drug effects: a survey of major medical journals. *BMC medical research methodology*, *18*(1), 1-14.

Puatwoe, J. T., & Piabuo, S. M. (2017). Financial sector development and economic growth: evidence from Cameroon. *Financial Innovation*, *3*(1), 1-18.

Rahi, S. (2017). Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics & Management Sciences*, *6*(2), 1-5.

Raut, R., Cheikhrouhou, N., & Kharat, M. (2017). Sustainability in the banking industry: A strategic multi-criterion analysis. *Business Strategy and the Environment*, *26*(4), 550-568.

Rega, F. G., Riccardi, N., Li, J., & di Carlo, F. (2018). Blockchain in the banking industry: an Overview. *Research Gate. DOI*, *10*.

Rousseau, P., & Wachtel, P. (2017). Episodes of financial deepening: credit booms or growth generators? *Financial systems and economic growth*, *52*, 52-75.

Said, K., & Doll, Y. (2021). Strategies to Improve Financial Profitability in the Banking Industry. *International Journal of Applied Management and Technology*, *20*(1), 3.

Sanfilippo-Azofra, S., Torre-Olmo, B., & Cantero-Saiz, M. (2019). Microfinance institutions and the bank lending channel in Asia and Latin America. *Journal of Asian Economics*, *63*, 19-32.

Schober, P., Boer, C., & Schwarte, L. A. (2018). Correlation coefficients: appropriate use and interpretation. *Anesthesia & Analgesia*, *126*(5), 1763-1768.

Sheytanova, T. (2015). The accuracy of the Hausman Test in panel data: A Monte Carlo study.

Shkodra, J. (2019). Financial performance of microfinance institutions in Kosovo. *Journal of International Studies*, *12*(3), 31-37.

Sileyew, K. J. (2019). *Research design and methodology* (pp. 1-12). Rijeka: IntechOpen.

Singh, S. (2018). Sampling techniques.

Soyer, K., Ozgit, H., & Rjoub, H. (2020). Applying an Evolutionary Growth Theory for Sustainable Economic Development: The Effect of International Students as Tourists. *Sustainability*, *12*(1), 418.

Sulewski, P. (2020). Modified Lilliefors goodness-of-fit test for normality.

Communications in Statistics-Simulation and Computation, *51*(3), 1199-1219.

Sulong, Z., & Bakar, H. O. (2018). The role of financial inclusion on economic growth: theoretical and empirical literature review analysis. *J Bus Fin Aff*, *7*(356), 2167-0234.

Tan, Y., & Floros, C. (2018). Risk, competition and efficiency in banking: Evidence from China. *Global Finance Journal*, *35*, 223-236.

Taylor, R. (1990). Interpretation of the correlation coefficient: a basic review. *Journal of diagnostic medical sonography*, *6*(1), 35-39.

Tehulu, T. A. (2022). Credit expansion and financial sustainability of microfinance institutions: A generalized method of moments panel data analysis. Cogent Business & Management, 9(1), 2140490.

The World Bank Group. (2018, September 21). *South Africa's Efforts to Improve Financial Stability and Inclusion Boosted*. World Bank. https://www.worldbank.org/en/news/press-release/2018/09/21/south-africas-efforts-to-improve-financial-stability-and-inclusion-boosted.

Thierer, A., & Broughel, J. (2019). *Technological Innovation and Economic Growth: A Brief Report on the Evidence* (No. 04666).

Tripathy, N. (2019). Does measure of financial development matter for economic growth in India. *Quant Financ Econ*, *3*, 508-525.

Trujillo, V., Rodriguez-Lopez, F., & Muriel-Patino, V. (2014). Microfinance regulation and market development in Latin America. *The BE Journal of Economic Analysis & Policy*, *14*(4), 1615-1644.

Tuyishime, R., Memba, F., & Mbera, Z. (2015). The effects of deposit mobilization on financial performance in commercial banks in Rwanda. A case of equity bank Rwanda limited. *International Journal of small business and entrepreneurship research*, *3*(6), 44-71.

VanHoose, D. (2017). Regulation and the Structure of the Banking Industry. In *The Industrial Organization of Banking* (pp. 243-280). Springer, Berlin, Heidelberg.

Waititu, W. B. (2018). Effects of Financial Integration on Economic Growth in Kenya. (Doctoral Dissertation, Kenyatta University).

Wang, X., & Guan, J. (2017). Financial inclusion: measurement, spatial effects and influencing factors. *Applied Economics*, *49*(18), 1751-1762.

Wanjala, K., & Gogo, P. (2020). The Effect of Financial Deepening on Economic Growth in the East African Community. *Finance & Economics Review*, *2*(2), 55-73.

Wondirad, H. A. (2020). The impacts of mobile insurance and microfinance institutions (MFIs) in Kenya. *Journal of Banking and Financial Technology*, *4*(1), 95-110.

Yanow, D., & Schwartz-Shea, P. (2015). *Interpretation and method: Empirical research methods and the interpretive turn*. Routledge.

Yao, Y. K. (2013). Development and sustainability of emerging health insurance markets: Evidence from microinsurance in Pakistan. *The Geneva Papers on Risk and Insurance-Issues and Practice*, *38*(1), 160-180.

Yip, A. W., & Bocken, N. M. (2018). Sustainable business model archetypes for the banking industry. *Journal of cleaner production*, *174*, 150-169.

Zhang, S., & Zhao, C. (2017). Stationarity test and Bayesian monitoring strategy for fault detection in nonlinear multimode processes. *Chemometrics and Intelligent Laboratory Systems*, *168*, 45-61.

Žukauskas, P., Vveinhardt, J., & Andriukaitienė, R. (2018). Philosophy and paradigm of scientific research. *Management culture and corporate social responsibility*, *121*.

Zulfikar, R., & STp, M. M. (2019). Estimation model and selection method of panel data regression: an overview of common effect, fixed effect, and random effect model. *INA-Rxiv 9qe2b, Center for Open Science*.

Harry Markowitz (1952). "Portfolio Selection." The Journal of Finance, Volume 7, No. 1, 1952, Pages 77-91.

APPENDICES.

Appendix I: Secondary Data Template

Year	Financial Performance of MFBs	Credit Accessibility	Deposits Mobilization	Micro - insurance Portfolio	Competition
	ROA (Net income/Total Assets	Bank credits	Bank deposits	Total premiums	Herfindahl-Hirschman Index
2015					
2016					
2017					
2018					
2019					
2020					
2021					
2022					

Source: Central Bank of Kenya Websites

Appendix II: List of Licensed Microfinance Banks in Kenya

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

Source: Central Bank of Kenya.

Appendix III: Research Approval

KENYATTA UNIVERSITY
OFFICE OF THE EXECUTIVE DEAN GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
P.O. Box 43844, 00100
NAIROBI, KENYA
Website: www.ku.ac.ke
Tel. 020-8704150

Internal Memo

FROM: Executive Dean, Graduate School **DATE:** 15th November 2023

TO: Mr. Lawrence Muriuki
c/o Department of Accounting and Finance
REF: D58/CTY/PT/29760/2014

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that Graduate School Board, at its meeting on **8th November 2023**, approved your Research Proposal for the M.Sc. Degree entitled ***Financial Deepening and Financial Performance of Microfinance Banks in Kenya".***

You may now proceed with your Data collection, subject to clearance with the Director General, National Commission for Science, Technology & Innovation and Ethics Review Committee, Kenyatta University.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking and Progress Report Forms per semester. The Forms are available at the University's Website under Graduate School webpage downloads.

Also, please ensure that you publish article(s) from your thesis before submitting it to Graduate School for examination as per the Commission for University Education and Kenyatta University guidelines.

Thank you.

ANGELA KIMARU
FOR: EXECUTIVE DEAN, GRADUATE SCHOOL

CC. Chairman, Department of Accounting and Finance

Supervisors:

1. Dr. Eddie Simiyu
c/o Department of Accounting and Finance
Kenyatta University

2. Mr. Gerald Atheru
c/o Department of Accounting and Finance
Kenyatta University

Appendix IV: Research Authorization

KENYATTA UNIVERSITY
OFFICE OF THE EXECUTIVE DEAN GRADUATE SCHOOL

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Website: www.ku.ac.ke

P.O. Box 43844, 00100
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Tel. 020-8704150

Our Ref: D58/CTY/PT/29760/2014 **DATE:** 15th November 2023

Director General,
National Commission for Science, Technology and Innovation
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION MR. LAWRENCE MURIUKI REG. NO. D58/CTY/PT/29760/2014

I write to introduce Mr. Lawrence Muriuki who is a Postgraduate Student of this University. He is registered for M.sc degree programme in the **Department of Accounting and Finance.**

Mr. Lawrence Muriuki intends to conduct research for a M.sc. Thesis Proposal entitled, ***"Financial Deepening and Financial Performance of Microfinance Banks in Kenya".***

Any assistance given will be highly appreciated.

Yours faithfully,

for **PROF. ELISHIBA KIMANI**
EXECUTIVE DEAN, GRADUATE SCHOOL

ESO/lws

Appendix V: NACOSTI License

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 118383

Date of Issue: 16/January/2024

RESEARCH LICENSE

This is to Certify that Mr., Lawrence Mutuki of Kenyatta 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: Financial Deepening and Financial Performance of Microfinance Banks in Kenya for the period ending : 16/January/2025.

License No: NACOSTI/P/24/32472

118383

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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