THE EFFECT OF FINANCIAL INNOVATION ON FINANCIAL PERFORMANCE OF LICENSED MICROFINANCE INSTITUTIONS

BY

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A RESEARCH PROJECT PRESENTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

2019

DECLARATION

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

Signature..... Date.....

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This research project has been submitted for examinations with my approval as the university supervisor.

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ACKNOWLEDGEMENTS

To God, who made all this possible. All glory unto him.

I would like to thank Mr. Martin Odipo, first and foremost, for agreeing to be my supervisor. I am grateful for his systematic guidance constructive criticism, open door policy and above all for his time and effort as he supervised me throughout the project process.

I would like to acknowledge some of my classmates who encouraged me to finish what we started together. Thank you all.

DEDICATION

This project paper is dedicated to family, who have always encouraged and supported me throughout my life. They have been, and still are, the pillar of strength in my life. I thank you.

To my friends, finishing this project would have been impossible if it were not for your constant impetus in concluding this project. Also for your wonderful support and great input, you are much appreciated.

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LIST OF ABBREVIATION AND ACRRONYMS

ANOVA	Analysis of Variance
ATM	Automated Teller Machine
CAR	Capital Adequacy Ratio
CBK	Central Bank of Kenya
DTMFI	Deposit Taking Microfinance Institutions
FP	Financial Performance
MFIs	Micro Finance Institutions
USA	United States of America
VIF	Variance Inflation Factor

ABSTRACT

The microfinance industry has been growing at a significant rate in several countries and it has become an important sub-sector of the formal financial markets. Many microfinance institutions have secured high loan repayment rates, but, so far, relatively few earn profits. This study sought to determine how financial innovations influences financial performance of licensed MFIs in Kenya. 13 licensed MFIs as at 31st December 2018 were the population of the study. The predictor variable was financial innovations operationalized as agency banking, number of ATMs, deposit accounts and mortgage accounts. The control variables were bank size and capital adequacy. Financial performance was given by ROA and it was the dependent variable. Secondary data was acquired for 5 years (January 2014 to December 2018) on an annual basis. Research design was descriptive cross-sectional design whereas association between variables was determined by multiple linear regression model. SPSS version 22 was used in data analysis. An R-square value of 0.575 that can be translated to mean 57.5% of the variations in financial performance of licensed MFIs can be related to the six chosen predictor variables whereas 42.5% in the changes of financial performance of licensed MFIs was linked to other variables that did not form part of this study. From the study it was further revealed that the predictor variables strongly correlated with financial performance (R=0.759). ANOVA results show that the F statistic was significant at 5% level with a p=0.000. Henceforth, the model was appropriate in providing an explanation of the relationship between the variables. Additionally, results demonstrated that that deposit accounts, mortgage accounts and bank size were positively and statistically substantial values in the study. The study discovered that agency banking, number of ATMs and capital adequacy have a statistically insignificant impact on financial performance of licensed MFIs. The recommendation is that measures should be set up to increase the number of deposit and mortgage accounts among licensed microfinance institutions as this will significantly increase their financial performance.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Financial innovation is creating new financial instruments which are influenced by updates in technology. These innovations lower the cost of providing existing financial services. The economic change affects the financial performance of microfinance institutions because the use of these innovations such as mobile banking, remittances, and equity crowd funding gives the institution a competitive advantage over its rivals (Mwangi, 2013). Harmon (2017) indicate that financial innovations influence the financial performance of banks as an increase in mobile banking showed an increase in the number of transactions. The central bank of Kenya (2013) indicates that the microfinance institutions utilizing innovations such as mobile money transfer are successful.

This study was supported by three theories. Constraint-induced theory by Silber (1983) points out the maximization profit in financial firms is the primary reason for financial innovation. The theory is relevant to the study as it explains that financial innovation affects financial performance positively in financial firms. Circumvention innovation theory by Kane (1981) came up with the approach that explains how the government regulations and controls forms role in the financial sector. It is relevant in explaining what the financial institutions should deal with: the failure of management and reduction of profit imposed by the government to reduce potential losses to the minimum capacity (Achieng et al., 2015). The transaction cost innovation theory by Nicks and Niehans (1983) arguesthat the reduction of transaction cost is the dominant factor of financial innovations. They view financial innovation as the reaction or response to advancement in technology which leads to a reduction of the transaction cost (Akkaya, 2019).

There are thirteen licensed microfinance institutions in Kenya which provide microfinance products to its active borrowers (Wijesiri & Meoli, 2015). The facilities and regulations began in the 1990s in Kenya whereby a legislation and Micro Finance Act was passed in 2006 and later became active in 2008. These institutions offer loans for large scale business, agriculture, education, and any other purpose (Gathondu et al., 2018). There also emergency loans which are quickly available but expensive, group loans and women loans which are offered under different interest rates, amount and duration.

The findings of the study will help the licensed microfinance institutions in Kenya understand financial innovations and their impact on performance in terms of profitability. It will provide insight into the importance of financial innovations, thus giving easy management of the institutions. Through the study, the Kenyan government will be able to appreciate the areas of innovations that support the microfinance institutions as it seeks to leverage on technology growth in the financial sector, thus enhancing financial services. The study will provide the data needed by the policymakers to crafting policies that promote financial innovation towards achieving Kenya's vision 2030.

1.1.1 Financial Innovation

Khraisha and Arthur (2018) defines financial innovation as a process carried out by any institution in the form of creating, promoting and adopting new platforms, products and processes of technologies that changes or introduces new ways of carrying out financial activities. Joseph, an economist back in the 1930s, defines financial innovation as an introduction of a qualitative or new change in existing markets, products, processes, organizations and sources of supply of inputs. Bhattacharyya and Nanda (2000) defines

financial innovation as unanticipated improvement in the array of financial products and instrument's that are stimulated by the unexpected change in tax policy, customer needs and preferences, regulatory impulses and technology (Goel, 2019).

There are three distinct types of financial innovations; institutional innovations, process innovation, and product innovations.Institutional innovations relate to changes in the business structures, establishment of financial intermediaries, changes in the legal framework, reduction of barriers, and setting up new service structure. Process innovations cover the formulation of new business processes such as the use of client data management software and computers in accounting leading which result in market expansion and increased efficiency (Willcocks&Lacity, 2016). Product innovation includes introduced to increase efficiency or in response to changes in the market-, leading to the introduction of new financial product such as hire purchase, insurance, deposit, and credit. Example, REMU Microfinance.

Institutional innovation, Initially REMU was only known for offering services in Meru and Maua. This perception chased away potential customers who do not come from this region.REMU Microfinance Bank Ltd has rebranded to KEY Microfinance Bank Plc as it seeks to shed off its regional image and position itself as a fully-fledged microfinance bank with a national outlook.The move, which has received regulatory approval from the Central Bank, is part of the bank's bigger strategy to grow its business by increasing its branch network in the country.KEY Microfinance Bank Ltd has loan products like Agri-business, Trade Finance,Boostika personal loan,Insurance Premium Financing,Savings products like Taratibu savings,Jipange savings,Darubini students,Lil' Angel.KEY

Microfinance has made access to finance easy by using the KEY Microfinance Mobile app that enables its clients to withdraw, transferfunds, checkbalance ,check mini statement .Furthermore the app is in both English and Kiswahili .It also has ATM services which enables access to account remotely and withdrawal of cash any day and any time of the week through their ATM centers (Key Microfinance, 2019).

1.1.2 Financial Performance

Shodhganga (2018) defines financial performance as the act of performing financial activities; a degree to which the financial objectives are being accomplished (Patel &Rajpara, 2018). Mohammad and Malek (2012) defines financial performance as measuring the results of a firm's policies and operations in monetary forms which are reflected in the institution's return on assets, investment's and value-added. Murwaningsari(2019)defines financial performance as a subjective measure of how well a firm can use assets from its primary mode of business and generate revenue which is also associated with the overall financial health of a firm for a given period.

There are standard measures set to measure the financial performance of an institution. They encompass liquidity, solvency, and profitability, among others (Singh et al., 2016). Liquidity measures the ability of an institution to meet upcoming financial obligations without disrupting the on-going operations of a business. It is analyzed both operationally, which encompass cash flow measures and structurally, which uses balance sheets to measure the relationship between assets and liabilities. Liquidity problems arise when debt maturities do not match with the conversion of business assets to cash. Solvency is the amount of borrowed capital used by a business compared to the amount of equity capital of

the owner invested in the business. Solvency provides an indication of business ability to withstand risks as it provides information on the ability of a firm to operate on major financial adversity. Profitability is a measure that provides the extent to which a business generates profits from the factors of production, such as capital, labor, and management. Its focuses on the relationship between revenues and expenses, including the level of profit relative to the investment size of the business.

1.1.3 Financial Innovation and Financial Performance

Kurgat (2017) indicates that innovation significantly affects financial performance with the highest contributor coming from mobile banking based on levy and charges used and its convenience. He shows how mobile banking in Kenya has been used in m-banking, paying bills, loan application, statement generation, internal transfer, and standing order instruction. The respondents in the study agreed that several online banking areas had lowered the prices of products, costs of operation, marketing costs, introduced new products, and increased turn over.

Chimwemwe (2018) research on financial innovations and bank performance in Kenya shows the branchless banking financial innovations. Financial innovations are noted to have significantly contributed to financial performance. A sample of 42 commercial banks in Kenya was used which covered the branchless banking models: representation of the transition from traditional branch-based banking. The firm-specific factors are noted to determine the financial performance of a firm compared to the industrial factors. The shareholders are noted to be the primary beneficiaries of the financial innovations used in commercial banks.

Sarah (2017) acknowledges that the financial institutions in Kenya have embraced changes by exploiting the capabilities presented by information and technology. Data from the central bank of Kenya were analyzed, whereby it showed that financial innovations had an influence on the performance of commercial banks in Kenya. Different variables such as internet banking, electronic funds transfer, and mobile banking were noted to affect the assets returns positively.

1.1.4 Micro Finance Institutions

Microfinance institutions are types of banking services that provide support in the form of finances to low-income individuals, groups, and small scale business start-up. They offer services such as saving solutions, loans, or insurance to entrepreneurs or individuals who do not have stable access to a reliable capital source (Tawiah& Asante, 2018). These institutions are regulated and licensed in relation to the guideline of Banking Act and the Regulations and Prudential Guidelines issued thereunder. They are regulated to secure the markets and protect the customers.

Microfinance is an old approach that has been transformed in recent years by changing the definition, operational procedures, and mode of services due to technology. It the past, it was backed up by pigmy deposits. In the present, there is remarkable growth on credit services whereby the technological evolution has played an essential role in the transformation of microfinance software and financial services which have influenced the success; the technological evolutions are advancing continuously taking this approach to the next level (Wijesiri&Meoli, 2015). In the future, the microfinance industry will have large numbers of customers which is going to expand beyond the finance practices of the past. The technological developments will allow the microfinance institutions to

collaborate with companies such as FinTech for competitive software applications that will help them operate 24/7 serving global customers.

1.2 Research Problem

Batiz-Lazo and Woldesenbet (2016) in their study on effects of financial innovation on the performance on UK banking state that financial innovation is used by commercial banks to be able to compete in financial markets, and as a result, it can improve their performance and maintain their effectiveness in the market. Nofie (2011) argues in his study on diffusion of electronic banking in Indonesia published in 2011 that financial innovations help in reducing the cost of providing the existing products and services; therefore, a tool of ensuring that the bank works effectively and efficiently in customer satisfaction. Hendrickson and Nichols (2017) study on effects of financial innovation on financial performance on banking in United States note that financial innovations by small banks in the United States of America (USA) led to improved performance. This is because the small banks gain an edge in the market and are able to attract more customers. Rossel (2012) on his research on 250 MFIs in Latin America and Caribbean conclude that there is increased efficiency in MFIs after diversifying through innovations. It concluded that innovation has a positive impact on financial performance.

The microfinance industry has been growing at a significant rate in several countries and it has become animportant sub-sector of the formal financial markets. Many microfinance institutions have secured high loan repayment rates, but, so far, relatively few earn profits (Quayes, 2015). MFIs also face stringent competition from commercial banks; the growth ofmicroloan activities of commercial banks may confront MFIs with increased competition for borrowers (Mustapha, Khursheed& Fatima (2018). Hence, leading to

lower profits. In Kenya, the microfinance sector has experienced extremely high competition evidenced by the shifting market share and profitability. The competition is among the MFIs sector, mainstream commercial banks and the telecommunication money transfer platforms such as Mpesa (King'ori, Kioko&Shikumo, 2017). Microfinance banks in Kenya reported very high competitive pressure in terms of pricing since they have less flexibility to adjust prices due to their financial structure (IMFI, 2018). Thus, the need to investigate the determinants of financial performance of Microfinance banks in Kenya.

Quayes (2015) investigated the possible trade-off between outreach and financial performance of microfinance institutions from 87 countries across Africa, East Asia and the Pacific, Latin America, Eastern Europe, and the Caribbean.The results suggests that a great depth of outreach positively influences the performance of microfinance institutions. This study provides conceptual gap as it did not cover financial innovation. Mustapha,Khursheed and Fatima (2018) conducted a study to examine the influence of global financial crunch on financially innovative microfinances institutions in South Asia for a period of 12 years from 2003-2012. The findings suggest that operational efficiency is positively related to organizational factors. This study presents a contextual gap as it was done in South Asia.Mia and Chandran (2016) objectively sought to establish financial and social outreach productivity of 165 microfinance institutions from Bangladesh for a period of 6 years from 2007-2012. The study found that 4.3 % in overall productivity of MFIs in Bangladesh which was caused by enhanced managerial efficiency. This study provides a conceptual gap as it focused financial social outreach productivity rather.

Local studies include; Mugo (2012) sought to establish the effect of financial innovation on firm growth of MFI's in Kenya. The research established that financial innovation by microfinance institutions lead to an aggregate growth of firms in various dimensions like number of products, market share, loan scales and the overall profitability. There exists a conceptual gap as the study used firm growth .King'ori, Kioko and Shikumo (2017) conducted a study to investigate the determinants of financial performance of microfinance banks in Kenya. This study established that there exists a positive and significant correlation between operational efficiency, capital adequacy, size of the firm and financial of microfinance banks in the country. There exists a conceptual gap as the study did not incorporate financial innovation. Kilika, Namusonge andSakwa (2017) in their study aimed at describing how methods of lending are a determinant of deposit taking microfinance institutions (DTMFIs) in Kenya. The findings from this study is that lending methods significantly influenced DTMFIs financial performance.There exists a conceptual gap as the study did not incorporate financial innovation and financial performance.Sindani, Muturi and Ngumi (2019) examined the Impact of financial channels of distribution evolution on financial inclusion in Kenya for a period of 6 years from 2012-2017. The study found that internet banking has a positive impact on the banking sector in Kenya because it promotes productivity and efficiency. There exists a conceptual gap as the study did not incorporate financial innovation. Therefore, this study sought to fill this gap by answering the following question: what is the effect of financial innovation on financial performance among MFI's in Kenya?

1.3 Research Objective

To establish the effect of financial innovation and performance of microfinance institutions in Kenya

1.4 Value of Study

The results of the study will give an insight into the management of different microfinance institutions on how to utilize the advanced technologies as well as their impact. It will analyze their efficiency, competitive advantage, and the overall impact on financial performance. Various means and ways of financial innovations are documented in the study, which gives helpful information to the microfinance institutions on how to enhance their financial innovations to enjoy their benefits. It will guide the management on how to improve the financial performance of microfinance institutions via financial innovations.

The modern portfolio theory has a role in microfinance institutions by helping them search for new opportunities in the economy. It states that innovations are managed by individuals, who are ready to take risks as according to the portfolio theory, risk tolerance results in rewards. Schumpeter (1934) views invention as a new dimension of growth in a self-propagating system in the theory of innovation. Its central theme is that innovation is a continuous process, and institutions ought to be cognizant with them to boost performance.

The study can be used by states departments in developing countries such as the Central bank of Kenya. The study contains adequate information on innovative products such as mobile banking, electric funds transfers, agency banking operations, and internet banking that will help the policymakers to set rules governing the innovations. Additional

information on the challenges and benefits if finance innovations will help policymakers make rules and regulations that will promote innovativeness in the banking industry.

The research is a source of information for scholars and researchers. It has discussed issues on financial innovations and their impact on microfinance institutions. These discussions are vital in future search as a reference for information relating to the subject. The data will be used as a basis for future research as students conducting research on financial innovations will use the study as a source of secondary data for their studies.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents a discussion on the theoretical review and empirical studies related to financial innovation. It is divided into sections that deal with Theoretical Foundation,

Determinants of Financial Performance, Empirical Review and lastly a Summary of Literature and Research Gap.

2.2 Theoretical Literature Review

Studies conducted on innovation are many and they cover extensive topics, however, high level of attention is given to neglected forms of innovation and locations of innovation. To get a clear insight of the relationship of innovation on performance. Therefore, this study entails three theories which are Diffusion of innovation theory, Silber's Theory of Financial Burden, Kane's Theory of Regulatory Dialectic.

2.2.1 Constraint-Induced Financial Innovation Theory

Silber, an economist in America, came up with the approach in 1983. The theory points out the maximization profit in financial firms is the primary reason for financial innovation. However, there are restrictions on the process which hinder the process of achieving profit maximization in a firm (Cherotich, Sang, Mutungú&Shisia, 2015). The handicaps are externally based, such as policies and internally based, such as leadership style and organization management. According to the theory, the limitations and restrictions guarantee stability in governance and reduce the efficiency of the business organization, and so the commercial organization should strive toward cutting them off. It suggests that this constrains inside and outside the organization provides a way of handling the market to improve their financial performance. It emphasizes on the adversity of innovation.

The theory is relevant to the study as it explainsthat financial innovation affects financial performance positively in financial firms. The approach discusses financial innovation from a microeconomic perspective. The argument is relevant in explaining why financial

institutions come up with new ways of getting income despite the changing landscape (Ongwen, 2015). Financial innovation involves a series of processes carried out by any financial institutions and consists in creation, promotion and adoption of new processes, products and products of different technologies or some changes to how the financial activities are carried out. It is relevant in explaining what weaker or smaller firms should do to succeed, which is engaging in more innovation. Financial constraints are viewed to reduce the ability of the firms to innovate, and so firms should work on lessening the limitations imposed on the financial institution. According to Silber (1983), the critical reason for innovating in financial institutions is to maximize the profits.

2.2.2 Circumvention Innovation Theory

Kane (1981) came up with the approach that explains how the government regulations and controls forms role in the financial sector. The controls or regulations are in the form of tax imposed in property in financial institutions which reduces the potential profit of the firm. The approach creates a gap between the political and commercial forces (Cherotich, Sang, Mutungú&Shisia, 2015). Kane argues against the regulations that impact the financial market positively in the market economy. Kane has used his argument to explain the evolution that took place in the United States of America in the last forty years. Kane's main aim is the regulative function existing between deposition of regulations by the federal government as well as the exogenous market forces such as the changing depositing environment, dynamic technological change and the uncertainty in prospective financial developments. It means that the product dimension occurs as a result of innovation to adapt or circumvent the regulations or controls.

Kane's theory means that the forms of government regulations and controls have an adverse effect on the profitability of the financial institution. Management and market innovation is a continuous process which entails a fight between the political forces and economic forces. The financial industry has strict regulations compared to other sectors. It is relevant in explaining what the financial institutions should deal with: the failure of management and reduction of profit imposed by the government to reduce potential losses to the minimum capacity (Achieng et al., 2015). Business innovation is a result of circumvention of government regulations and earning a profit. However, the theory differs from reality as it assumes that regulation innovation is towards the direction of reinforcing law while in a real sense, it's toward liberal market innovation. It is considered better than Silber's theory, as it forms the basis of innovation origin and its research on the process of regulation innovation as well as their dynamic relation.

2.2.3 The Transaction Cost Innovation Theory's

Nicks andNiehans introduced this model in 1983. They argue that the reduction of transaction cost is the dominant factor of financial innovations. They view financial innovation as the reaction or response to advancement in technology which leads to a reduction of the transaction cost (Akkaya, 2019). The decline of transaction cost is explained to result in improvement of financial services and stimulation of financial innovation. It studied financial innovation from a microscopic economic structure change perspective. Financial innovation motive is to reduce the exchange costs, but the model explains that the purpose of financial innovation from another perspective is to earning benefits in financial institutes. Nicks and Niehans mean that the main aspect of innovation

in financial firms is to reduce business costs which are possible by the use of technology as it reduces the transaction costs.

The ability to lower down the transaction costs results in upgrading the financial services and innovation in the financial institutions. The money related innovations are argued to decreases the costs involved in sales. The theory is relevant to information and technology set up as it considerably lessens the transaction costs, as it is helpful in the utilization of data, effective coordination and administration (Willcocks&Lacity, 2016). For example mobile phones using the internet reduce the exchange costs as it gives offsite access to the sources of information in the company, such as the internal database. It is relevance in agency and mobile banking as they lower the cost of operation and later improves the profitability of the bank. The theory is a guideline on the effects of innovation on the performance of financial firms.

2.3 Determinant of Financial Performance

Most microfinance organizations are not able to adequately be self-sustaining. Some of the key determinants of financial performance have been discussed below which may include financial innovation, capital adequacy, interest rates and size of microfinance institutions.

2.3.1 Financial Innovation

Financial innovation refers to a continuous process of creating new financial products, services and procedures and standardized products get differentiated so that microfinance institutions can easily adopt the ever changing economic environment. Innovation can take various forms which include innovations in the marketing strategies, micro MFIs, location invention, and lastly inventions in the research and development sector. Financial

innovations can take various forms such as institutional innovation, product innovation and process innovation.

It is therefore evident that financial innovation is a significant determinant of financial performance and growth of microfinance institutions because it eases the operations of business they are involved in. Innovation mostly is motivated by anticipating in material gains following cost-benefit analysis. Through innovation microfinance institutions are able to cut costs and generate more earnings or both. The cost reduction aspect is mainly made possible by exogenous technological innovations. However, it is unclear of the capability of microfinance institutions to adequately create innovative ideas meant to help them run their business operations efficient due to the fact that they are mostly associated with problems of limited growth and expansion. The correlation between performance is strategic in that an organization that cannot experience growth if the performance is poor.

2.3.2 Capital Adequacy

According to (Almazari&Alamri, 2017) capital adequacy reveal the efficiency and capacity of most financial institutions in that when they are able to possess it they are able to effectively measure and control any risks associated with their business operations. Capital adequacy refers to the amount that acts as a cushion for economic shocks that may occur to financial institutions where it is able to absorb any losses in case they occur (Musyoka, 2017). Fatima (2014) states that an institution with sufficient capital adequacy ensures availability of the appropriate capital levels that will be used when the necessity to expand the business arises and also makes certain that the institutions has sufficient net assets to act as cushion in the cases where it is experiencing financial down turns without risk of insolvency. (Almazari&Alamri 2017) reveals that capital adequacy ratio (CAR) in

the financial sector is regarded highly as a crucial indicator used to access the financial solvency of financial institutions.

Just like any other financial organization microfinance institutions when aiming to promote financial safety, soundness and efficiency more so aid in safeguarding the money of the depositor the ratio is considered as a safety valve. CAR acts as an indicator of the internal strength of a financial institution so that they are able to absorb any economic shocks and also indicates how the institution is resilient when faced with an economic crisis (Nazir&Sangmi 2010). Therefore, it is right to say that the CAR protects financial institutions from insolvency and economic crisis (Fatima, 2014). Sufficiency CAR aide financial institutions in combatting any losses that occur unexpectedly and also helps in costs reduction which have the eventual result of recording a remarkable improvement in the profit margin. Various techniques are used in measuring the capital adequacy of financial institutions. For instance, the following variables are used to measure capital adequacy; loan loss provisions against total assets, total revenue against the number of workers and non-interest earnings against total assets. (Otwani&Sindani, 2017) states that all these variables have the objective to assess capital adequacy through different perspectives.Fatima (2014) defines capital adequal as the capital amount a financial institutions possess in relation to the total assets that considered to be highly risky and current liabilities.

2.3.3 Interest Rates

The lending rates of microfinance institutions always impact their finance performance. This fact is due to the impact of interest rates on the income and expenses of microfinance institutions and the net outcome that have an impact on the profit margins. The interest

variable is positively and statistically related to the performance of microfinance institutions and thus its significant influence implies that MFIs financial performance in Kenya increases with increase in interest rates. The fact that borrowers have no readily available alternative borrowing sources to improve on their investments, the availability doctrine, rather than the cost doctrine lives to the only option. This implies that borrowers are always ready to apply for loans provided by microfinance institutions as long as they available. When interest rates are high, microfinance institutions rip the benefits of increased profit margins, however, this is at the expense of the general economic development in the country.

In a study by Bella (2011) to establish the effect of the global financial crisis on MFIs and policy implications, she found that the impact of the global financial crisis on the performance of MFIs was negative because of the constrain on lending rates caused by limited opportunities of borrowing, while the economic drop had a negative and significant impact on the quality of assets and the profit margin of MFIs. She also reported that this crisis caused high rates of interest to be imposed on low-income clients by MFIs. The results from this study shows that there exists a relationship between the financial performance of MFIs not only with local economic crisis but also with the changes that occur in global capital markets. The analysis from Bella's study on lending rates helps policy decision makers to make informed decisions. The analysis also reveal the impact of the size of loans, productivity and the age of an MFI to the differences in the levels of lending rates. Another study by Donor Brief 18 (2014) states that most countries have established ceilings meant to safeguard customers from deceitful lenders. The study also shows that more often so much pressure which could be political or cultural is exerted on

the governments of different countries urging them to keep interest rates at low levels. However, as much as interest rates may come with good intentions their negative impact on the low-income earners customers is significant which makes it hard for the emergence of new MFIs and the old ones stay in business.

2.3.4 Size of the Microfinance Institution

According to Pandey (2015) firm size refers to the number of assets an organizations owns. Large firms have less disposal to insolvency compared to smaller firms; this is due to the fact large firms practice investment diversification and thus they are associated with less risks. Low bankruptcy levels give a chance to large firms to be able to access high debt amounts. There is the possibility of large firm reducing asymmetric information in the market by being fast movers to grab opportunities in the market that help to improve performance. The stability of large firms is higher compared to that of small firms which makes them capable of satisfying their financial responsibilities thus exposing them to a high degree of information required for smooth business operations. Due to their extensive network of branches, large firms are able to satisfy the needs of their customers which has a significant positive impact on their financial performance in comparison to small institutions who cannot such services. Willison, Dimitris and Hong (2013) in their study presents an argument that states that the efficiency brought about by the positive growth of an institution is determined by the size of that institution since economies of scale vary depending on the range of the possible sizes of the operations of that firm. The market experience and well defined networks of large firms is better compared to smaller firms facing a struggle of establishing themselves in the market which puts the larger firms in a position to rip more benefits.

According to a study by Ammar and Russell (2013) who attempted to investigate factors affecting profitability of a bank before and during times of economic crisis that was experienced in Switzerland found that, both larger and smaller banks had positive correlation with profitability. Moreover, larger and smaller banks had enhanced profit margin in comparison to medium-sized banks prior to the economic crisis. This was because of the ability of large firms to offer efficient services because of the high quality and modern technologies they had adopted. The ability of large banks to diversify their products and services to absorb risks, by handling bulky products and services through complex technological systems made it possible for them to enjoy economies of scale.

2.4 Empirical Studies

Various global studies have been conducted on this area. Sseremba (2012) conducted a research on the effect ownership and corporate governance on MFI' performance. The study adopted descriptive research design, and analyzed data via descriptive statistics. The study findings held that ownership and corporate governance are significant predictors of MFIs performance. In order to streamline the MFI systems, the board must be totally independent.

Quayes (2015) investigated the possible trade-off between outreach and financial performance of microfinance institutions from 87 countries across Africa, East Asia and the Pacific,Latin America, Eastern Europe, and the Caribbean. The study was conducted from the United States of America. The study covered the period between 2003-2013.The study relied on data collected from Mix market data base reports. The results suggests that a great depth of outreach positively influences the performance of microfinance institutions. The study concluded that financial innovation attainment could negatively

impact the MFI outreach efforts should be dispelled and also it is evident that extending the outreach to low income earners could positively boost the financial performance of MFI.

Mustapha, Khursheed and Fatima (2018) conducted a study to examine the influence of global financial crunch on financially innovative microfinances institutions in South Asia for a period of 12 years from 2003-2012. They used the fixed effect panel regression technique on the dataset of 95 microfinance institutions in South Asia. The findings suggest that operational efficiency is positively related to organizational factors of a country and that the political practices of a country has a pervasive impact performance of MFIs. The study concluded that MFIs located in states with vigorous political practices experience less impact of the economic crunch.

Mia andChandran(2016) objectively sought to establish financial and social outreach productivity of 165 microfinance institutions from Bangladesh for a period of 6 years from 2007-2012 due to the fact that the massive utilization of scarce resources objectively to attain sustainability and social outreach has become a primary concern for policy decision makers and practitioners. Using the Malmquist total factor productivity method, with a balanced panel dataset of 165 MFI's. The study found that 4.3 % in overall productivity of MFIs in Bangladesh which was caused by enhanced managerial efficiency. The study concluded MFI's should design a comprehensive savings products and creation of the appropriate synergies on the best five performing MFIs, the government and any relevant authority should stimulate the transfer of their innovative practices to other MFIs to ensure that the sectorial growth is enhanced and satisfy the needs of the poor groups.

Local studies include; Mugo (2012) sought to establish the effect of financial innovation on firm growth. The study adopted a descriptive research design.The study adopted survey research design. Thirty four registered MFI's formed the population. Data gathered was analyses via correlation design. The research established that financial innovation by microfinance institutions lead to an aggregate growth of firms in various dimensions like number of products, market share, loan scales and the overall profitability. The study concludes that effective techniques should be formulated to motivate MFIs to be innovative financially.

King'ori, Kioko andShikumo (2017) conducted a study to investigate the determinants of financial performance of microfinance banks in Kenya. Secondary data was obtained from 7 microfinance banks in Kenya from 2011-2015. The analysis for data was done using correlation and regression analysis methods. Using descriptive research design this study established that there exists a positive and significant correlation between operational efficiency, capital adequacy, size of the firm and financial of microfinance banks in the country. However, there was negative but not significant correlation between risks associated with liquidity, and credit and financial performance of microfinance banks in Kenya. The conclusion from the study is that there exists a direct correlation between operational efficiency, capital adequacy, size of the firm with the financial performance of microfinance banks in Kenya.

Kilika, NamusongeandSakwa (2017) in their study aimed at describing how methods of lending are a determinant of deposit taking microfinance institutions (DTMFIs) in Kenya. Another objective of this study was to establish financial costs associated with methods of lending as a primary indicator of the financial performance of DTMFIs. The study was

guided by the following theories: capital structure, portfolio theory, the economic theories which include theory of choice, finance theory, capital investment theory, investor choice theory, preference theory and efficient capital theory. Data was collected from 138 DTMFIs in Kenya where primary data was collected using questionnaires while secondary was obtained from published reports. The respondents consisted of 102 random samples of branch managers and finance officers working as employees in DTMFIs. Data analysis and interpretation were based on descriptive statistics and dispersion measures as well as inferential statistics which included mainly of regression analysis, Pearson correlation, factor analysis, ANOVA, and Chi-Square. The findings from this study is that lending methods significantly influenced DTMFIs financial performance. The study concludes that DTMFIs should do away with lending methods that are unpopular among customers and invest in formulating techniques to find out effective lending methods.

Sindani, Muturi and Ngumi (2019) examined the Impact of financial channels of distribution evolution on financial inclusion in Kenya for a period of 6 years from 2012-2017. The specific objectives guiding this study include; examine how internet banking affects financial inclusion in Kenya and to examine how ATM banking affect financial inclusion in Kenya. Secondary data was collected for subsequent analysis. For analysis of the data collected, frequency tables, percentages and means were used to demonstrate the findings of this study. Use of descriptive statistics in this study was meant to present the category sets formed by this research. The mean, standard deviation and variance on the dependent and independent variables function was to describe the dispersement of the variables used for the study. The conclusion from this study is that internet banking has a positive impact on the banking sector in Kenya because it promotes productivity and

efficiency. Also, ATM banking has enhanced financial inclusion in Kenya. The recommendation from this study is that policy decision should incorporate internet banking in formulation of strategies because of the development in technology and perceived switch in future from physical branch networks to banking services that are supported by technological systems.

2.5 Summary of Literature and Research Gap

It is evident from this study that technology innovation adoption levels by MFIs greatly influence their financial performance. It is necessary that MFIs adopt effective technological innovations so that they can be able to reduce costs of operation so that they can maximize financial performance. Donor funds enable MFIs to service affordable credits to their customers.

The studies above have failed to cover all three types of innovations which include institutional innovation, product innovation and process innovation. Therefore, this study seeks to fill that research gap to determine the effect of financial innovation on the financial performance of microfinance institutions in Keny

2.6 Conceptual Framework

The relationship between the predictor variable and the dependent variable. The predictor variable is represented by number of agency banking, number of ATMs, number deposit accounts and number of mortgage accounts. The dependent variable is represented by return on assets.

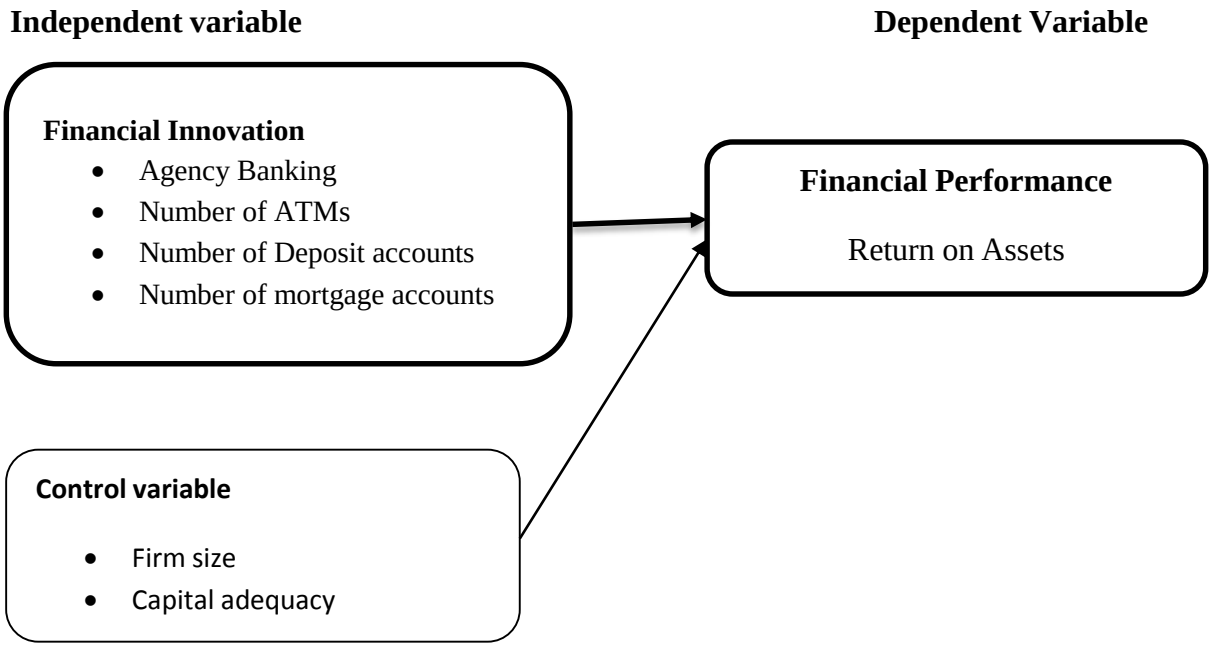

Figure 2.1: Conceptual Framework

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter is an overview of the methods and procedures that the researcher will use to execute the study. It is a detailed chapter that highlights the research design, target population, the sample size and the procedure that were used to acquire the sample size, the instruments that were utilized to collect data and the ethical concerns. This chapter also highlights the methods that were used in data analysis.

3.2 Research Design

The study used a quantitative research design which assists in the creation of new knowledge and meaning through quantifying data. The main objective of a quantitative research design is to establish, validate and confirm the relationship between variables. In addition, this particular research design helped to develop the generalization that contributed to the formation of the theory.

Aspects the quantitative research designs that were used include the descriptive research method which helped identify different attributes of particular phenomenon on an observation basis. In addition, the comparative method was also used to analyze how the dependent variables are affected by independent variables.

3.3 Population of Study

A study population is the characteristic group or items from which a study sought to obtain the study information. For this study the target population was the 13 microfinance institutions in Kenya. Therefore, all the 13 MFI's underwent the analysis.

3.4 Data Collection

Data collection was mainly collected from secondary sources. The secondary data that was used in the study was derived from CBK Annual banking supervision report, 2014 -2018. These reports gave the financial summary of the details that were required in the study. Information to be gathered from the CBK Annual banking supervision report include: return on assets, number of agency banks, number of ATMs, number of deposit accounts and number of mortgage accounts.

3.5 Data Analysis

The data collected from secondary sources was analyzed via inferential statistics which were used in hypothesis testing. Inferential statistics was mainly used to test hypothesis between dependent and independent variables (Kern, 2013). The study also used a multiple regression analysis model to predict the value of a variable based on the value of two or more other variables. Data analysis tool was Statistical Package for Social Sciences. Multiple regression model is as follows:

$$Y= \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \varepsilon$$

Whereby: β_0 was the regression intercept; $\beta 1$-$\beta 6$ are the regression coefficients;

Y =Return on Assets

X_1 = Log number of agency banks

X_2 = Log number of ATM's

X_3 = Log number of deposit accounts

X_4 = Log number of mortgage accounts

X_5 =Firm size measured by log of total assets

X_6 = Capital adequacy measured by the ratio of core capital to total assets

ε = Error term

3.6 Diagnostic Tests

Information collected underwent diagnostic tests. The following diagnostic tests were performed: normality test, autocorrelation, multi-collinearity test, homoscedasticity. Normality tests are used to determine if dataset has been drawn from a normally distributed

population. A normal data distribution is an underlying assumption in parametric testing since their validity depends on it. Normality test of the data was tested through Shapiro Wilk test. Data was normally distributed if the Shaipro wilk p value is more than 0.05. This aided in identifying outliers. Autocorrelation is used to establish the degree or existence of correlation between the values of variables across various observations in the data. Autocorrelation was tested via Durbin Watson test. Durbin Watson tests range from 0 to 4. Values closer to 0 or 4 indicate positive and negative correlation. Values close to 2 indicate less autocorrelation.

Multicollinearity refers to high level of intercorrelation between the predictor variables in a manner that the effects of the predictor variables cannot be separated. Multicollinearity was tested via Variance inflation factor When VIF=1 then there exists no correlation, 1<VIF<5 means moderate correlation while VIF>5 reflects high correlation. Homoscedasticity means the relationship under investigation is the same for the entire range of the dependent variable. Lack of homoscedasticity is shown by higher errors (residuals) for some portions of the range compared to others. Homoscedasticity was measured via Breusch-Pagan / Cook-Weisberg test test (Garson, 2012).

3.7 Tests of Significance

To test the statistical significance the study applied F-test and T-test. F-test is a measure used to test the overall significance model, while t-test is a measure used to test the individual significance of each variable at 5% level of significance.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This section details the analysis, findings and elucidation of the secondary data obtained from the CBK and individual licensed MFIs websites. The aim of the study was determining the effect of financial innovations on the FP of licensed microfinance institutions. The independent variable for the study was financial innovations while the dependent variable was the FP measured by ROA. Regression analysis was adopted to determine the effect between the variables of study in relation to the study's objectives. In ascertaining the suitability of the analytical model, ANOVA was applied. The results were presented in tables and figures.

4.2 Descriptive Analysis

The statistics produces a representation of the mean, minimum and maximum values of variables presented including the standard deviations. Table 4.1 below displays the qualities of each variable. An output of each variable was extracted using SPSS software for a five-year time frame (2014 to 2018) on an annual basis.

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	65	-.0177	.0614	.025325	.0174115
Agency banking	65	5.656	6.791	6.34955	.281655
ATMs	65	1.792	5.298	3.50051	1.027297
Deposit accounts	65	7.525	11.025	9.33709	.991984
Mortgage accounts	65	8.340	9.535	8.78665	.330072
Bank size	65	6.807	8.414	7.75380	.432184
Capital adequacy	65	.116	.810	.51089	.201468
Valid N (listwise)	65				

Source: Research Findings (2019)

4.3 Diagnostic Tests

The data collected was subjected to diagnostic tests. The study presumed a significance level of 5% or 95% confidence interval so as to make variable deductions on the data adopted. Diagnostic tests were useful for ascertaining the falsity or truth of the data. Therefore, the nearer to 100% the confidence interval, the more accurate the data used is presumed to be. In this case, the tests conducted were Multicollinearity test, normality test, and autocorrelation and Heteroskedasticity tests.

4.3.1 Multicollinearity Test

Multicollinearity can be defined as a statistical state where more than one predictors are highly correlated in a multiple regression model. It is an unwanted situation for

independent variables to have a strong correlation. A combination of variables is said to exhibit high Multicollinearity in case there is one or more exact linear correlation among the study variables.

Table 4.2: Multicollinearity Test

	Collinearity Statistics	
Variable	**Tolerance**	**VIF**
Agency banking	0.392	2.551
Number of ATMs	0.398	2.513
Deposit accounts	0.388	2.577
Mortgage accounts	0.396	2.525
Bank size	0.390	2.564
Capital adequacy	0.386	2.591

Source: Research Findings (2019)

VIF value and Tolerance of the variable were utilized where the values below 10 for VIF and values more than 0.2 for Tolerance imply no Multicollinearity. From the results, all the variables had a VIF values <10 and tolerance values >0.2 as illustrated in table 4.2 suggesting that no Multicollinearity.

4.3.2 Normality Test

Shapiro-wilk test was utilized for normality testing. The level of significance in the study was 5%. The outputs of the test are depicted in Table 4.3. The null hypothesis is that the data is distributed normally. Since the p value in both tests of all the variables is greater than the α (0.05), then the null hypothesis is not rejected. Hence the data series of all the variables is normally distributed.

Table 4.3: Normality Test

ROA	Shapiro-Wilk Statistic	Df	Sig.
Agency banking	.918	65	.822
ATMs	.894	65	.790
Deposit accounts	.892	65	.784
Mortgage accounts	.893	65	.787
Bank size	.896	65	.792
Capital adequacy	.892	65	.788

a. Lilliefors Significance Correction

Source: Research Findings (2019)

4.3.3 Autocorrelation Test

To test for autocorrelation, Durbin-Watson statistic was applied which gave an output of 1.668 as displayed in Table 4.4. The Durbin-Watson statistic ranges from point 0 and point 4. If there exist no correlation between variables a value of 2 is shown. If the values fall under point 0 up to a point less than 2, this is an indication of an autocorrelation and on the contrast a negative autocorrelation exist if the value falls under point more than 2 up to 4. As a common rule in statistics, value falling under the range 1.5 to 2.5 is considered relatively normal whereas values that fall out of the range raise a concern. Field (2009) however, opines that values above 3 and less than 1 are a sure reason for concern. Therefore, the data used in this panel is not serially autocorrelated since it meets this threshold.

Table 4.4: Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.759[a]	.575	.532	.0119167	1.668

a. Predictors: (Constant), Capital adequacy, Mortgage accounts, Bank size, Agency banking, Deposit accounts, ATMs

b. Dependent Variable: ROA

Source: Research Findings (2019)

4.3.4 Heteroskedasticity Test

The researcher checked for heteroskedasticity by use of Likelihood Ratio (LR) as indicated in the Table. This test used the alternative hypothesis that the error was homoscedastic. A chi-square value of 34.36 was produced by the likelihood-ratio test with a 0.0000 p-value. The chi-square esteem was significant at 1 percent level.

Table 4.5: Heteroskedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of ROA
chi2(1) = 34.36
Prob > chi2 = 0.0000

Source: Research Findings (2019)

4.4 Correlation Analysis

Correlation analysis establishes whether there exists an association among two variables. The association falls between a perfect positive and a strong negative correlation. This study utilized Pearson correlation to analyze the level of association between ROA and financial innovations. The study employed a confidence interval of 95%, as it is the most utilized in social sciences. A two tailed test was utilized.

The correlation results revealed that agency banking, numbers of ATMs, deposit accounts and mortgage accounts have a positive correlation with financial performance but the association is not statistically significant. This is evidenced by positive correlation coefficients and p values above 0.05. Existence of a positive and statistically substantial correlation ($r = .306$, $p = .013$) between capital adequacy and FP was revealed. Further

results discovered a positive and significant correlation between bank size and licensed MFIs' performance as demonstrated by (r = .563, p = .000) existed

Table 4.6: Correlation Analysis

		ROA	Agency banking	ATMs	Deposit accounts	Mortgage accounts	Capital adequacy	Bank size
ROA	Pearson Correlation	1						
	Sig. (2-tailed)							
Agency banking	Pearson Correlation	.149	1					
	Sig. (2-tailed)	.237						
ATMs	Pearson Correlation	.112	.802**	1				
	Sig. (2-tailed)	.374	.000					
Deposit accounts	Pearson Correlation	.050	.239	.622**	1			
	Sig. (2-tailed)	.694	.055	.000				
Mortgage accounts	Pearson Correlation	.209	.211	.314*	.600**	1		

	Sig. (2-tailed)	.095	.092	.011	.000			
Capital adequacy	Pearson Correlation	.306*	.173	.212	.097	.072	1	
	Sig. (2-tailed)	.013	.168	.090	.443	.571		
Bank size	Pearson Correlation	.563**	.213	.064	.303*	.008	.251*	1
	Sig. (2-tailed)	.000	.088	.610	.014	.947	.043	

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).
c. Listwise N=65

Source: Research Findings (2019)

4.5 Regression Analysis

At significance level of 5% a regression analysis was accomplished between FP and the six predictor variables selected for this study. The F critical value was compared against the F calculated.

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.759[a]	.575	.532	.0119167	1.668

a. Predictors: (Constant), Capital adequacy, Mortgage accounts, Bank size, Agency banking, Deposit accounts, ATMs
b. Dependent Variable: ROA

Source: Research Findings (2019)

From table 4.7, the R-square value was 0.575, implying that 57.5 % of the deviations in FP of licensed MFIs is caused by changes in agency banking, number of ATMs, deposit accounts, mortgage accounts, bank size and capital adequacy. Other factors not incorporated in the model are attributed 42.5% of the changes in FP. The correlation coefficient (R) value of 0.759 shows that there exists a strong relationship between the independent variables included in the study and financial performance.

Table 4.8 provides the outcomes of the ANOVA; the essence of F-test was to establish how significant model. The formulae for calculating the critical value for the F test is;

$\mathbf{F} = (SSE_1 – SSE_2 / m) / SSE_2 / n\text{-}k$

Where;

SSE = Residual sum of squares,

m = Number of restrictions

k = Number of independent variables.

A critical value of 2.36 was obtained from the F-Test tables. The F statistic indicated in the study findings is more than the critical value, thus the whole model is significant to predict FP.

Table 4.8: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.011	6	.002	13.105	.000[b]
	Residual	.008	58	.000		
	Total	.019	64			

a. Dependent Variable: ROA

b. Predictors: (Constant), Capital adequacy, Mortgage accounts, Bank size, Agency banking, Deposit accounts, ATMs

Source: Research Findings (2019)

So as to ascertain the significance of each variable individually variable in this research as a predictor of the performance of licensed MFIs it was important for t-test to be employed. P-value was utilized to indicate how significant the relationship between the response and the predictor variables was. Confidence level at 95% and value of p below 0.05 was

understood as an index of statistical significance of the concepts. Therefore, a p-value more than 0.05 depicts an insignificant variable.

Table 4.9: Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.351	.091		-3.876	.000
	Agency banking	.003	.012	.056	.295	.769
	ATMs	.002	.004	.142	.616	.541
	Deposit accounts	.012	.003	.698	4.111	.000
	Mortgage accounts	.031	.006	.586	4.979	.000
	Bank size	.030	.004	.740	7.168	.000
	Capital adequacy	.003	.008	.031	.328	.744

a. Dependent Variable: ROA

Source: Research Findings (2019)

The coefficients are used as an indicator of the magnitude and direction of the relation between the predictors and the response variable. The T values were applied to establish the significance of the relationship of the predictor variable to the response variable. The values obtained are contrasted to the critical values. A confidence interval of 95% and a two tailed T test critical value of ±2.04523 was obtained from the T test tables. A T test value that lies out of this range is significant.

The results revealed that mortgage accounts and deposit accounts have positive and significant influence on FP. Implication of this is that a unit increment in deposit accounts or mortgage accounts will result to an increase in financial performance by 0.012 and 0.031 respectively. The findings further revealed that bank size has a significant positive effect on FP. Although agency banking, number of ATMs and capital adequacy had a positive influence on financial performance, the influence was not statistically significant. The

constant coefficient -0.351 implies that when the six selected independent variable have a zero value, financial performance would be equal to the figure.

The regression equation below was thus estimated:

$$\mathbf{Y_i = -0.351 + 0.012X_1 + 0.031X_2 + 0.030X_3}$$

Where;

Y_i= Return on Assets

X_1 = Deposit accounts

X_2 = Mortgage accounts

X_3 = Bank size

4.6 Discussion of Research Findings

The researcher was seeking to assess the influence of financial innovations on the licensed MFIs' FP. Agency banking, number of ATMs, deposit accounts, mortgage accounts, bank size and capital adequacy were the predictor variables in this study while financial performance of licensed MFIs measured by ROA was the dependent variable. The adequacy of the overall model in predicting FP was examined. The influence of each predictor variable on the dependent variable was also examined with respect to strength and direction.

From the results of Pearson correlation, existence of a positive and statistically substantial correlation between bank size and FP was revealed. Further results discovered a positive and significant correlation between capital adequacy and licensed MFIs' performance

existed. Agency banking, number of ATMs, deposit accounts and mortgage accounts exhibited a positive relationship with FP but the association was not statistically significant.

The independent variables from the model summary revealed that: Agency banking, number of ATMs, deposit accounts, mortgage accounts, bank size and capital adequacy explains 57.5% of variations in the response variable as shown by R square which derives an implication that other factors not considered in the model explain the 42.5% of variations in performance. The model was found fit at 95% confidence level because the F-value is 13.105. This signifies that the model adopted is appropriate for predicting and explaining how the independent variables affect licensed MFIs' FP. This implies that agency banking, number of ATMs, deposit accounts, mortgage accounts, bank size and capital adequacy are good predictors of financial performance.

This study agrees with Mugo (2012) who sought to establish the effect of financial innovation on firm growth. The study adopted a descriptive research design.The study adopted survey research design. Thirty four registered MFI's formed the population. Data gathered was analyses via correlation design. The research established that financial innovation by microfinance institutions lead to an aggregate growth of firms in various dimensions like number of products, market share, loan scales and the overall profitability. The study concludes that effective techniques should be formulated to motivate MFIs to be innovative financially.

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Kenya. Secondary data was obtained from 7 microfinance banks in Kenya from 2011-2015. The analysis for data was done using correlation and regression analysis methods. Using descriptive research design this study established that there exists a positive and significant correlation between operational efficiency, capital adequacy, size of the firm and financial of microfinance banks in the country. However, there was negative but not significant correlation between risks associated with liquidity, and credit and financial performance of microfinance banks in Kenya. The conclusion from the study is that there exists a direct correlation between operational efficiency, capital adequacy, size of the firm with the financial performance of microfinance banks in Kenya.

The study findings also concur with that conducted by Quayes (2015) who investigated the possible trade-off between outreach and financial performance of microfinance institutions from 87 countries across Africa, East Asia and the Pacific, Latin America, Eastern Europe, and the Caribbean. The study was conducted from the United States of America. The study covered the period between 2003-2013.The studies relied on data collected from Mix market data base reports. The results suggest that a great depth of outreach positively influences the performance of microfinance institutions. The study concluded that financial innovation attainment could negatively impact the MFI outreach efforts should be dispelled and also it is evident that extending the outreach to low income earners could positively boost the financial performance of MFI.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The main goal of the study was determining how financial innovations impact on the financial performance of licensed MFIs. This chapter gives an overview of the results from the previous chapter, conclusion, limitations encountered during the study. Moreover, it recommends policies that policy makers can use. Additionally, the chapter gives recommendations for future researchers.

5.2 Summary of Findings

The aim of the research was to ascertain how financial innovations influences financial performance of licensed MFIs listed at the NSE. To conduct the study, financial innovations was given by agency banking, number of ATMs, deposit accounts and mortgage accounts. The control variables were bank size given as the natural log of total

assets and capital adequacy given by the ratio of core capital to risk weighted assets. FP was the response variable that formed the scope of the study and it was be given by return on assets. The researcher reviewed available theoretical foundations and empirical reviews to get an understanding on the generally accepted relationship among the selected dependent and independent variables. From this review, a conceptual framework was developed that hypothesized the expected association between the study variables.

Descriptive research design was employed. All the 13 licensed MFIs as at December 2018-year end comprised the population of this study. Data secondary in nature was acquired from CBK and individual licensed MFIs financial reports for a time frame 5 years spanning 2014 to 2018 was used. The researcher carried out descriptive, correlation analysis as well as regression analysis. So as to confirm that the data is fit for analysis the researcher transformed the data using natural logarithms and conducted diagnostic tests to make sure that the data has the required characteristics before conducting inferential statistics. Regression analysis was applied in testing the strength of the association between the study variables and to test both the significance of the overall model and individual parameters. SPSS software version 22 was used to carry out the analysis.

Pearson correlation showed existence of a positive and statistically substantial correlation between bank size and FP. Further results discovered a positive and significant correlation between capital adequacy and licensed MFIs' performance existed. Agency banking, number of ATMs, deposit accounts and mortgage accounts exhibited a positive relationship with FP but the association was not statistically significant.

The coefficient of determination also called R square shows the disparities in the response variable triggered by variations from the predictor variable. From the results, R square was found to be 0.575, a revelation that 57.5% of the changes in performance stems from variations in agency banking, number of ATMs, deposit accounts, mortgage accounts, bank size and capital adequacy. Alternative factors beyond those in the model justify for 42.5% of these changes in financial performance. The findings showed a strong correlation between the chosen variables and the FP of licensed MFIs (R=0.759). Results from the ANOVA test showed that the F statistic was at significance level of 5% and a p=0.000 rendering the model appropriate for providing an explanation of the relation between the variables studied.

The study further found that a unit increment in deposit accounts or mortgage accounts will result to an increase in financial performance by 0.012 and 0.031 respectively. The findings further revealed that bank size has a significant positive effect on FP. Although agency banking, number of ATMs and capital adequacy had a positive influence on financial performance, the influence was not statistically significant. The constant coefficient -0.351 implies that when the six selected independent variable have a zero value, financial performance would be equal to the figure.

5.3 Conclusion

The findings of this study show that the FP of Kenyan licensed MFIs is notably impacted by deposit accounts, mortgage accounts and bank size. This research shows that an increment in a unit in deposit accounts significantly increases the FP of licensed MFIs. The study also showed that an increase in mortgage accounts significantly increases FP. In addition, larger MFIs were found to perform significantly better than small MFIs Number

of ATMs, agency banking and capital adequacy were statistically insignificant in determining performance and hence the study concluded that these variables do not have a profound effect on performance.

The conclusion of this study is that the independent variables selected for this study (agency banking, number of ATMs, deposit accounts, mortgage accounts, bank size and capital adequacy) to a larger extent have a notable influence on bank performance in Kenya. The conclusion that these variables have a notable impact on the performance of licensed MFIs given the p value in anova summary is hence correct. The finding that 57.5% of the variations in the response variable are from the six factors listed implies that the 42.5% variations result from other factors outside the model.

5.4 Recommendations of the Study

Leveraging on the study findings, below recommendations has been drawn. Deposit accounts were found to be positively and significantly related to the FP of licensed MFIs. This study recommends that managers of licensed microfinance institutions should dedicate resources and effort on increasing customer deposits as this will significantly contribute to their performance. This can be achieved by having more aggressive market campaigns and introducing deposit products that are customer friendly.

The study showed that the number of mortgage accounts had a positive and significant influence on financial performance of commercial banks in Kenya. A recommendation is that licensed MFIs' management and directors should focus on increasing their mortgage accounts by formulating measures and policies centered on enlarging the licensed MFIs' mortgage offering since this has a direct impact on how they perform financially. The

results of the study show that the more the number of mortgage accounts, the higher the expectation of superior performance in comparison to lower number of mortgage accounts and hence more focus should be on growing their mortgage accounts.

The study showed that size of a bank showed a positive impact with the performance. A recommendation is that licensed MFIs' management and directors should focus on increasing their asset base by formulating measures and policies centered on enlarging the licensed MFIs' assets since this has a direct impact on how they perform financially. The results of the study show that the larger the bank(in terms of asset base), the higher the expectation of superior performance in comparison to smaller licensed MFIs and hence more focus should be on growing their asset base.

5.5 Limitations of the Study

The study was confronted with limitations including; the data used was secondary in nature and the researcher is not aware of its authenticity and reliability based on its collection and storage and alterations that might have been done on it.

The study adopted the analytical approach which is highly scientific. The research also disregarded qualitative information which could explain other factors that influence the association between financial innovations and licensed MFIs' performance. The study should have rather considered utilizing focus group discussions, open ended questionnaires or interviews so as to come up with more concrete results.

The research concentrated on 5 years (2014 to 2018). It is not certain whether the findings would hold for a longer time frame. It is also unclear as to whether similar outcomes would

be obtained beyond 2018. The study should have been executed over a longer time frame in order to incorporate major forces such as booms and recession.

5.6 Suggestions for Further Research

A suggestion is given that more research ought to include a qualitative analysis on how financial innovations and FP of licensed MFIs in Kenya relate. That study would deal with interviewing of vital respondents in the licensed MFIs and this would reveal concealed insights into the fine detailed relationship between financial innovations and FP of licensed MFIs.

The study didn't exhaust all the independent variables influencing performance of Kenyan licensed MFIs and a recommendation is given that more studies be carried out to constitute other variables for instance asset quality, industry practices, growth opportunities, political stability and age of the firm. Determining the impact of each variable on financial performance shall enable the policy makers to understand the tools that can be used to control performance.

The research only focused on the financial institutions. The study's recommendations are that further studies be carried out on other sectors in Kenya. Finally, as a result of regression models' limitations, other models including the VECM model may be applied in explanation of the various relationships among variables.

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APPENDICES

Appendix I: Licensed Microfinance Institutions in Kenya

1. Kenya Women Microfinance Bank
2. Rafiki Microfinance Bank Ltd
3. Faulu Kenya Microfinance Bank
4. SMEP Microfinance Bank Ltd
5. Remu Microfinance Bank Ltd
6. Century Microfinance Bank Ltd
7. Sumac Microfinance Bank Ltd
8. U&I Microfinance Bank Ltd
9. Caritas Microfinance Bank Ltd
10. Daraja Microfinance Bank
11. Maisha Microfinance Bank
12. Choice Microfinance Bank Ltd
13. Uwezo Microfinance Bank Ltd

Source: CBK (2019)

Appendix II: Research Data

COMPANY	Year	ROA	Agency banking	ATMs	Deposit accounts	Mortgage accounts	Bank size	Capital adequacy
Kenya Women Microfinance Bank	2014	0.0269	6.620	5.106	10.903	9.218	7.280	0.513
	2015	0.0219	6.720	5.165	10.917	9.222	7.293	0.456
	2016	0.0126	6.753	5.236	10.939	9.227	7.331	0.676
	2017	0.0123	6.753	5.257	10.950	9.228	7.344	0.745
	2018	0.0071	6.791	5.298	11.025	9.242	7.351	0.723
Rafiki Microfinance Bank Ltd	2014	0.0330	6.593	4.500	9.965	9.257	7.664	0.274
	2015	0.0410	6.613	4.625	9.968	9.481	7.716	0.325
	2016	0.0390	6.709	4.700	9.994	9.499	7.792	0.289
	2017	0.0310	6.709	4.736	9.926	9.513	7.834	0.295
	2018	0.0390	6.733	4.787	9.962	9.535	7.919	0.275
Faulu Kenya Microfinance Bank	2014	0.0498	6.477	5.024	10.717	8.981	8.267	0.643
	2015	0.0389	6.551	5.075	10.912	8.992	8.316	0.666
	2016	0.0387	6.659	5.106	10.923	9.059	8.354	0.664

COMPANY	Year	ROA	Agency banking	ATMs	Deposit accounts	Mortgage accounts	Bank size	Capital adequacy
	2017	0.0360	6.659	5.124	10.919	9.069	8.382	0.653
	2018	0.0284	6.659	5.165	10.942	9.093	8.414	0.637
SMEP Microfinance Bank Ltd	2014	0.0110	6.310	4.454	9.606	8.393	7.690	0.116
	2015	0.0150	6.363	4.500	9.673	8.353	7.722	0.132
	2016	0.0025	6.397	4.554	9.728	8.340	7.794	0.166
	2017	-0.0160	6.446	4.585	9.792	8.341	7.841	0.147
	2018	0.0002	6.477	4.585	9.847	8.345	7.748	0.127
REMU Microfinance Bank Ltd	2014	0.0410	6.430	3.367	8.261	8.353	7.716	0.701
	2015	0.0390	6.430	3.497	8.288	8.362	7.792	0.691
	2016	0.0310	6.430	3.555	8.201	8.365	7.834	0.702
	2017	0.0390	6.469	3.638	8.146	8.380	7.919	0.650
	2018	0.0498	6.522	3.689	8.251	8.385	8.267	0.538
Century Microfinance Bank Ltd	2014	0.0211	6.109	2.833	8.238	8.388	7.691	0.733
	2015	0.0250	6.190	2.944	8.266	8.393	7.884	0.661
	2016	0.0252	6.205	3.135	8.139	8.417	8.030	0.595
	2017	0.0030	6.254	3.135	8.154	8.419	7.150	0.608
	2018	-0.0151	6.310	3.178	8.163	8.420	7.144	0.550
Sumac Microfinance Bank Ltd	2014	0.0614	6.461	3.178	8.167	8.433	7.842	0.383
	2015	0.0426	6.507	3.296	8.230	8.485	7.853	0.355
	2016	0.0324	6.529	3.332	8.010	8.527	7.900	0.403
	2017	0.0406	6.593	3.526	8.243	8.542	7.945	0.573
	2018	0.0359	6.593	3.526	9.506	8.548	8.014	0.561
U&I Microfinance Bank Ltd	2014	0.0287	5.991	2.773	9.454	8.570	8.002	0.289
	2015	0.0309	6.109	2.890	9.523	8.605	8.096	0.551
	2016	0.0251	6.163	3.091	9.539	8.660	8.245	0.431
	2017	0.0247	6.174	3.296	9.618	8.683	8.298	0.765
	2018	0.0322	6.205	3.367	9.460	8.685	8.324	0.580

COMPANY	Year	ROA	Agency banking	ATMs	Deposit accounts	Mortgage accounts	Bank size	Capital adequacy
Caritas Microfinance Bank Ltd	2014	0.0084	6.413	3.178	9.486	8.689	7.255	0.248
	2015	-0.0063	6.482	3.178	9.625	8.713	7.225	0.241
	2016	-0.0177	6.489	3.332	9.605	8.724	7.178	0.358
	2017	0.0030	6.503	3.401	9.644	8.744	7.150	0.228
	2018	-0.0151	6.503	3.401	9.630	8.755	7.144	0.221
Daraja Microfinance Bank	2014	0.0251	6.438	2.398	7.525	8.768	6.807	0.514
	2015	0.0247	6.438	2.485	7.544	8.772	6.864	0.530
	2016	0.0322	6.438	2.639	7.544	8.776	6.948	0.587
	2017	0.0084	6.438	2.639	7.546	8.790	7.012	0.693
	2018	0.0094	6.438	2.833	7.551	8.792	7.086	0.607
Maisha Microfinance Bank	2014	0.0190	5.940	2.197	9.492	8.797	7.491	0.535
	2015	0.0330	5.979	2.485	9.415	8.801	7.638	0.592
	2016	0.0340	6.109	2.485	9.433	8.822	7.791	0.508
	2017	0.0270	6.165	2.708	9.501	8.822	7.910	0.693
	2018	0.0044	6.203	2.708	9.479	8.827	7.842	0.763
Choice Microfinance Bank Ltd	2014	0.0498	5.964	1.792	9.526	8.886	8.267	0.795
	2015	0.0389	6.047	2.197	9.513	8.886	8.316	0.785
	2016	0.0387	6.096	2.398	9.617	8.921	8.354	0.697
	2017	0.0360	6.125	2.639	9.551	8.936	8.382	0.668
	2018	0.0284	6.111	2.639	9.423	8.943	8.414	0.683
Uwezo Microfinance Bank Ltd	2014	0.0330	5.808	2.079	9.424	8.962	7.664	0.307
	2015	0.0410	5.808	2.197	9.403	8.966	7.716	0.229
	2016	0.0390	5.808	2.197	9.420	8.981	7.792	0.328
	2017	0.0310	5.656	2.197	9.209	8.992	7.834	0.810
	2018	0.0390	5.656	2.303	9.340	9.059	7.919	0.746