# SELECTED DETERMINANTS, FIRM AGE AND FINANCIAL PERFORMANCE OF MICROFINANCE INSTITUTIONS IN KENYA

**BY**

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**A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF BUSINESS AND ECONOMICS, DEPARTMENT OF BANKING AND FINANCE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTERS IN BANKING AND FINANCE**

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# DECLARATION

**Declaration by Candidate**

This research project is my original work and has not been presented for a degree or diploma in any other institution/university. No part of this research project may be reproduced without prior authorization from the author and or Moi University.

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## DEDICATION

This project is dedicated to my mum Yunia Opiyo who wanted the best for her children; God has granted you long life to see the fruits of your hard work. To my father Bishop Peter Opiyo Okoth, your generosity and service to the Almighty Lord will never go unanswered. May God give all of you long life to see more daddy and mummy? To my daughter Yunia and sons Syagga and Pedersen "May you live to achieve more in life and aspire to be God fearing people on earth."

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## ABSTRACT

Microfinance institutions play significant role in the development of nations in general and developing countries like Kenya in particular. The global Studies indicate that regulatory measures have resulted in decline in the financial performance of MFIs. Whereas the local studies indicate contrary. In Kenya, CBK regulatory framework requires MFIs to adhere to required capital, statutory, operational among other. These regulations are however costly and stringent and may discourage investors from venturing into this sector, thus affecting the performance of MFIs. Specifically, the study sought to examine the effect of management efficiency measures, liquidity management measures and capital adequacy measures on financial performance of MFIs in Kenya. Further, the study examined the moderating role of firm age on the relationship between management efficiency measures; liquidity management measures and capital adequacy measures and financial performance of Microfinance institutions in Kenya. The study was underpinned on the public interest theory, buffer theory of capital adequacy, and regulatory capture theory. Explanatory research design was adopted to establish the causal relationship between the study's variables by use of panel data. The study targeted a total of 54 registered microfinance institutions in Kenya. However, a sample of 34 MFIs met the criteria, while 20 MFIs though registered did not met the selection criteria and hence were not included in the sample. Secondary data for the period between 2012 -2020 was extracted from annual financial statements of microfinance institutions. The data was analyzed through descriptive and inferential statistics using statistical techniques including Pearson correlation coefficient and regression analysis, hierarchical moderated. The hypotheses were tested through hhierarchical multiple regression model. The study established that management efficiency measures ($\beta= 0.102$, $p> 0.05$); liquidity management measures ($\beta= 0.818$, $p> 0.05$) had a positive and insignificant effect on performance of microfinance institutions. It also established that capital adequacy measures ($\beta= 0.609$, $p< 0.05$) had a positive and significant effect on performance of microfinance institutions. Further, the study established that firm age moderates the relationship between capital adequacy ($\beta= 0.671$, $p< 0.05$) and financial performance of microfinance institutions. By incorporating firm age, this study has proposed and empirically tested and extended the model of selected determinants and financial performance of microfinance institutions. Based on the findings, the study concluded that, firm age moderated the relationship between capital adequacy and financial performance of MFIs. The findings, recommends that MFls should focus more effort on formulating plans, strategies and policies that directly enhance financial performance. It is the recommendation of this study that the CBK should consider reviewing the regulatory framework to allow for more ways of resource mobilization by the MFIs. Finally, the study recommends further studies be done on the role of management efficiency and liquidity management since they was on significance.

# TABLE OF CONTENTS

# LIST OF TABLES

# LIST OF FIGURES

## DEFINITION OF TERMS

**Capital Adequacy;** This is the measure of a bank or financial institution's capital in relation to its risk weighted assets (Kimeu, 2020)

**Financial Performance;** Measure of how well firm use assets from its primary mode of business to generate revenues. It measures the financial health of an organization. The common indicators of financial performance are; profits, return on investment, return on assets, value added and margins among others (Verma, 2022)

**Firm Age;** This refers to the time between the initial creation of a firm and the present time in years (Muli, 2017).

**Firm Size** The total assets held by an organization (Kagan, 2022)

**Liquidity Management;** The ability of a bank to meet its obligations mostly of depositors Financial ratios such as total loans to customer deposits is used to measure liquidity management measures (Majakusi, 2016).

**Management Efficiency;** Expressed qualitatively through subjective evaluation of the quality of employees, organizational discipline, and management and control systems. Financial ratios such as expenses to assets ratio and operating profit to income ratio are used to measure management quality (Pawłowski, 2009).

**Regulated Microfinance Institution;** Those microfinance institutions that are registered, regulated to provide Financial services including taking deposit from their members/customers. Association of Microfinance of Kenya registers them (van Greuning, 1998).

## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| **AMFIK** | Association of Microfinance Institution of Kenya |
| **ANOVA** | Analysis of Variance |
| **CA** | Capital Adequacy |
| **CAR** | Capital Adequacy Requirement |
| **CBO** | Community Based organization |
| **CBK** | Central Bank of Kenya |
| **CGAP** | Consultative Group to Assist the Poor |
| **CR** | Capital Ratio |
| **EBIT** | Earnings Before Interest and Tax |
| **DTM** | Deposit Taking Microfinance |
| **EFF** | Operational Efficiency |
| **FLR** | Financial Leverage Ratio |
| **FSA** | Financial Services Association |
| **FSS** | Financial Self-Sufficiency |
| **GR** | Gearing Ratio or Debt/Equity ratio |
| **MFBs** | Microfinance Banks |
| **MFI** | Microfinance institution |
| **MFIs** | Microfinance institutions |
| **NSE** | Nairobi Security Exchange |
| **PAT** | Profit After Tax |
| **ROA** | Return on Asset |
| **ROE** | Return on Equity |
| **OSS** | Operational Self-Sufficiency |
| **TRWA** | Total Risk Weighted Assets |
| **RMFIs** | Regulated Microfinance Institutions |
| **RWA** | Risk Weighted Assets |

# CHAPTER ONE

# INTRODUCTION

## 1.0 Overview

This chapter gives the background of the study in relation to how selected determinants affects the financial performance of microfinance institutions in Kenya as well as the statement of the problem. The chapter also outlines the general and specific objectives of the study and the research hypotheses. The significance and scope of the study is also stated in the chapter.

## 1.1 Background to the Study

Financial performance is the measure of organizations achievement on its' goals, policies and operations presented in monetary terms. It involves the financial health and can be compared between similar firms in the same industry (Agola, 2014). Financial performance of a firm, being one of the major characteristics, defines competitiveness, potentials of the business and economic interests of the company's management and reliability of present or future stakeholders (Dufera, 2010). In the MFI context, financial performance is the ability of a MFI to keep on going towards microfinance objective without donor support (Thapa, 2008). The main aim of micro-finance institution is to have operations that are profitable in order to maintain stability and improve on sustainability and growth (Agola, 2014). Thus, MFIs should focus to maximize performance in many areas, whether it is social or economic (Jørgensen, 2011). Financial performance of microfinance institutions in this study refers to the extent to which a microfinance institution is able to achieve its policies, financial and non-financial objectives in the utilization of the organization's resources.

Understanding the determinants of financail performance is therefore important, as it makes it possible to recognize certain factors that should be treated with more interest to improve the financial performance. Performance of MFIs received more attention following the failure of many MFIs around the world, including the home country of this industry Bangladesh. Recently, the complexities of the global business environment have created a high level of uncertainty among companies in all industries, reinforcing the need for corporate organizations to be more vigilant about the business success (Gavrea, Ilies, & Stegerean, 2011). Financial performance is perhaps the most critical thing. This hyper-competition entails continuously enhanced performance, which is the objective of any company as organizations can flourish and progress only through success. However, empirical evidences on performance of microfinance institutions have reported different results, most of them indicating variation of performance across types of MFIs.

The study by Tucker and Miles (2004) used financial metrics to compare performance of microfinance institutions with commercial banks operating in four regions Africa, Asia, Eastern Europe and Latin America. The findings of the study show that, MFIs that were operating self sufficiency (OSS) had higher performance in terms of return on asset (ROA) and return on Equity (ROE). In Bukina Faso, Congo, (2000) assessed the performance of microfinance institutions in the country using performance indicators. The findings of the study show that, microfinance performance in outreach was very low compared with the potential demand of financial services. The evidences from India show that most of performing MFIs in India follow different business models but they have similarities in most of the performance indicators (Agarwal, 2010).

However, global empirical evidence observes that microfinance institutions experience poor financial performance, epitomized by low profitability, low portfolio quality, low operating efficiency and high operating costs. Similarly, in Africa, MFIs also manifest poor financial performance as evidenced by low efficiency ratios, declining net operating margins and declining portfolio yield, a rise in operating costs, low relative productivity and profitability (Daher and Erwan, 2015). In the context of Kenya, the trend is the same, as illustrated by this statistical evidence; decrease in portfolio yield, increase in operating costs, the increase in cost of funds ratio, a reduction in capital adequacy ratio and low levels of liquidity ratio (AMFIU, 2017/2018a).

In Kenya, microfinance have been in operation since 90s. However, legislation was passed in 2006 followed by microfinance Act becoming operation 2008(Central Bank of Kenya, 2016). The microfinance institution are categorized into deposit taking microfinance institutions, non-deposit taking institutions. The implementation of Act and Regulation was aimed at promoting the orderly growth and development of a sound and stable microfinance industry. It also provides a good platform for broadening and deepening of access to financial services throughout the country, especially the low-income populace and small and medium enterprises in both urban and rural areas. The regulation also set some minimum measures in terms of capital adequacy, liquidity requirement and governance or management efficiency.

Financial performance of microfinance institutions is measured by evaluating its capital adequacy. This is done by ascertaining if the microfinance has complied with the minimum statutory capital requirement of as stipulates in the microfinance Act 2006. It is also evaluated by computing the core capital to total risk weighted assets (TRWA) ratio, total capital to total RWA ratio and core capital to total deposit

liabilities ratio. Financial performance is also measured by evaluating the liquidity ratio as well as the credit risk. The interest coverage ratio measures a bank's ability to meet its interest on debt obligations as and when they fall due. Investment ratios such as return on equity (ROE), return on capital and return on assets (ROA) are also used to establish the financial performance of a bank, (Understanding Financial Ratios, 2015).

According to OXEPA of September 2006, indicate that financial performance can be measured by looking at the growth in the financial sector and can be done by comparing financial performance before and after introduction of regulation. This can also be done by using surveys that show in market outcome as result of regulation measures. International comparison can also be used to enables the analysis of outcome in various countries and regions that are comparable but have different regulatory framework

According to Banerjee, Cole and Duflo (2009), microfinance institutions are high on the public policy agenda. They have achieved tremendous success in improving the livelihoods of the poor, through the provision of financial services. In addition, such initiatives are widely sponsored by a various organizations that include the World Bank, United Nations, national governments and many charitable Non-Governmental Organizations (NGOs). Their aim is to help the poor cope with risk by taking advantage of small income generating opportunities, through employing profit-making banking practices among low income in both urban and rural communities (Ahlin & Jiang, 2008).

By alleviating financing constraints, microfinance institutions are able to promote small-scale investments from otherwise unrealized market activities while yielding a

return on their investment. Levels of success of these microfinance institutions, however, vary across different organizations depending on some factors related to the regulation and supervision of these institutions (Christen, Lyman & Rosenberg, 2009). Given this fact, some microfinance institutions may fail and cease to exist while others end up growing to reach millions of borrowers.

Management efficiency in Microfinance institutions refers to efficient use of resources such as the subsidies, human capital and assets owned by microfinance institutions to produce output measured in terms of loan portfolio and number of active borrowers (ILO, 2007). Management efficiency is an important attribute in any organization including MFIs in a number of reasons, first input resources (Time, money, raw materials, machine, labor, etc) used by MFIs are scarce and limited since donors are unwilling to fund MFIs to the required capacity to serve all poor clients (Rosenberg, 1994). Secondly, the rapid growth of MFIs sector across the world has increased competition for donor funds. Additionally, the recognition of MFIs by development expertise as a promising and new tool for poverty alleviation has increased the need for their efficiency in the use of public funds. The increased competition among MFIs themselves has resulted into lowering interest rates and operating more efficiency (Hermeset al, 2009). The fifth point is that profitability potentials of microfinance industry have attracted commercial banks and other private investors to engage into microfinance business with efficient operations, better utilization of the resources and reduction of the amount of wasted and lastly most of the donors are now interested in funding MFIs which are sustainable and efficient (Barreset al , 2005).

Liquidity refers to the ability of institutions to meet demands for funds. Liquidity risk arises when a microfinance bank is unable to meet its cash requirements or payment

obligations timely and in a cost-efficient manner (Idama et al., 2014). MFI with inadequate liquidity might be less immune towards future uncertainty, timely delay of refinancing, disruption in meeting growth projections and increased portfolio at risk (Brom, 2009). To reduce liquidity risk, each microfinance institutions needs to prepare a daily fund plan that guides the matching of cash inflows from loan repayment and saving deposits with cash outflows for the branch on a daily basis (Idama et al., 2014). Loan to total assets ratio (LAR) is normally used to measure the liquidity position of MFI that indicates the percentage of total assets used to provide the loan (Adhikary, 2014).

Capital adequacy pertains to requirement for organizations conducting investment/financial business to have sufficient funds and acts as measure of financial strength (Upchurch, 2005). According to (Upchurch, 2005) capital adequacy has been cited as a crucial factor in sustainability of any organization and it is more so in the business of using other people's monies such as banking. Christen et al, (2005) notes that due to high volatility and scarce geographical diversification of MFIs, the capital adequacy ratio should be high to ensure sustainability. The primary function of capital to serve as a cushion on loaned funds to absorb losses that may occur. It also serves the function for the acquisition of physical assets. The capital affords the "engine and bumper" that keeps the MFI going as well as taking up vicious shocks and the more capital a MFI has the better it is able to sustain losses without resulting to solvency.

The study by Barth, Gerard and Levine (2008) on Rethinking Bank Regulation stated that due to the different variables that firms encounter, there is need for rules, laws and regulations to govern their every action. The rules and regulation will aide in promoting a seemingly fair playing field for all institutions in a particular industry

field. The financial industry and particularly the banking-microfinance institutions need to be regulated in an effort to ensure that they work within a laid down structured rules and regulation as there is need to protect both the customers and investors.

The rapid growth and expansion of microfinance throughout the world have sparked calls for increased regulation. It is evident that the aspect of regulating and supervising microfinance institutions or the lack of it affects the performance of these institutions in a significant way (EIU, 2010). While it is the absence of formal regulation that has long given microfinance the necessary flexibility to develop as a successful financial inclusion tool, this situation has changed gradually over the recent decades (Llewellyn (2009).

Christen, Lyman and Rosenberg (2003) while discussing tradeoffs in regulation of microfinance, draw an important distinction between prudential and non-prudential regulation. According to their definition, regulation is prudential when it is aimed specifically at protecting the financial system as a whole as well as protecting the safety of small deposits in individual institutions. The assets of microfinance institutions remain substantially less than those of formal banks.

However, an increasing share of microfinance institutions take deposits from the public, and many of the depositors are relatively poor. Protecting the safety of those deposits provides a rationale for improved regulation and supervision of microfinance institutions, and thus Christen, Lyman, and Rosenberg argue that prudential regulations should generally be triggered when an MFI accepts retail deposits from the general public (Christen, Lyman & Rosenberg 2008).

However, the Kenyan microfinance sector is one of the most vibrant in Sub-Saharan Africa with a diversity of institutional forms and a good infrastructure to serve the poor, microfinance activities were not regulated until 2006. The absence of regulation allowed innovations to take place. Institutions were set up easily without any barrier like minimum capital requirements. In this environment, the microfinance industry developed and managed to attain reasonably high outreach (FSD, 2009). This study seeks to investigate the impact of regulation and supervision on the performance of microfinance institutions in Kenya.

Firm age board composition elements are rooted in time according to Wahba, & Elsayed, (2015). Further, firm age is important because older firms have financial performance and financial literacy decisions at the Centre stage, which may influence firms' financial performance. According to Kieschnick. R & Moussawi R, (2017), found out that the effects of firm age on how much debt a firm uses is primarily due to the interaction between firm age and its governance features. They concluded that over time, managers allow their risk preferences to dominate their firm capital structure decisions when they are protected from discipline.

### 1.1.1 Microfinance Institutions in Kenya

Microfinance industry in Kenya is under the umbrella of Association of Microfinance Institutions of Kenya (AMFI). The main objective of AMFI is provision of general policy guidelines, adherence to ethical practices and to build capacity of the microfinance industry. Kenya has 54 microfinance institutions who are members of AMFI in 2020. The microfinance business takes different forms raging from those, which are regulated as deposit taking MFIs, those registered as Non- governmental organizations, Church based, Merry go round (Chamas), Rotating Savings and Credit Associations (ROSCAs), accumulative savings and credit associations (ASCAS) and

investments groups. Delivery of the microfinance products and services takes different forms from group lending, individual, corporate, and non-formal lending. The Economic Pillar of Kenya's Vision 2030 objective of enhancing deposit mobilization, increasing savings levels and improving the general quality of life for all citizens, has seen the government introduce regulations through the Microfinance act 2006 and the continued amendment to ensure the industry is able to meet their objectives of serving the poor. Section 3(2) of the Act, empowers the Minister for Finance to make regulations specifying the credit only Microfinance business and prescribes measures for the conduct of the specified business (MF Act, 2006).

**Table1.1: Performance of Microfinance Institutions in Kenya Ksh. 'billion'**

| | **Year** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **2012** | **20123** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** |
| EBIT | 0.25 | 0.42 | 0.53 | 1.00 | 0.59 | (0.38) | (0.62) | (0.34) | (2.24) |
| Customers Deposits | 9.99 | 15.41 | 24.75 | 35.86 | 40.59 | 40,20 | 38.92 | 43.90 | 49.40 |
| Net Loan Portfolio | 1.61 | 2.00 | 2.75 | 2.52 | 4.58 | 4.71 | 4.29 | 4.20 | 5.70 |
| Return on Equity | 7% | 7% | 15% | 10% | 5% | (3.2)% | (5.5)% | (6.2) | (6.7) |

**Source CBK, 2021**

CBK (2021) highlights that, in terms of their financial performance, without commercial banks, total customer deposit of the MFI sector stood at KES 49.4bn for the documented as of December 2020 posting 13% annual growth. This make the MFI sector one of the flagship in aiding financial inclusion of the unbankable Kenyan.

Microfinance institutions therefore bridges this gap in the financial sector industry by offering micro credit loans preferably to the people who do not have a potential to access conventional loans (Gatuhu, 2013). Therefore, this study seeks to examine the

moderating effect of firm age on the relationship between selected determinants and financial performance microfinance institutions in Kenya

### 1.2 Statement of the Problem

The concept of financial performance has received significant attention from scholars in the various areas of business. It is an issue of primary concern virtually by all stakeholders in any sector since financial performance is an ingredient to organizational health and ultimately its survival. Good financial performance may reflect management effectiveness and efficiency in utilizing a company's resources, through deploying adequate measure of both capital and liquidity management measures. This necessitate the study of financial performance determinants of management efficiency, liquidity management and capital adequacy.

In Kenya, there has been a tremendous increase in customer deposit over a period of 9 years fivefold. However, non-performing loans have also increased over the same period, resulting to a decrease in profitability, thus negatively affecting the investment decisions of the MFIs leading to poor financial performance (AMFI, 2020). The performance of MFIs in Kenya in terms of earnings before interest and tax, customers deposit, net non-performing loans, return on equity are summarized as shown in the table1.1

The regulatory framework for microfinance Institution in Kenya is aimed at optimizing financial performance, which include the Microfinance Act, 2006 and the Microfinance (Deposit Taking Institutions) Regulations, 2008. The purpose for regulations were to promote the performance and sustainability of Microfinance institutions in the country. However, the practioners regard the regulation as stringent (FSD, 2012). The government regulated MFIs have made losses since the first

institution was licensed by the Central Bank in 2009. Majority of the licensed Microfinance institutions have recorded negative profit growth (Ali, 2015; Otieno, Nyagol, & Onditi, 2016). In 2010, one out of the two licensed Microfinance institutions made losses (CBK, 2011). In 2011, three out of the six licensed Microfinance institutions made losses (CBK, 2012). In 2012, one out of the six licensed Microfinance institutions made losses while in 2013, four out of the nine licensed institutions made losses (CBK,2013; CBK, 2014). In 2014, two out of the nine licensed institutions made losses, while in 2015 six out of the twelve licensed institutions made losses (CBK, 2015; CBK, 2016). In the years 2016, 2017 and 2018 more the 65% of the government regulated MFIs recorded losses. Thus, between 2010 and 2018, out of the thirteen institutions licensed, only two did not make any losses.

The regulation framework requires Microfinance Institutions to adhere to required MFI to comply with capital adequacy measures, liquidity measures, and operational efficiency measures among other. Regarding capital, the regulation require MFI to maintain Core Capital to Total Risk Weighted Assets (TRWA) and Total Capital to TRWA ratios of 10% and 12% respectively. As to statutory requirements, the MFIs are required to maintain a liquidity ratio of 20% at all times (Republic of Kenya, 2006; Republic of Kenya, 2008a). Not forgetting that regulation if not well thought may stifle Microfinance institutions to the point of rendering them unsustainable while well thought regulations enhances performance of MFIs in conducive environment.

Regulations may be costly for the institutions thus hurting their performance (Debapratim, Trilochan, & Biswajit, 2014). Investors are discouraged from venturing

into the sector which has been identified as critical in the realization of the financial sector goals under Vision 2030 (Republic of Kenya, 2007, This may be occasioned due to poor performance of MFIs as a result of costly and stringent regulations,. Thus, discouraging non - regulated Microfinance institutions from seeking to be regulated (Ndambu, 2011).

Studies carried out around the globe on the effect of regulatory measures on financial performance have concentrated on commercial banks whose regulatory requirements are different from those of Microfinance institutions. Such studies include King'ang'ai, Kigabo, Kihonge and Kibachia (2016) on the relationship between regulation and financial performance of commercial banks in Rwanda; and Aymen (2013) on the impact of capital on the financial performance of banks in Tunisia. Studies on Microfinance globally such as by Adeyemi (2008) and Nzaro, Njanike, & Jaravani (2013) have concentrated on general factors affecting their financial performance with some excluding regulation. In Kenya, studies by Ali and Okibo (2015), Mabeya, Nyakundi and Abuga (2016) and Mwando (2013) on the effect of regulations on financial performance were carried out on commercial banks, while studies by Biwott, Asienga, Oketch and Mutai (2015) and Otieno, Okengo, Ojera and Mamati (2013) were conducted on Savings and Credit Co-operative Societies (Saccos).

The global studies indicate that regulatory measures have resulted in a decline in the financial performance of financial institutions. Whereas the local studies shows that regulations have resulted in an increase in the profitability of financial institutions. The various studies show that there is a lack of clarity on what the true effect of regulations and this has led to the research question. What is the effect of selected

determinants of capital adequacy, liquidity management and management efficiency on the financial performance of micro-finance institutions in Kenya considering both government regulation and self-regulation under Association of Microfinance Institutions in Kenya?

## 1.3 Research Objectives

### 1.3.1 Objectives of the Study

The general objective of the study was to investigate the moderating effect of firm age on the relationship between selected determinants and financial performance of Microfinance institutions in Kenya.

### 1.3.2 The specific objectives were

1. To determine the effect of management efficiency measures on the financial performance of Micro finance institutions in Kenya.
2. To establish the effect of liquidity management measures on the financial performance of Microfinance institutions in Kenya.
3. To determine the effect of capital adequacy measures on the financial performance of Microfinance institutions in Kenya.

4a To determine the moderating effect of firm age on the relationship between management efficiency measures and financial performance of Microfinance institutions in Kenya.

4b To determine the moderating effect of firm age on the relationship between liquidity management measures and financial performance of Microfinance institutions in Kenya.

4c To determine the moderating effect of firm age on the relationship between capital adequacy measures and financial performance of Microfinance institutions in Kenya.

### 1.4 Research Hypotheses

**$H0_1$:** Management efficiency measures have no significant effect on financial performance of Microfinance Institutions in Kenya.

**$H0_2$:** Liquidity management measures have no significant effect on financial performance of Microfinance Institutions in Kenya.

**$H0_3$:** Capital adequacy measures have no significant effect on financial performance of Microfinance Institutions in Kenya.

**$H0_{4a}$:** There is no significant moderating effect of firm age on the relationship between management efficiency measures and financial performance of microfinance institutions in Kenya

**$H0_{4b}$:** There is no significant moderating effect of firm age on the relationship between liquidity management measures and financial performance of microfinance institutions in Kenya

**$H0_{4c}$:** There is no significant moderating effect of firm age on the relationship between capital adequacy measures and financial performance of microfinance institutions in Kenya

### 1.5 Significance of the Study

Microfinance industry is economic pillar of Kenya's vision 2030. Microfinance enables its clients to protect, diversify and increase their income as well as to accumulate wealth and reduce vulnerability to income and consumption shock. Therefore, better performance of the industry will benefit the Kenyan economy and aid the achievement of millennium development goals.

The study finding will help the microfinance management in making well informed decision that will enhance the industry financial performance. The regulator in the

other hand will use the same to provide regulation that promote the microfinance industry and encouraging the mobilization of deposits from clients.

The Researchers and Scholars, particularly academicians active in microfinance institution, finance, investment, and public finance research, will find this study beneficial as one of their working documents, particularly for those focusing on the financial health of MFIs.

### 1.6 Scope of the Study

The focus of this study was to evaluate the effect of moderation of firm age on selected determinant and financial performance of microfinance institution in Kenya. The target population was comprised of all the registered microfinance institutions in Kenya regulated by the Association of Microfinance Institution of Kenya and Central Bank of Kenya. There are a total of 54 registered microfinance institutions in Kenya as at December, 2020. This study used of longitudinal and explanatory research design. Secondary data on the study variables was collected using a data collection schedule. Secondary data was extracted from published financial statements and reports of the microfinance institutions in operation for an nine-year period between 2012 - 2020. Explanatory research designs was used to establish causal relationships between the independent and dependent variables respectively. Hierarchical regression analysis was used to analyze the moderating effect of firm age on the relationship between selected determinants and financial performance of Microfinance institutions in Kenya. The theoretical scope of the research is limited to buffer theory of capital adequacy, regulatory capture theory, and the public interest theory of regulation.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Overview

The purpose of this chapter is to review the available literature based on the proposed study. It dealt with the theoretical framework and conceptual framework of the study and then followed by the review of the effect government regulation on financial performance of microfinance institutions in Kenya. The critique on the literature, and finally the research gaps.

## 2.1 Conceptual Review

The independent variables for the study are management efficiency measures, liquidity management measures, and capital adequacy measures, while the dependent variable is financial performance of microfinance institutions in Kenya.

### 2.1.1 Financial Performance

Financial performance is the process of measuring the results of firm's policies and operation in monetary terms Adabenege and Yahaya, (2015). It is the yardstick of measuring the overall financial health over a given period. However, there are a number of financial performance measures, there is little consensus about which instrument to apply. According to Hoque et al., (2012), financial performance measures can be divided into two major types: one, accounting-based measures such as Return on Assets (ROA), Return on Equity (ROE) or Return on Sales and two, market- based measures such as the Tobin's Q ratio.

According to Tomuleasa and Cocris (2014) suggests that three representative indicators, namely ROA, ROI and Net Interest Margin (NIM), express bank performance. However, the choice of the financial performance measure depends on

the objective of the measure. According to Ceylan, et al., (2008) the most common measure of bank performance is profitability. Bank profitability is the net after- tax income, profit after tax (PAT) or net earnings of a bank (Gwaya & Mungai, 2015). The two main measures of bank profitability are the Return on a bank's assets (ROA) and Return on Equity (ROE). Therefore, financial performance in this study will be conceptualized in terms of Return on Assets (ROA), Return on Equity (ROE) and Profit after tax (PAT).

ROA indicates how capable the management of the bank has been in converting the institution's assets into net earnings (Sunday et al., 2013). ROA also measures the operating and financial performance of the firm (Klapper & Love, 2002). ROA is calculated by dividing a company's annual earnings by its total assets. ROE is the amount of net income returned as a percentage of shareholders equity. ROE measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. ROE is calculated by dividing Net Income by Shareholder's Equity. Studies by Albertazzi and Gambacorta (2009), Athanasoglou, Brissimis and Delis (2008), Dietrich and Wanzenried (2011), Mahoney and Roberts (2007) and Pasiouras and Kosmidou (2007) have considered at least one of the mentioned variables. In Kenya, Gwaya and Mungai (2015), Muriithi, Waweru (2017), Ongore, Kusa (2013), and Otieno et al., (2016), have used ROA and ROE in many studies as a measure of financial performance such as.

Better performance rewards shareholders with sufficient return for their investment, while adverse performance has a negative impact on economic growth and development and can lead to bank runs, failures and crises (Ongore & Kusa, 2013). This applies equally to Microfinance institutions.

### 2.1.2 Management Efficiency Measures

Management Efficiency is one of the key internal factors that determine the bank profitability. It is represented by different financial ratios like total asset growth, loan growth rate and earnings growth rate. Yet, it is one of the complexes subject to capture with financial ratios. Moreover, operational efficiency in managing the operating expenses is another dimension for management quality. The performance of management is often expressed qualitatively through subjective evaluation of management systems, organizational discipline, control systems, quality of staff, and others. Yet, some financial ratios of the financial statements act as a proxy for management efficiency. The capability of the management to deploy its resources efficiently, income maximization, reducing operating costs can be measured by financial ratios. One of these ratios used to measure management quality is operating profit to income ratio (Rahman et al. in Ilhomovich, 2009; Sangmi and Nazir, 2010). The higher the operating profits to total income (revenue) the more the efficient management is in terms of operational efficiency and income generation. The other important ratio is that proxy management quality is expense to asset ratio. The ratio of operating expenses to total asset is expected to be negatively associated with profitability. Management quality in this regard, determines the level of operating expenses and in turn affects profitability (Athanasoglou et al. 2005).

### 2.1.3 Liquidity Management Measures

Liquidity management is a concept that is receiving serious attention all over the world especially with the current financial situations and the state of the world economy. The concern of business owners and managers all over the world is to devise a strategy of managing their day-to-day operations in order to meet their obligations as they fall due and increase profitability and shareholder’s wealth.

Liquidity management, in most cases, are considered from the perspective of working capital management as most of the indices used for measuring corporate liquidity are a function of the components of working capital.

The importance of liquidity management as it affects corporate profitability in today's business cannot be over emphasis. The crucial part in managing working capital is required maintaining its liquidity in day to-day operation to ensure its smooth running and meets its obligation (Eljelly, 2004). Liquidity plays a significant role in the successful functioning of a business firm. A firm should ensure that it does not suffer from lack-of or excess liquidity to meet its short-term compulsions. A study of liquidity is of major importance to both the internal and the external analysts because of its close relationship with day-to-day operations of a business (Bhunia, 2010).

Dilemma in liquidity management is to achieve desired trade-off between liquidity and profitability (Raheman et all, 2007). Liquidity requirement of a firm depends on the peculiar nature of the firm and there is no specific rule on determining the optimal level of liquidity that a firm can maintain in order to ensure positive impact on its profitability. For the purpose of this study liquidity management is viewed from the aspect of company's credit policy, it cash flow management and cash conversion cycle. Liquidity in itself, for the purpose of this research, is measured in terms of current asset ratios, quick ratio and operating cashflow. Liquidity management is of crucial importance in financial management decision. The optimal of liquidity management is could be achieve by company that manage the trade-off between profitability and liquidity management.

### 2.1.4 Capital Adequacy Measures

Capital is one of the firm specific factors that influence the level of profitability of microfinance institutions. Capital is the amount of own fund available to support the business and act as a buffer in case of adverse situation (Athanasoglou et al. 2005). Microfinance institutions capital creates liquidity for the institutions due to the fact that deposits are most fragile and prone to bank runs. Moreover, greater microfinance institution capital reduces the chance of distress (Diamond, 2000). However, it is not without drawbacks that it induces weak demand for liability, the cheapest sources of fund Capital adequacy is the level of capital required by the MFIs to enable them withstand the risks such as credit, market and operational risks they are exposed to in order to absorb the potential loses and protect the bank's debtors. According to Dang (2011), the adequacy of capital is judged based on capital adequacy ratio (CAR). Capital adequacy ratio shows the internal strength of the bank to withstand losses during crisis. Capital adequacy ratio is directly proportional to the resilience of the MFIs to crisis situations. It has also a direct effect on the profitability of banks by determining its expansion to risky but profitable ventures or areas (Sangmi and Nazir, 2010).

### 2.1.5 Firm Age

Age is the length of time during which a being or thing has existed. We defined firm age as the number of years since incorporation of the company; even though some believe that listing age, should define the age of the company (Shumway, 2001). According to him, listing age is more economical since listing is a defining moment in the company' life. Shumway's argument is debunked from the perspective of the company as a legal personality (Waelchi & Pdferer. 2011). As a legal person, a

company is born through incorporation Gitzmann, 2008; Pickering, 2011). Hence our preference for the year of incorporation as the definition of the age of the company.

The relationship between firm age and profitability is contentious. While some reported the positive and significant relationship between age and profitability (Halil & Hasan, 2012; Papadogonas, 2007; Akinyomi & Olagunju, 2012). Others have reported negative relationship (Majumdar, 1997; Dogan, 2013 and Coad, Segarra & Teruel, 2007). This mixed reaction has made the debate inconclusive.

Moreover, younger firms are prone to "liabilities of newness" which refer to a number of poorly understood factors leading to higher failure rates (Stinchcombe 1965). A second strand of literature supports the view that older firms enjoy better performance and suggests that there might be "selection effects" which arise when less productive firms are forced to exit the business leading to higher average productivity in the cohort even if the productivity levels of the individual firms do not change over time (Jovanovic 1982). A third stream of research, however, suggests that aging can have a negative impact on firms' financial performance due to "inertia effects" leading firms to become inflexible and have difficulties in fitting the rapidly changing business environment in which they operate (Barron et al. 1994). Given the equivocality of these existing theories, the relationship between a firms' financial performance and its age is a question that remains to be answered empirically

Firms with more years in business gain competitive advantage over young firms in terms of experience. Most studies (Pástor & Veronesi, 2003; Morgan, Kaleka & Katsikeas, 2004; Loderer & Waelchli, 2010; Abu Bakar 2011; and LiPuma, Newbert & Doh, 2013) that look at business age focused on the number of years that the business has been in operation legally. Morgan, et al (2004) defined firm age in terms

of the number of years firm has been engaged in exporting operations. Abu Bakar (2011) categorized firm age into three groups: enterprise operating less than five years, those operating from six to ten years, and more than ten years respectively. While LiPuma, et al (2013) focused on just new firm and old firm. Hui, Radzi, Jenatabadi, Kasim and Radu (2013) measured firm age as the number of years elapsed from the establishment of the business. Loderer and Waelchli (2010) emphasized that measuring age bigger frims is not always straightforward, due to factors such as mergers and relisting.

## 2.2 Theoretical Review

Theories are formulated to explain, predict, and understand phenomena and, in many cases, to challenge and extend existing knowledge, within the limits of the critical bounding assumptions. The theoretical framework must demonstrate an understanding of theories and concepts that are relevant to the topic of the research and that will relate to the broader fields of knowledge in the study one is taking. The selection of a theory should depend on its appropriateness, ease of application, and explanatory power. The theoretical framework connects the researcher to existing knowledge (Cresswell, 2003). The theory underpinning this study is the public interest theory. Other theories that complemented the public interest theory were buffer theory of capital adequacy, regulatory capture theory and contingency theory.

### 2.2.1 Public Interest theory of Regulation

According to Pigou (1938), public interest theory of regulation proposed that government regulation is a response to public demand for government intervention to rectify a situation of a market failure through imperfect competition, market disequilibria, missing market or market outcomes that are undesirable for the social reasons Hertog (2002). Public interest theory assumes that market outcomes represent

a failure and the markets do not have the ability to fix the problem without external intervention. Thus, the regulator or government have the ability fix the problem or failure to achieve the optimal efficient outcome. The theory also assumes that the benefits accruing from the regulation will much more beneficial as compared to the additional cost brought about by the regulation itself. Thus, the benefits of regulation outweigh the cost of regulation. It is assumed the regulatory regime achieve economic efficiency Hertog, (2002)

The public interest theory of regulation also is of the thought that government have to institute a regulation since all individuals, including the public servants are driven by self-interest Hantke-Domas, (2003). The theory is critical in the explanation of why government plays a critical role in regulation and has been cited in studies by Otieno et al., (2013); Mebeya et al., and David et al (2008). This public interest theory of regulation influence the general objective of the study on effect of government regulation on performance of microfinance institution in Kenya.

### 2.2.2 The Buffer Theory of Capital Adequacy

According to Calem and Rob (1996)theory of buffer theory postulate that a bank approaching the regulatory minimum capital ratio may have incentives to boost capital and reduce with intention of avoiding the cost triggered by the breach of capital requirement. The theory is based on the volatility of the capital adequacy requirement as well as reliability and dependability on capital for long-term plans. Financial institutions are confronted by the danger of capital depletion, if they are not able to mobilize sufficient deposits. Thus, financial institutions may be endangered by the volatility of the capital adequacy requirement. Therefore, financial institution may prefer to hold a buffer of excess capital to reduce the possibility of not meeting the minimum capital required. The capital buffer is the excess capital a financial

institution holds over and above the minimum capital required. This help the financial institution to hedge itself against prolonged undercapitalization and avoid sanction possible closure by the regulatory authorities, which consider the breach of capital requirement as a major infringement of banking legislation Tockukwu,(2006)

Regulations are developed targeting the improvement of adequate capital buffer Milne and Whalley (2001). The main goal of regulation is to reduce the procyclical nature of lending by promoting the creation of counter cyclical buffer Ochei (2013).the capital buffer theory proposes that a bank with low capital buffer attempt to rebuild their capital buffer by raising capital while that banks with huge capital adequacy attempt to maintain the capital buffer. The higher the capital buffer the better the bank's ability to absorb the adverse shock and therefore reduces the likelihood of failure because of increase portfolio risk. Financial institution tends to maintain their capital buffer as optimal as possible in order to mitigate risk. Therefore, the relationship between capital adequacy and performance can be either positive or negative depending on the risk behavior of the financial institutions. Thus, the theory is relevant in explaining the relationship between capital adequacy and financial performance. It is has been cited in studies on capital adequacy David et al (2018), Karanja and Nasikeu (2016).

### 2.2.3. Regulatory Capture Theory

The regulatory capture theory, Stigler (1971) and Posner (1974). This theory suggests a contrary perspective of regulation and argues that although regulations are often introduced to protect the public. However, regulations are to serve and protect the interest of a particular group within the society. Posner argues that in the course of time, regulation will come to serve the interest of a particular group of the industry

involved. Regulatory capture occurs where, due to industry control of information, the effect of repeated interactions and career opportunities; the regulator comes to serve the interests of the regulated (Posner, 1974). This can be through direct subsidies, entry restrictions or tariffs, controls on substitutes, or price fixing (Stigler, 1971).

Regulatory capture could occur, for example, where an agency was established to conduct occupational regulation for quality reasons and became captured by that same profession to achieve benefits for incumbents through entry restriction (Guerin, 2002). Regulatory capture, cautions that regulation of an industry may result from the effort of incumbents to create and extract rents and to prevent entry by new competitors (Stigler, 1971). Regulatory capture in microfinance occurs where, established MFIs may propose regulation to prevent entry for future competitor or making assessability of fund both donor and public more difficult for the new members and socially responsible equity investments (McIntosh & Widyck, 2005). The theory is critical in explaining the relationship between the regulator and interested stakeholders such as microfinance institutions, and has been cited in studies on regulation such as Mabeya et al., (2016) and Korutaro (2013).

**2.3 Empirical Literature Review**

This section reviewed prior literature on the moderating effect of firm age on the relationship between selected determinants and financial performance in a variety of contexts. A summary of the empirical literature is presented, along with a list of research gaps, which serves as the foundation for the conceptual framework's diagrammatic presentation.

### 2.3.1 Management Efficiency Measures and Financial Performance

Mwando (2013) conducted a study to establish the contributions of management efficiency on the financial performance of the commercial banks in Kenya. This study adopted a descriptive survey. The study found that management efficiency on agency banking had a positive influence on the financial performance of commercial banks in Kenya. A study on Microfinance operations in Nigeria by Clementina and Gabriel (2015) concluded that the mode of poor efficiency management of Microfinance institutions in Nigeria leads to high operating costs leading to poor financial performance.

Barus, Muturi, Kibati and Koima (2017) studied the effect of management efficiency on financial performance of savings and credit societies in Kenya. The purpose of this study was to evaluate the effect of management efficiency on financial performance of savings and credit societies in Kenya. The study employed an explanatory research design. The target population was 83-registered deposit taking SACCO's in Kenya that have been in operation for the last five years. The study concluded that management efficiency has no significant influence on the financial performance of savings and credit societies in Kenya. The univariate regression results showed that management efficiency has no significant influence on the financial performance of savings and credit societies.

Ikapel, Namusonge and Sakwa (2019) did a study on financial management efficiency and financial performance of commercial banks listed on the Nairobi Securities Exchange. This study sought to examine the effect of financial management efficiency on financial performance of commercial banks in Kenya. The study targeted commercial banks listed on the Nairobi Securities Exchange for the

period 2006 to 2017. The dependent variable of this study was financial performance, measured by the return on assets and return on Equity. The predictor variables were financial management efficiency, inferred from capital adequacy, liquidity, financial leverage and market capitalization. This study adopted the descriptive research design, which involved collection and analysis of both primary and secondary data. The results showed that there is a strong and positive relationship between financial performance of commercial banks proxied by return on assets (ROA) and return on equity (ROE). The study rejects the null hypothesis that there is no significant relationship between financial management efficiency and financial performance of commercial banks in Kenya.

A study on Microfinance bank operations in Nigeria by Clementina and Gabriel (2015), concluded that costly operational such as office and branch networks hinders their financial performance. Ongore & Kusa (2013) explain that management efficiency is often expressed qualitatively through subjective evaluation of the quality of employees, organizational discipline, and management and control systems. Financial ratios such as expenses to assets ratio and operating profit to income ratio are used to measure management quality. Management is deemed efficient operationally and in terms of income generation when operating profits are higher than revenue.

Similarly, the efficiency with which bank operating income is generated from the traditional intermediation activities and non-intermediation activities; net interest income and non-interest income is essential. The growing complexity of banking institutions notwithstanding, the key drivers of bank performance can be envisaged as earnings capability, efficiency, risk-taking and leverage. According to the market

power hypothesis, concentrated banking sectors may make banks earn high profits through setting prices of financial products and services at levels, which are un-favorable to customers. Similarly, the efficient-market structure hypothesis suggests that more banks that are efficient are able to generate higher market shares and earn high profits induced by competitive prices enabled by efficient performance rather than market power practices. Beck, (2007) posits that less developed financial systems are typically characterized by high overhead costs and interest spreads, reflecting inefficient financial service provision. This study focuses on efficient-market structure paradigm to establish the extent to which various tenets of financial intermediation efficiency influences firm performance. Noteworthy, bank executives today ensure that the institutions they are managing are making profits, since a loss making entity will eventually deplete its capital base and put the jobs of the managers at risk.

### 2.3.2 Liquidity Management and Financial Performance

Otieno et al., (2016) undertook a study to establish the relationship between liquidity management measures and financial performance of Microfinance institutions in Kenya. The independent variables were financial gap ratio and capital adequacy ratio while ROA and ROE measured financial performance. Longitudinal research design utilizing panel data covering the period from 2011 to 2015 was used with the target population comprising the 12 licensed Microfinance institutions. Purposive sampling was used to obtain a sample of 6 MFBs. The findings revealed a moderate correlation and a significant positive relationship between both financial gap ratio and liquidity requirement measures and the financial performance measures.

Muriithi and Waweru (2017) also examined the effect of liquidity requirement on financial performance of commercial banks in Kenya, between 2005 and 2014 for all the 43 registered commercial banks. Liquidity requirement was measured by liquidity coverage ratio (LCR) and net stable funding ratio (NSFR) while financial performance was measured by return on equity (ROE). The findings established that NSFR is negatively associated with bank profitability while LCR does not significantly influence the financial performance of commercial banks in Kenya. However, the overall effect was that liquidity requirement has a negative effect on financial performance.

A study conducted by Odunga, Nyangweso and Nkobe (2013) on the effect of liquidity and capital adequacy on the operating efficiency of commercial banks in Kenya, concluded that operational efficiency ratio, liquid assets to short-term liabilities ratio and total capital ratio positively and significantly affect a bank's operating efficiency. Kahuthu, Muturi and Kiweu (2015) undertook a study to ascertain if liquidity requirement and credit management had any impact on the financial performance of deposit taking SACCOs in Kenya. To ascertain whether the two variables had any role, the study examined the beta coefficients before establishment of prudential regulations for SACCO's in Kenya in 2010 and the beta coefficients after 2010. The findings established that liquidity and credit management had great impact on SACCO's financial performance.

Biwott et al., (2015) conducted a study to investigate the effect of government regulation on performance of small Saccos in Nairobi City County, Kenya. The study sought to determine the effect of regulation requirements that is statutory deposit requirements, management qualification requirements, and membership regulation

requirements on the performance of small Saccos. The main finding of the study was that implementation of government regulations had improved performance of the Saccos. The study also established that statutory deposit regulations positively affect Sacco liquidity. In conclusion, the regulation has positive effect on the performance of Saccos in Nairobi County, Kenya.

The microfinance Act requires all microfinance institution to maintain a minimum holding of liquid assets of twenty percent of its deposit liabilities (Republic of Kenya, 2008a). According to Belydah & Ondigo, 2016) the levels of liquidity do affect performance to certain extent, as liquid assets are associated with lower rates of return and thus too many liquid assets would result to lower profitability. Christian and Rosenberg, (2000) deduce that high liquidity requirement by central Bank of Kenya may affect the financial performance of Microfinance institutions in Kenya.

Generally, many countries require banks to maintain reserves, held as cash in the bank's vault or by the central banks equal to a percentage of deposit or certain types of deposit (CGAP, 2012). MFIs needs a functioning supply of cash not only to meet withdrawal and credit extension needs, but also to withstand various types of liquidity shocks and risks. However, according to Valdemar et al., (2007) holding too much cash may lead to over liquidity for firm may pay a cost, subsequently affecting their performance. According to Christian and Rosenberg, (2000), capital adequacy and cash reserve requirements regarding microfinance institutions as laid down by the central bank in a numbers of countries has led to credit constraint in the microfinance sector as a major portion of their liquidity is held in these reserves, hence affecting their financial performance. In Kenya, central Bank of Kenya since 2015 requires microfinance institutions to maintain at central Bank of Kenya at least three percent

of their deposits on a daily basis and on a monthly basis an average of 5.25% of the total deposit. This reserves ratio by the monetary authorities leads banks to contract their loan and thus affecting financial performance.

Given the below market rate or the zero rate often paid on these cash reserves, this requirement can squeeze out small depositors by raising the minimum deposit size that a microfinance can handle profitably. The reserve requirement restricts the proportion of deposit available for on lending, with less credit to disperse, thus affecting financial performance of microfinance institution.

### 2.3.3 Capital Adequacy Measures and Financial Performance

Karanja and Nasieku (2016) conducted a study on the effect of capital on the financial performance of Commercial Banks in Kenya between 2010 and 2014. The specific objectives of the study were to determine the effect of core capital, subordinate capital and risk weighted capital on the financial performance of commercial banks in Kenya. The study concluded that the level of core capital and subordinate capital positively affects the financial performance of the commercial banks in Kenya. Onoyere (2014) in a study conducted in Nigeria concluded that some of the major challenges for Microfinance institutions include poor capitalization and restrictive regulatory and supervisory procedures. It was established that the low capital base and the isolated mode of operation had hindered any meaningful contributions to statutory requirements. It was established that low capital base of microfinance institutions hinder the ability of the institutions to meet the demand for their clients, thus affecting their performance.

Kariuki and Wafula (2016) studied the relationship between capital adequacy and financial performance of deposit taking saving and credit cooperative societies in

Kenya as at 31st December 2014 using a sample of 103 Deposit taking Sacco's. The study used three proxy ratios to measure financial performance namely; return on assets (ROA), return on equity (ROE) and net interest margin (NIM). Capital adequacy was measured using two ratios namely; core capital to total assets and core capital to total deposits. The results revealed that there exists positive significant relationship between financial performance and capital adequacy ratios, indicating that as the amount of capital held increases, financial performance is enhanced.

Aymen (2013) examined the impact of capital on the financial performance of banks in Tunisia. The study used a static panel to study empirically the relationship between capital and financial performance by approximating the capital by the ratio of equity/total assets and financial performance by three measures, that is ROA (Return on assets), ROE (Return on equity) and NIM (net interest margin). Through a sample of 19 banks in Tunisia over the period of 2000-2009, he found that the relationship between capital and financial performance as measured by ROA, ROE and NIM was positive. Only the relationship between capital and ROA was statistically significant.

Capital adequacy was reviewed under section 33 (4) of the Banking Act which gives authority to the CBK to issue guidelines to be adhered to by institutions for the purpose of maintaining an efficient and stable banking and financial system. The purpose of the guideline is to ensure that institutions maintain a level of capital that is adequate to protect its depositors and creditors.

The guideline provided that institutions shall at all times maintain a core capital to total risk weighted assets of not less than 8 per cent. It also stated that the core capital to total deposit liabilities ratio should not be less than 8 per cent. It also stated that the

total capital to total risk weighted assets should not be less than 12 per cent. The guidelines state that institutions shall at all times maintain a minimum ratio of 8 per cent for core capital to total risk weighted assets ratio and core capital to total deposit liabilities ratio, and 12 per cent for the total capital to total risk weighted assets ratio. In addition to this, institutions are required to hold a capital conservation buffer of 2.5 per cent over and above the minimum ratios. This buffer should consist of high quality capital which should mainly be made up of, premium reserves, retained earnings and common equity, (CBK, 2013).

Capital adequacy requirement can take either two forms, capital adequacy ratio (CAR) or minimum amount of capital to be maintained by a microfinance institution. In 1988, the Basel Capital Accord was published recommending a risk weighted capital adequacy ratio (CAR) of 8% for all internationally active banks. This ratio has been accepted as the minimum standard for all financial institutions around the world. The capital adequacy ratio protect depositors as microfinance institutions grow in size and expand their risk profile (Haq et al., 2008)

Globally it is recommended that microfinance institutions require stricter capital adequacy requirement as compared to traditional banks. For this reason, different countries have set different capital adequacy ratios for microfinance institutions Staschen, (2003). According Haq et al., (2008) the majority of MFIs in most of the countries maintain capital adequacy ratio of at least 8% of the risk weighted asset. However, in Kenya the minimum ratio's for core capital to total risk weighted assets (TRWA) and total capital to total risk weighted assets are 10% and 12 % respectively (Republic of Kenya, 2006). Each country sets a minimum capital for the microfinance institutions depending on whether it's a deposit taking or credit only institution

(Staschen, 2003). In Kenya microfinance institutions are required to hold a core capital of at least sixty million Kenya shilling per year for the nationwide microfinance, while twenty million for the community microfinance (Republic of Kenya, 2006)

Higher ratio of capital adequacy requirement may reduce investment opportunities thus negatively affecting the financial performance. However, to mitigate bank failures and protect the interest of depositors, it is prompt to require banks to maintain high level of capital adequacy (Aymen, 2013). It is evident that core capital can contribute to the profitability of a bank, since capital enables the bank to collect more deposits and lend more to the borrowers, hence earning higher revenues and making profits. It is therefore evident that well-capitalized banks should be profitable, and these imply to the microfinance institutions, thus resulting to better performance.

### 2.3.4 Moderating Effect of Firm Age on Independent Variables and Dependent Variables

Firm age is widely added as a determinant of financial performance (e.g. Custódio & Metzger, 2014; Lin & Chang, 2011), but there is a dearth of studies that investigate the moderating effects of firm age on the relationship between selected determinants and financial performance. Firm age is an important moderating factor. As firms grow older, they are characterized by lower rate of failure and low costs to obtain capital (Koh, Durand, Dai, & Chang, 2015), and they have experience to negotiate favorable debt capital to increase returns. The reverse is true for young firms in the birth stage (Stepanyan, 2012).

Empirical studies in developing countries also include firm age as a determinant of performance, but there is dearth of studies that investigate the moderating effects of

firm age. Lin and Chang (2011) within the framework of M-M theory analyze whether debt affects firm value, but firm age is added as a control variable. Lin and Chang (2011) report significant relationship between firm age and return in Taiwan. Similarly, Agiomirgianakis, Magoutas, and Sfakianakis (2013) investigate the determinants of returns in tourism sector in Greece. Agiomirgianakis et al. (2013) panel regression results confirm significant positive relationship between firm age and returns. Agiomirgianakis et al. (2013) argue that it appears older firms are more profitable than younger firms and it reflects the impact of accumulated learning by doing.

### 2.4 Conceptual Framework

A conceptual framework is a graphical or diagrammatic representation of the relation between the variable in a study (Mugenda & Mugenda, 2003). McGaghie et.al. (2001) posit that the conceptual framework sets the stage for the presentation of particular research question that drive the investigation being undertaken based on the problem statement. According to Kothari (2004) independent variables are the predetermined causes of variation of the dependent variable while dependent variable is one that the study will seek to explain.

Based on figure 2.1, the dependent variable is financial performance of microfinance institutions in Kenya while the independent variables are represented by capital adequacy, liquidity requirement and management efficiency, and moderator variable age of microfinance institutions.

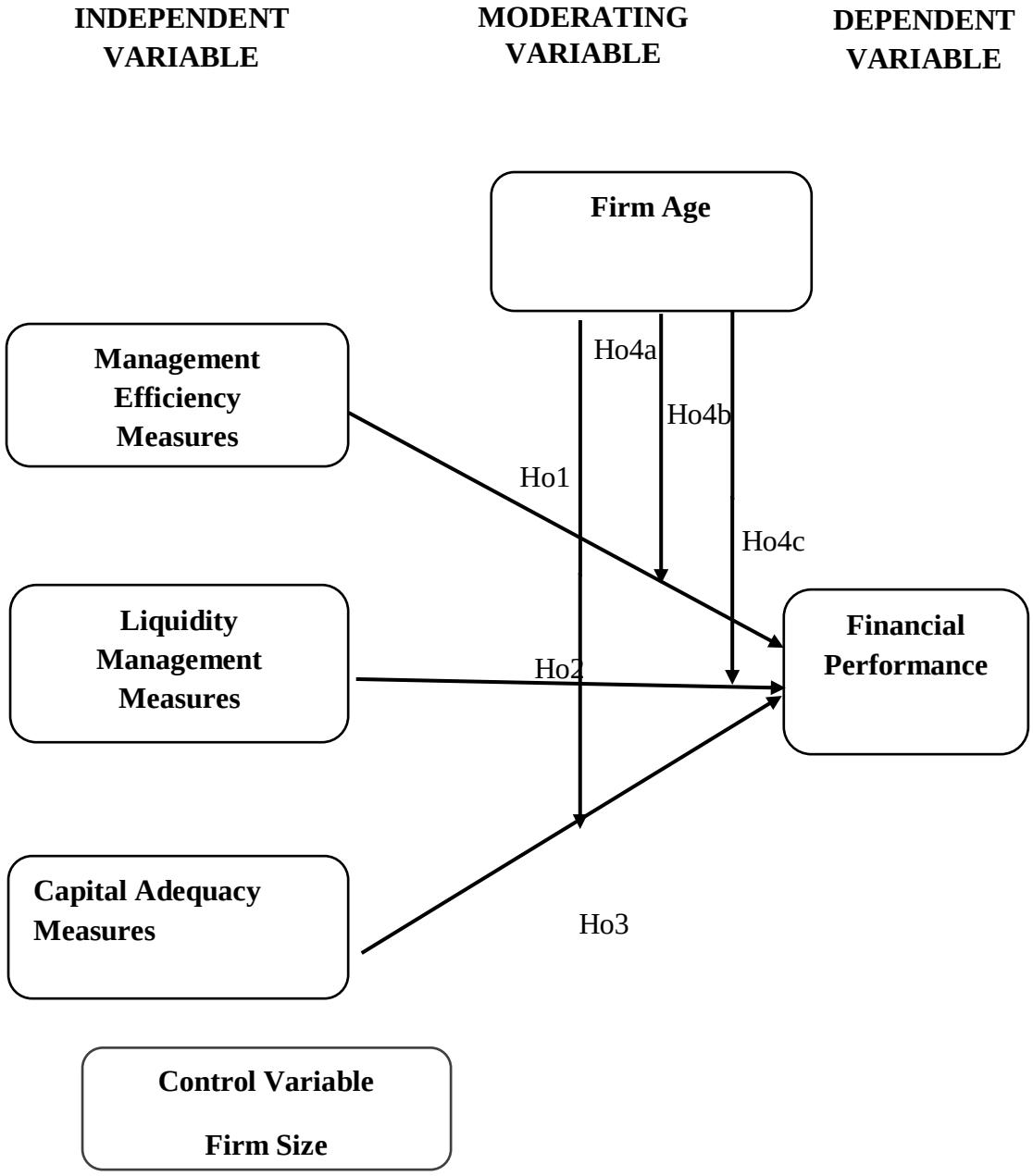


**Figure 2.1 Conceptual Framework**

**Source: Author (2022)**

## 2.5 Critique of Existing Literature

Previously, research has been conducted on regulations and performance of commercial banks in Kenya. Although various studies have been done on the effect of stand-alone components of banks financial regulations and its determinants on performance, none has looked at how these determinants of financial regulations affect the financial performance of microfinance institutions. This study, therefore, will seek to determine how various forms of government regulations affect the financial performance of commercial banks in Kenya.

Mureithi, (2012) carried out an investigation on how financial regulations affected the financial performance of deposit-taking microfinance institutions in Kenya. The study found out that the regulations lead to an increase in the value of loans outstanding, total assets of DTMs, the profit and shareholders' equity of DTMs. The study only focused on deposit-taking microfinance institutions in Kenya. This study will enlarge the scope by focusing on microfinance institution with emphasis on capital adequacy requirement, operational requirement and statutory requirements.

Nekesa, (2017) carried out an investigation on the impact of capital adequacy on the financial performance of the companies listed on the Nairobi Securities Exchange in Kenya. The study found out that capital adequacy contributed positively to the companies listed on the NSE in Kenya. The study focused on a capital adequacy of firms listed in the Nairobi Security Exchange. This study will expand its scope to include other forms of regulations, which include; interest rate limits, financial reporting and disclosure and foreign exchange exposure. It will narrow down on its effects on microfinance institution in Kenya.

Okwachi, (2008) carried out a study to examine the effectiveness of state regulation of the insurance industry in Kenya. The research found out that the state had succeeded to address Autonomy to a great extent and supervisory intervention to a significant extent. The research concentrated on the extent to which the state has succeeded in regulating the insurance industry in Kenya and establishing the factors that affect effective regulation of the insurance industry in Kenya. This study will analyze the effects of government regulations and its effects on financial performance in the microfinance sector in Kenya.

### 2.6 Research Gaps

From the reviewed empirical literature, it is evident that factors influencing the performance of MFIs are multifaceted and are purely dependent on the operating environment of the MFI. Sustainability of MFIs became a concern of donors in the mid-1990s and increasingly has been linked with growth of microfinance service provision. Some of the benefits of sustainability are increased outreach and quality of services offered (CGAP, 2004). Sustainable MFIs are able to increase their capital through retained earnings and hence increased capacity to reach more loan customers.

Financial institutions today find themselves increasingly challenged by having to manage unpredictable and continually changing regulatory environment. Forecasts become unworkable and success is dependent on an ability to respond rapidly and flexibly to regulatory essentials to modify the organization in these new opportunities on a constant basis.

Performance of business banks has been fluctuating over the previous years. The literature survey has demonstrated that the estimation of bank performance especially business banks is well looked into and has gotten increased consideration over the

previous years in Kenya as well as all over the world. In an examination led among worldwide banks, Berger and Bouwman (2013) found an immediate affiliation and significant effect of capital ampleness on universal bank productivity. Notwithstanding research contemplates being directed, there existed logical, reasonable, and methodological holes that have been seen from a few examinations. For example, kipruto, (2017) inspected the impact of capital ampleness proportion on the money related execution of second-level business banks in Kenya. The investigation was done on just second-level business banks, in this way, restricting the appropriateness of the exploration discoveries in level one and level three business banks. It is in this setting this examination will assess the impacts capital ampleness has on the monetary execution of the business banks in Kenya.

Firms all over the world are progressively being tested to develop and extend their monetary reportage to incorporate both those focused at profiteering and in addition social endeavors being made to enhance the environment. There has been an expansion of firm-particular research on the impact of consistence with high corporate administration models on the expense of capital and money related execution. Naemeka (2017) did an assessment on the impact of sustainability accounting on the financial performance of listed manufacturing firms in Nigeria. The investigation uncovered that manageability detailing had a positive and critical impact on the money related execution of firms considered. The examinations concentrated on assembling firms in Nigeria consequently the exploration discoveries are not appropriate to the banking sector in Kenya.

Makokha, Namusonge and Sakwa (2016) focused more on the risk management practices that affect the financial performance of commercial banks and therefore

recommended that risk management framework should be adopted in financial institutions to enable them proactively mitigate risks. They did not look at the risks associated with increasing non-performing loans that are threatening the survival of most financial institutions.

Other studies have not been done specifically to establish the financial performance of RMFIs in Kenya based on a combination of the variables considered in this study especially after the regulations stipulated in the Microfinance Act (2006). It is in the face of such that this study aims at filling the gap by establishing the factors considered to influence the financial performance of MFIs in Kenya. The current study wishes to close this knowledge gap by determining the moderating role of firm age on selected determinants and financial performance of Microfinance Institutions in Kenya.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.0 Overview

This chapter discusses the methodology that was used to carry out the study. It gives the specific procedures, tools and instruments that was used in undertaking the study. These include; research design, target population, sampling techniques, data collection methods and instruments and data analysis tools and procedures.

## 3.1 Research Design

Research design is a set of logical procedures that enable the researcher to obtain evidence to determine the degree to which the research hypotheses are correct. It is a general plan or strategy for conducting a research study to examine specific testable research questions of interest (Lavkaras, 2008). This study employed explanatory research design. This research design is considered suitable as it involves collecting numerical data on the same variable over a lengthy period. Therefore, this design is ideal to this study because it considers panel data set for nine-year period between 2012 - 2020. An explanatory research design is often used to deduce the cause and effect relationship between variables (Kassa, 2021). Explanatory research design was ideal because this study sought to determine the effect of selected determinants on the financial performance of regulated microfinance institutions in Kenya.

## 3.2 Target Population and Sample

The target population is defined as the specific population containing all the study elements that the study is interested in. According to (Ngechu, 2017), a population is a defined set of people, services, elements, events and group of things or households that are being investigated. The study's population was all the registered microfinance

institutions in Kenya between between 2012 and 2020. The target population comprised of all the registered microfinance institutions in Kenya regulated by the Association of Microfinance Institution of Kenya and Central Bank of Kenya (AMIK, 2020) as shown in Appendices 3.2. There are a total of 54 registered microfinance institutions in Kenya (AMIK, 2020).

The basis of inclusion of the microfinance institutions was MFIs that operated continuously from 2012 to 2020 and availability of published financial statements. Those Microfinance institutions with missing financial statements for the period as well as those that were registered after year 2012 was excluded. This resulted to the sample of 34 MFIs, which met the criteria, while 20 MFIs though registered did not met the selection criteria and hence were not included in the sample.

### 3.3 Data Types and Sources

The study used secondary data that was extracted from annual reports and financial statements of Central Bank of Kenya Bank Supervision Reports and audited financial Statement from respective MFIs. The audited financial reports were downloaded from the individual MFI's website. Additionally, data collection process was guided by a data collection schedule. Secondary data are beneficial for enhancing comprehension and describing the study's problem, as well as offering more information to help solve a problem (Ghauri & Gronhaug, 2005). Secondary data is also more reliable and objective compared to primary data (Sekaran & Bougie, 2019); Vartanian (2010).

### 3.4 Data Collection Procedure

The study used a document analysis guide to collect data. According to Oso & Onen (2009), document analysis is used when the data to be collected is secondary and derived from a database of repository. The researcher verified all entries in order to

reduce errors during the data collection process from annual reports. This is appropriate for the study because all audited financial statements and other information about the MFIs are readily available to the public, as required by Kenya's Company Law, Cap 2015. Additionally, Corbetta (2003) recognized certain advantages of documents over other research techniques.

### 3.5 Measurement of Variables

Research variables ought to be measurable to enable hypotheses testing, making inferences, and drawing conclusions. Measurement entails the operationalization of research variables. Sekaran and Bougie (2016) define the operationalization of concepts as "operationally defining a concept to render it measurable is done by looking at the behavioral dimensions, facets, or properties denoted by the concept. The purpose of this study was to investigate the moderating effect of firm age on the relationship between selected determinants and financial performance of Microfinance institutions in Kenya:

#### 3.5.1 Dependent Variable

##### 3.5.1.1 Financial Performance

The dependent variable was financial performance. In the light of the previous studies (Ciftci *et al.*, 2019; Gerged and Agwili, 2020; Kyere and Ausloos, 2020; Manna *et al.*, 2016), this study uses return on equity as a measure o financial performance. The Return on Equity ratio essentially measures the rate of return that the owners of common stock of a company receive on their shareholdings. Return on equity signifies how good the company is in generating returns on the investment it received from its shareholders, and the efficiency of the institutions (AEMFI, 2013). Thus, Return on Equity (ROE) profit after tax over shareholders equity. This ratio shows how MFIs can convert shareholders' equity into net income. The higher value of this

ratio indicates a higher ability of the company. This ratio provides an indicator to evaluate the efficiency of managerial. In the study, financial ratios such as expenses to assets ratio and operating profit to income ratio are used to measure management efficiency. Management is deemed efficient operationally and in terms of income generation when operating profits are higher than operating expenses. Thus, management efficiency is measured by the total Expenses divided by total Assets.

### 3.5.2 Independent Variables

#### 3.5.2.1 Management Efficiency Measures

Efficiency measurement determines how banks provide an optimal combination of financial services with a set of inputs. On the one hand, one is asking oneself bank capability to efficiently and technically produce, financial services for economic agents. Efficiency ratio evaluates the overhead structure of a financial institution. The efficiency ratio gives us a measure of how effectively a bank is operating. Not all banks calculate efficiency ratio the same way. If the efficiency ratio is getting lower, it is good for the bank and its shareholders.

**ER= Noninterest Expense/ Total Revenue**

#### 3.5.2.2. Liquidity Management Measures

Other studies quantitative measurement of liquidity included Ghalib (2017) ratio of liquid assets to customer funds, King'ori et al. (2017) ratio of loan to asset ratio, Wanjiru (2016) ratio of total loans to total customer deposits, Nderitu (2016) and Mwangi (2016) ratio of currents assets to current liabilities, Buseretse (2015) ratio of gross loans and advances to customers' deposits, Mwangi (2014) ratio of cash and cash equivalents to total assets ratio and Afude (2017) ratio of liquid assets to current liabilities. This study adopted the measure, liquidity ratio 'LR' is calculated as the net

liquid assets to total short-term liabilities, as prescribed in the Kenya Microfinance Deposit-taking Microfinance Institutions Regulations by the Central Bank of Kenya (2008). The net liquid assets are deposit balances in government bodies and all other sources including their accrued interest and other deposits, less balances due to banking and financial institutions while short-term liabilities are those already matured and maturing within 91 days. The liquidity ratio value for each microfinance bank was provided in the Central Bank of Kenya Bank Supervision Department annual reports hence used in the study analysis.

**Liquidity Ratio = Net Liquid Assets/Total Short-term Liabilities**

#### 3.5.2.3 Capital Adequacy Measures

Various related studies capital adequacy quantitative measurements differed, with Yu et al. (2014) ratio being risk-weighted assets to equity, Ghalib (2017) capital ratio as total equity capital to total assets, Ashenafi and Kingawa (2018) financing structure being capital structure measured as the ratio of total equity to total assets, Shibru and Menza (2017) capital asset ratio measured by capital to total assets, King'ori et al. (2017) capital adequacy ratio as equity to total assets ratio, Otieno, Nyagol and Onditi (2016) capital adequacy ratio as the ratio equity to total assets, Nderitu (2016) capital adequacy ratio as capital to total weighted assets, Wanjiru (2016) capital adequacy ratio as core capital to total assets, Buseretse (2015) capital adequacy as ratio of total shareholders' equity to total assets, and Mwangi (2014) capital adequacy ratio as long-term debt to the sum of long-term debt and shareholders' equity.

As prescribed by the Kenya Deposit-taking Microfinance Institutions Regulations by the Central Bank of Kenya (2008), risk-based capital items used to compute the capital adequacy regulations include the core capital and/or supplementary capital in

relation to total deposit liabilities and total risk weighted assets. a) Core capital, b) Core Capital/Total Deposit Liabilities, c) Core Capital/Total Risk Weighted Assets, and d) Total Capital/Total Risk Weighted Assets. This study used total capital 'TC' which is the sum of core capital and supplementary capital as the measurement for capital adequacy. The core capital is ordinary and noncumulative irredeemable preference share capital, share premium, retained earnings or accumulated losses, current year's 50% un-audited net profit after tax, capital grants and other reserves less investments in banking subsidiaries, goodwill, intangible assets and total deductions, while supplementary capital is 25% of revaluation reserves, cumulative irredeemable preference shares, subordinated debt, capital investments and statutory loan loss reserve. The TC value for each microfinance bank is provided in the Central Bank of Kenya Bank Supervision Department annual reports hence used in this study's analysis.

**Total Capital = Core Capital + Supplementary Capital**

**Firm Age Moderating Variable**

As firms grow older, they are characterized by lower rate of failure and low costs to obtain capital (Koh, Durand, Dai, & Chang, 2015), and they have experience to negotiate favorable debt capital to increase returns. The reverse is true for young firms in the birth stage (Stepanyan, 2012). Empirical studies in developing countries also include firm age as a determinant of performance, but there is dearth of studies that investigate the moderating effects of firm age. The study measured firm age as natural logarithm of years operation from year of incorporation to year 2020 plus one.

**Firm Size Control Variables**

It is important to control the confounding variables to avoid any false rejection of hypotheses (Bartov, Gul, & Tsui, 2000). Control variables are included to reduce the possibility of omitted-variable bias (Afrifa & Tauringana, 2015). This study controlled for firm size. Following prior studies, firm size is defined as the natural log of the total firm's assets (Lee *et al.*, 2014; Rashidah & Ali, 2006). The study measured firm size as natural logarithm of Total assets.

**Table 2.1: Operationalization and measurement of the study variable**

| Variables | Notation | Operational definition | Measurement |
|---|---|---|---|
| Return on equity | ROE | ROE as a financial ratio refers to how much profit a firm earned compared to the total amount of shareholder equity invested. This is what the investors look in return for their investment. The higher the ROE the more profitable the firm is. | Net Income after taxes divided by total Equity Capital. |
| Capital adequacy | CAR | Capital adequacy ratio demonstrates the internal strength of a firm to withstand losses during crisis. It has a direct effect on the effectiveness of banks by influencing its expansion to risky but profitable undertakings (Sangmi & Nazir, 2010). | Core Capital to Total Risk Weighted Assets |
| Liquidity Management requirement | LR | Liquidity is the ability of a firm to achieve its obligations to its depositors. According to Dang (2011) adequate level of liquidity is highly correlated to firm's profitability | Net Liquid Assets/Total Short-term Liabilities |
| Management efficiency | ME | Management efficiency is often expressed qualitatively through subjective evaluation of the quality of employees, organizational discipline, management and control systems. Financial ratios such as expenses to assets ratio and operating profit to income ratio are used to measure management quality. Management is deemed efficient operationally and in terms of income generation when operating profits are higher than revenue. | Noninterest Expense/ Total Revenue |

**Source Author (2022)**

### 3.6 Data Analysis and Presentation

The collected data was subjected to a number of data analysis techniques. This section summarizes each of these critical procedures in detail. Data analysis was performed using multiple regression model, with the aid of STATA version 13 (Hayes and Matthes, 2009), and both descriptive and inferential statistics. Descriptive analysis was done for comparison of means, frequency distribution, standard deviation, skewness and Kurtosis values. The hypotheses were tested using moderated regression analysis to establish the extent that the moderator variable affects the relationship between the independent variables and the dependent variable. The moderator effect was examined using hierarchical regression analysis procedures as outlined by Baron and Kenny (1986); Aiken and West (1991).

#### 3.6.1 Descriptive Statistics

As defined Zikmund *et al.*, (2013), descriptive analysis is the process of transforming raw data into a form that is easily understood and interpretable by the rearrangement, ordering, and manipulation of data to yield descriptive facts. Descriptive statistics aid the researcher in simplifying large amounts of data in a practical manner, as each descriptive statistic condenses a large amount of data into a more manageable amount. There are two fundamental approaches to presenting descriptive statistics, numerical and graphical. Both approaches was used in this investigation. For quantitative data, descriptive and inferential approaches were used. The data was evaluated using a variety of central tendency measures.

### 3.6.2 Inferential Statistics

Correlation and regression analysis are examples of inferential analysis. Tables and figures were used to present the findings. Correlation analysis is a statistical technique that analyses the degree of link between two or more variables (Levin, 2011). In statistical modelling, the analysis is the first stage in establishing the link between the independent and dependent variables. Prior to performing multiple regression analysis, a correlation matrix was generated. The relationship between the independent variables is analyzed to aid in the development of a multiple prediction model that identifies non-existence of relationships where the correlation value is 0. When the correlation is 1.0, it indicates the existence of an ideal negative or positive relationship (Hair *et al.,* 2006). According to the values interpretation, there is no relationship between 0 and 1, whereas there is a perfect relationship between 0 and 1. The Panel data model's regression analysis was utilized to assess and estimate the effect of the independent variable on the dependent variable. Panel data was utilized to analyze and quantify relationships between variables, which was expressed as an equation capable of predicting generally the values of one variable given the values of other variables.

## 3.7 Model Specification

The model specification involves combination of study variables that represent the empirical between the dependent, independent and moderating variables. This was do as the conceptual framework illustrated under figure 2.1. The study used panel data spanning the years 2012-2020. To examine the direct and moderating effects, the study adopted a hierarchical regression model (Baron & Kenny 1986). A series of hierarchical linear regression analysis were used to examine the hypotheses. The following model parameters and regression equations were adopted.

**Model 1**. Testing the effect of control variables on the financial performance of MFIs.

$$\boldsymbol{Y_{it}} = \beta_0 + \beta_1 FSiz_{it} + \varepsilon_{it}$$

**Model 2.** Testing the moderating effect of firm age on financial performance of MFIs.

$$\boldsymbol{Y_{it}} = \beta_0 + + \beta_1 FSiz_{it} + \beta_2 CAR_{it} + \beta_3 LR_{it} + \beta_4 ME_{it} + \beta_5 FAg_{it} + \varepsilon_{it}$$

**Model 3.** Introducing the first interaction term between firm age and capital adequacy ratio.

$$\boldsymbol{Y_{it}} = \beta_0 + + \beta_1 FSiz_{it} + \beta_2 CAR_{it} + \beta_3 LR_{it} + \beta_4 ME_{it} + \beta_5 FAg_{it} + \beta_6 CAR_{it} * FAg + \varepsilon_{it}$$

**Model 4.** Introducing the second interaction term between firm age and liquidity management ratio

$$\boldsymbol{Y_{it}} = \beta_0 + + \beta_1 FSiz_{it} + \beta_2 CAR_{it} + \beta_3 LR_{it} + \beta_4 ME_{it} + \beta_5 FAg_{it} + \beta_6 CAR_{it} * FAg + \beta_7 LR_{it} * FAg + \varepsilon_{it}$$

**Model 5.** Introducing the third interaction term between firm age and management efficiency.

$$\boldsymbol{Y_{it}} = \beta_0 + + \beta_1 FSiz_{it} + \beta_2 CAR_{it} + \beta_3 LR_{it} + \beta_4 ME_{it} + \beta_5 FAg_{it} + \beta_6 CAR_{it} * FAg + \beta_7 LR_{it} * FAg + \beta_8 ME_{it} * FAg + \varepsilon_{it}$$

$Y_{it}$ = Financial Performance

CAR = Capital Adequacy Ratio of firm i at year t

LR = Liquidity Ratio of firm i at year t

ME = Management Efficiency of firm i at year t

FAg = Firm Age of firm i at year t

FSiz= Firm Size of firm i at year t

FS= Firm Size

FP= Firm Performance

β1… β8 = Coefficients of the equations

$\beta_0$ = Constant (the intercept of the model)

t = Time

i = Firm

$\varepsilon$ = error term

**Test for Moderation**

Most moderator analysis measure the casual relationship between the independent and dependent variables with regression coefficients. The following steps were used to test for moderation. First, all the variables were standardized to make interpretations easier and avoid multicollinearity. Secondly, categorical variables were dummy coded and product terms manually created for the predictor and moderator variables. Then a regression model predicting the outcome variable Y from both the predictor variables and the moderator variable was fitted. Both effects as well as the model in general ($R^2$) were test for significant. Finally, the interaction effect was added to the previous model and checked for a significant $R^2$ change as well as a significant effect by the new interaction term.

## 3.8 Diagnostic Tests and Assumption of Multiple Linear Regression

### 3.8.1 Normality Test

Regression models assume that the residual is normally distributed for valid hypothesis testing. In addition, a normality test should be performed to ensure that error terms of the ordered probit model are indeed normal. This assumption was tested using the Shapiro-Wilk test for normality. The null hypothesis of this test assumes that the distribution is normal; therefore, the null hypothesis predicts that the distribution of the residuals is normal. In this respect if the p-value (Sig. value) of the Shapiro-Wilk Test was greater than 0.05, the data is normal. If it is below 0.05, the

data significantly deviate from a normal distribution. Therefore, since the p-values for all the variables were more than 0.05, then normality of the data was confirmed.

### 3.8.2 Linearity

Linearity defines the dependent variable as a linear function of the predictor (independent) variables (Darlington, 1968). Multiple regression accurately estimated the relationship between dependent and independent variables when the relationship is linear in nature (Osborne & Waters, 2002). The chance of non-linear relationships is high in the social sciences, therefore it is essential to examine analyses for linearity (Osborne & Waters, 2002). If linearity is violated all the estimates of the regression including regression coefficients, standard errors, and tests of statistical significance may be biased (Keith, 2006). If the relationship between the dependent and independent variables is not linear, the results of the regression analysis will under- or over- estimate the true relationship and increase the risk of Type I and Type II errors (Osborne & Waters, 2002). Linearity was tested with the STATA following the accepted procedures. The decision rule applied was that if the value of significant deviation from linearity is > 0.05, then the relationship between the independent and dependent variables is said to be linearly related. However, the reverse was true if the value < 0.05.

### 3.8.3 Multicollinearity

This study tests this assumption by examining the correlation matrix, tolerance, and variance inflation factor (VIF) values to determine the presence of multicollinearity. VIF reveals if a predictor has a strong linear relationship with another predictor (or set of predictors). (Field, 2009), and the tolerance value is calculated by dividing one by the value of VIF (Field, 2009). The variance inflation factor (VIF) is a term that

refers to a component that raises the variance of a given partial regression coefficient due to the variable's degree of correlation with the other predictors in the model (Dennis, 2011). Generally, lower levels of Variance Inflation Factor (VIF) are preferable, as higher levels of VIF have been shown to have a detrimental effect on the outcomes of multiple regressions.

While the explanatory variables should be correlated to some extent, if they are strongly correlated, it is impossible to discern the independent influence of an explanatory variable on the criterion variable in order to test for the inflation factor (VIF) and multicollinearity tolerance values. When the VIF value is 10 or greater, it implies that a predictor has a strong linear association with other predictor variables (Hair *et al.*, 2006). A VIF of less than three (VIF 3) indicates the absence of multicollinearity, whereas a VIF of more than three (VIF 3) indicates the presence of multicollinearity.

### 3.8.4 Unit Root Test

Because the study employed panel data, it is necessary to ascertain whether the variables in question are stationary or non-stationary. Whenever stationarity exists, it is possible to observe a series of finite variance and uniform oscillations from the mean. As a result, it is necessary to determine whether the variables have a constant mean and variance across time. It is possible to have deceptive inferences if the information collected is not stationary and regression models gained may be spurious or affected by uneven regression problems. Im-Pesaran-Shin and Fisher-type tests for unit root were used.

The stationarity of the values in a series was examined through Levin Li Chu (LLC) and Breitung unit root testing which are more appropriate for pool panel data. The

null hypothesis for the LLC unit root test is that H0: pi = 1 for i = 1, ..., N, against Hi: -1 < pi= P<1 for i = 1, ..., N, this requires the first order serial correlation co-efficient.. The commonly used unit root tests like the Dickey±Fuller (DF), augmented Dickey±Fuller (ADF) and Phillips±Perron (PP) tests lack power in distinguishing the unit root null from stationary alternatives (Maddala & Wu,1999). Breitung (2000) develops a modified version of the LLC test which does not include the deterministic terms (i.e. the fixed effects and/or a deterministic trend), and which standardises the residuals from the auxiliary regression in a more sophisticated fashion. Under LLC and Breitung approaches, only evidence against the non-stationary null in one series is required before the joint null will be rejected.

### 3.8.5 Autocorrelation

Since the data involves both cross section and time-series, it raises the suspicion of the existence of serial correlation. The presence of serial correlation indicates that the variables in the model violate the assumptions of the regression (Anderson et al., 2007). To cater for serial correlation, the Woodridge test for autocorrelation was employed. The null hypothesis of this test was that the data has no serial correlation. If the serial correlation is detected in the panel data, then the Feasible Generalized Least Squares (FGLS) estimation is adopted.

## 3.9 Ethical Considerations

During the course of the research, the researcher obtained permission from both Moi University and National Commission of Science, Technology and Innovation. The privacy and confidentiality of the information collected from the microfinance institutions and Central Bank of Kenya website was respected.

# CHAPTER FOUR

# DATA ANAYSIS, FINDINGS AND DISCUSSIONS

## 4.0 Introduction

Chapter four presents the analysis of data, data findings and discussions. The study sought to investigate the moderating effect of firm age on the relationship between selected determinants and financial performance of Microfinance institutions in Kenya. The data was collected using secondary sources used to analyze MFIs performance. The data was obtained from the financial statements of the MFBs and MFIs using data instrument together with CBK annual report for a period of nine years starting 2012 to 2020.

## 4.1 Descriptive Statistics

The study analyzed the effect of selected determinants in a duration of nine years in relation to the 34-microfinance institutions' financial performance in Kenya as measured by Return on Equity (ROE). The table 4.1 indicates the statistical summary of the main variables (financial performance-dependent variable, management efficiency, liquidity management and capital adequacy measures-independent variables) and the moderator variable (firm age), involved in the model, which include minimum, maximum, mean/average, standard deviation, and variance.

### 4.1.1 Descriptive Statistics for MFBs

**Table 4.1: Performance ROE and Selected Determinants for MFIs**

| | Financial Performance | Capital Adequacy | Liquidity Management | Management Efficiency |
|---|---|---|---|---|
| **Mean** | -0.253959829 | 0.590576068 | 0.404818205 | 0.305117949 |
| **Standard Error** | 0.13466249 | 0.150715508 | 0.048423492 | 0.041548916 |
| **Median** | -0.0496 | 0.415666667 | 0.321533333 | 0.241211111 |
| **Standard Deviation** | 0.485532512 | 0.543412491 | 0.174593385 | 0.149806749 |
| **Kurtosis** | 7.598507527 | 7.138613445 | 0.079092184 | 1.396777224 |
| **Skewness** | -2.603371179 | 2.494792065 | 1.194839361 | 1.345374204 |
| **Range** | 1.845166667 | 2.038888889 | 0.5156 | 0.510777778 |
| **Minimum** | -1.717666667 | 0.172222222 | 0.243288889 | 0.153077778 |
| **Maximum** | 0.1275 | 2.211111111 | 0.758888889 | 0.663855556 |
| **Count** | 306 | 306 | 306 | 306 |

**Source: Research Data (2022)**

The results indicate that MFIs' ROE has a mean of -0.2540 with a minimum of -1.7177, a maximum of 0.1275 and a standard deviation of 0.485532512. The findings indicate that on average the ROE among microfinance institutions in Kenya is -0.2540, which implies that the microfinance institutions are not optimally utilizing the shareholders equity to generate profit.

The results indicate that microfinance institutions' capital adequacy measures has a mean of -0.590576 with a minimum of 0.172222, a maximum of 2.2111 and a standard deviation of 0.1507155. The findings indicate that on average the capital adequacy is maintained by most of the MFIs. Thus, they have adequate capital for their operation.

Further, management efficiency measures had a mean of 0.404818, standard deviation of 0.0.048423, maximum of 0.788889 and a minimum of 0.2432889. As for liquidity management, a mean of 0.404818205, standard deviation of 0.174593385 was generated with a maximum of and a minimum of 0.243288889. This indicate that

number of MFIs need to adhere to liquidity management measures in order to operate optimally.

### 4.2 Test of Assumptions of Regression Model

The test of assumption of regression model check whether any of the assumption was violated. If the regression model assumption are violated then it might lead to biased results.

#### 4.2.1 Linearity Test

**Table 4.2: Analysis of Variance (ANOVA) - MFIs**

ANOVA

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 3 | 2.530088219 | 0.84336274 | 25.4013344 | 0.000100036 |
| Residual | 9 | 0.298813619 | 0.033201513 | | |
| Total | 33 | 2.828901838 | | | |

**Source: Research Data (2022)**

The above table 4.2 shows the results of Statistics of 25.4013344 and p value of 0.0001, P<0.05 thus, there is indicating that there was a linear relationship between the dependent variable and independent variables.

#### 4.2.2 Normality Test

The Table 4.3 shows the normality results using for Skewness and Kurtosis test for the financial performance of microfinance institutions in Kenya.. Bera and Jarque (1981) tests of normality was performed. If the p-value is less than 0.05, the null of normality at the 5% level is rejected. If the data is not normally distributed a nonparametric test was most appropriate. The study tested the null hypothesis that the disturbances are not normally distributed.

H0: The data are not normally distributed

H1: The data are normally distributed

**Table 4.3: Normality Test**

| Variable | Observation | Skewness | Kurtosis | Value |
|---|---|---|---|---|
| ROE | 34 | 2.2952 | 0.8061 | 0.5041 |
| Management Efficiency | 34 | 1.4721 | 0.4608 | 0.2963 |
| Liquidity Management | 34 | 2.8629 | 0.9274 | 0.3702 |
| Capital Adequacy | 34 | 1.7681 | 0.6365 | 0.6735 |
| **Firm Age** | **34** | **2.6572** | **0.5167** | **0.6582** |

**Source: Research Data (2022)**

From the table 4.3 the normality results using for skewness and Kurtosis test. The P<values were higher than the critical 0.05 and thus we conclude that the data is normally distributed.

### 4.2.3: Hausman Test

In order to make decision on the most suitable model adopt, both random and fixed effect estimate coefficients. The study used Huasman's specification test (1978) to make decision between fixed and random effect models. The table below show the result of Hausman test.

Ho: Random effect is appropriate

Hi: Fixed effect is appropriate

**Table 4.4: Hausman Random Test for random and fixed effect**

| ROA | (b) fixed | (B) random | (b-B) Difference | sqrt(diag(V_b-V_B)) |
|---|---|---|---|---|
| Management Efficiency | 0.334823 | 0.267627 | 0.067196 | 0.045957 |
| Liquidity Management | -0.8381 | -0.75592 | 0.9274 | 0.3702 |
| Capital Adequacy | -0.01518 | -0.01616 | 0.6365 | 0.6735 |
| chi2(3) | 2.37 | | | |
| **Prob>chi2** | **0.6674** | | | |

**Source: Research Data (2022)**

The null hypothesis of the Hausman test is that the random effects model is preferred to the fixed effects model. Hausman test revealed a chi-square of 2.37 with a p-value of 0.6674 indicating that at 5 percent level, the chi-square value obtained is statistically insignificant. Thus, the researcher does not reject the null hypothesis that random effects model is preferred to fixed effect model for the model. The study concludes that random effect is appropriate model when to examining the moderating effect on regulation on selected determinants and the financial performance of microfinance institutions in Kenya.

### 4.2.4 Test for Multicollinearity

This study used Variance inflation Factor (VIF) and tolerance to test for multicollinearity in the data. The rule of thumb is that VIF > 4.0 and tolerance and tolerance <0.20 indicates multicollinearity problem in the analysis. Since the tolerance value of all the variables is greater than .20 and the VIF is less than 4.0, it implies that there is no multicollinearity problem (Hair et al., 2010).

**Table 4.5: Test for Multicollinearity**

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.215 | .320 | | 13.179 | .000 | | |
| | Management Efficiency | -.125 | .068 | -.134 | -1.844 | .067 | .837 | 1.194 |
| | Liquidity Management | -.033 | .060 | -.039 | -.552 | .581 | .905 | 1.105 |
| | capital adequacy | .062 | .069 | .063 | .898 | .370 | .901 | 1.109 |

**Source: Research Data (2022)**

### 4.2.5 Testing for Homoscedasticity

White's test was used to test for heteroskedasticity. The null hypothesis in the test is that error terms have a constant variance (i.e. should be Homoskedastic). The heteroskedasticity results are presented in Table 4.6

**Table 4.6: Breusch-Pagan test for Heteroskedasticity**

| *Breusch-Pagan / Cook-Weisberg test for heteroskedasticity* | | |
|---|---|---|
| Ho: | Constant variance | |
| Variables: | fitted value of ROE | |
| Chi2(1) | = | 3.76 |
| Prob>chi 2 | = | 0.0527 |

**Source: Research Data (2022)**

The results in the Table 4.6 indicate that the error terms are heteroskedastic, given that the p-value (0.0519>0.05) confirmed that the null hypothesis of constant variance was accepted justifying the absence of heteroskedasticity in the data as indicated by Poi and Wiggins (2001).

### 4.2.6 Autocorrelation Test

Serial correlation test was conducted to check for correlation of error terms across time periods. This study used the Wooldridge test for serial correlation to test for the presence of autocorrelation in the linear panel data. Serial autocorrelation is a common problem experienced in panel data analysis and has to be accounted for in order to achieve the correct model specification. The test tested for the following hypotheses. The results are presented in Table 4.7.

H0: Residuals of this regression model does not have serial correlation

H1: Residuals of this regression model have serial correlation

**Table 4.7: Serial Correlation Tests**

| |
|---|
| Wooldridge test for autocorrelation in panel data |
| H0: no first-order autocorrelation |
| F( 1, 33) = 1.871 |
| Prob > F = 0.623 |

**Researcher's Compilation 2022**

The null hypothesis of this test was that there is no first order serial/autocorrelation existed in the data. When Serial Correlation was conducted, the test statistic reported is F-test of 1.871 and a p value of 0.623>0.05. The null hypothesis that no first order serial autocorrelation exists is not rejected. We then conclude that serial correlation does not exist.

### 4.3 Correlation Analysis

In order to get an overview of the association between the dependent and independent variables, the researcher conducted Pearson correlation analysis. The analysis aims at testing for existence of multicollinearity and it is ideal for eliminating variables, which are highly correlated. Shown in the table 4.7 below.

The results for correlation on management efficiency indicates a negative (-0.54222) but insignificant correlation with financial performance of microfinance institutions in Kenya. This imply that management efficiency improves the financial performance of microfinance institution also improves.

Liquidity management was found to have negative correlation of (-0.47928) and p-value 0.818. Thus the correlation if insignificant. This implies that when liquidity decreases then financial performance increases. However, there is a positive and

significant (0.653697) capital adequacy and financial performance of microfinance institutions in Kenya.

**Table 4.8: Correlation Coefficient Results**

| | ROE | Capital Adequacy | Management Efficiency | Liquidity Management |
|---|---|---|---|---|
| ROE | 1 | | | |
| Capital Adequacy | 0.653697 | 1 | | |
| Management Efficiency | -0.54222 | -0.07632 | 1 | |
| Liquidity Management | -0.47828 | 0.0169 | 0.307056 | 1 |

**Source: Research Data (2022)**

### 4.4 Multiple Regression Analysis

The intention of multiple regression analysis is to find an equation the best predict the Y variable as a linear function of the X variables.

The hierarchical regression analysis conducted for capital adequacy, liquidity management, management efficiency measures and the performance of microfinance institution in Kenya.

### 4.5 Testing for the Control Effects on the Study

The study looked at the effect of the control variable firm size, on performance of microfinance institution in Kenya before looking at the effect of the predictor variables on the dependent variable. Table 4.9 shows that firm size explained 0.2 percent of performance. The prediction of the control variables was not statistically significant (F = .1948,p= .824), according to the ANOVA model. As a result, the model proved unfit to predict financial performance when control factors were used.

**Table 4.9: Testing for Control Variables**

| Unstandardized Coefficients | | Standardized Coefficients | | | |
|---|---|---|---|---|---|
| B | Std. Error | Beta | t | Sig. | |
| (Constant) | .149 | .264 | | .563 | .574 |
| Firm Size | .010 | .102 | .011 | .102 | .919 |
| **Model Summary** | | | | | |
| R | | .048 | | | |
| $R^2$ Change | | .002 | | | |
| Std. Error of the Estimate | | 1.00477789 | | | |
| **Model Fit** | | | | | |
| F change | | .194 | | | |
| Sig. | | | | | .824 |

**Source: Research Data (2022)**

### 4.6 Hypothesis Testing

Regression analyses were performed to test the model fit and to establish the predictive power of the study models. Field (2009) observes that there are a number of methods of regression such as forced entry, hierarchical method and stepwise methods available in statistical packages including STATA. This study used the multiple regression model to tests the direct effects of predictor variables on the predicted variable (financial performance of microfinance institutions in Kenya).

#### 4.6.1 Test for Direct Effects

The coefficients of independent variables relating to performance of microfinance institutions were calculated using a multiple linear regression analysis. The overall variation of financial performance of microfinance institutions was accounted for by the combined prediction of all factors ($R^2$ = .433), which accounted for about 43.3 percent of the total variation. The independent variable's prediction, as shown in table 4.4, was statistically significant (F = 25.034, $\rho$ = 0.000), according to the ANOVA

model. As a result, the model was found to be suitable for predicting financial performance.

**$H_{01}$:** predicted that management efficiency measures have no significant effect on financial performance of Microfinance Institutions in Kenya. Findings in table 4.5 revealed a positive and insignificant association between management efficiency measures and performance of microfinance institutions ($\beta$ = .102, $\rho$= .125 which is more than $\alpha$ = 0.05) implying that management efficiency measures do not result in increased financial performance. Thus, we fail to reject the null hypothesis.

**$H0_2$:** proposed that liquidity management measures have no significant effect on financial performance of Microfinance Institutions in Kenya. Results presented in table 4.5 revealed that there was a positive and insignificant association between liquidity management measures and performance of microfinance institutions ($\beta$ = .019, $\rho$= .818 which is more than $\alpha$ = 0.05) implying that liquidity management measures do not result in improved financial performance. We therefore fail to reject the null hypothesis.

**$H0_3$:** stated that capital adequacy measures have no significant effect on financial performance of Microfinance Institutions in Kenya. Results displayed in table 4.6 shows that there was a positive and significant association between capital adequacy measures and performance of microfinance institutions ($\beta$ = .609, $\rho$= .000 which is less than $\alpha$ = 0.05). This implies that capital adequacy measures result in increased employee performance. Therefore, the hypothesis was not supported, thus rejected.

**Table 4.10: Multiple Regression Results for Testing Direct Effects**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | -.205 | .208 | | -.988 | .325 |
| | Zscore(Management Efficiency) | .102 | .066 | .101 | 1.541 | .125 |
| | Zscore(Liquidity Management) | .019 | .081 | .019 | .231 | .818 |
| | Zscore(Capital Adequacy) | .609 | .074 | .615 | 8.181 | .000 |
| | **Model Summary** | | | | | |
| | R | .658 | | | | |
| | $R^2$ Change | .433 | | | | |
| | Std. Error of the Estimate | .75561146 | | | | |
| | **Model Fit** | | | | | |
| | F change | 25.034 | | | | |
| | Sig. | .000 | | | | |

**Source: Research Data (2022)**

The regression coefficients of the overall mode of the direct effect are as shown in table 4.9. The results revealed that management efficiency measures, liquidity management measures had no significant effect on performance of microfinance institutions whereas capital adequacy measures had a significant effect on institutions. The model now becomes:

$Y = -0.205 + 0.102X_1 + 0.019X_2 + 0.672X_3 + 0 + \varepsilon$

### 4.6.2 Testing for Moderating effect of Firm Age on the Relationship between Selected Determinants and Microfinance Performance

These hypotheses ($H04_a$, $H04_b$, $H04_c$) were tested using hierarchical regression. Prior to conducting hierarchical regression analyses, all study variables were standardized as z-scores to test for interaction terms (Aiken & West, 1991; Jose, 2008). Z-

standardization of the variables allows easy interpretation of the interaction effects (Dawson, 2014).

The fourth objective of the study was to establish the moderating effect of firm age on the relationship between management efficiency measures and financial performance of microfinance institutions in Kenya. The hierarchical regression results are presented in Model 1 to 5 in Table 4.11.

**H04a** specified that there is no significant moderating effect of firm age on the relationship between management efficiency measures and financial performance of microfinance institutions in Kenya. The interaction between firm age and management efficiency measures on financial performance of microfinance institutions was introduced to the model to analyze the moderating. In this model, the control variable was found to be insignificant, with $p > .05$. Age was found to be significant ($\beta = -.182$, $p = .002$ which is less than $\alpha = 0.05$). According to $R^2$ change, firm age moderates the relationship between management efficiency measures and financial performance of microfinance institutions by 3%. Thus, firm age improves management efficiency and microfinance performance.

**H04b** postulated that there is no significant moderating effect of firm age on the relationship between liquidity management measures and financial performance of microfinance institutions in Kenya. In this model, the interaction effect between firm age and liquidity management measures on financial performance of microfinance institutions showed a positive and significant moderating effect ($\beta = -.250$, $p = .001$ which is less than $\alpha = 0.05$). Hence, the null hypothesis was rejected. This implies that firm size strengthens the relationship between liquidity management measures and financial performance of microfinance institutions. R 2 Δ of 3.1% implying that

firm size improves liquidity management and financial performance of microfinance institutions also confirmed this.

**H04c** stated that there is no significant moderating effect of firm age on the relationship between capital adequacy measures and financial performance of microfinance institutions in Kenya. The regression results of this model established that firm size positively moderated the relationship between capital adequacy measures and financial performance of microfinance institutions ($\beta$ = -.500, □ = .000 which is less than $\alpha = 0.05$), hence leading to the rejection of the null hypothesis. The moderating effect was also revealed by change in R squared ($R^2\Delta$ .04). This suggests that firm age facilitate the relationship between social capital adequacy measures and financial performance of microfinance institutions.

**Table 4.11: Multiple Regression Results for Testing Moderating Effects**

| | **Model 1 β (SE)** | **Model 2 β (SE)** | **Model 3 β (SE)** | **Model 4 β (SE)** | **Model 5 β (SE)** |
|---|---|---|---|---|---|
| (Constant) | .116 (.262) | -.114 (.203) | -.045 (.199) | -.012 (.194) | -.119 (.188) |
| **Control Variables** | | | | | |
| Firm Size | .022 (0.101) | 0.037 (0.075) | 0.039 (0.073) | 0.056 (0.071) | 0.102 (0.069) |
| **Main Effect** | | | | | |
| Zscore(Management Efficiency) | | 0.056 (0.066) | 0.060 (0.064) | -0.018 (0.066) | -0.08 (0.066) |
| Zscore(Liquidity Management) | | -0.1871 (0.100) | -0.098 (0.101) | 0.018 (0.104) | -0.235 (.119) |
| Zscore(Capital Adequacy) | | 0.672 (0.075) | 0.557 (0.081) | 0.460 (0.084) | 0.603 (0.089) |
| Zscore(Firm Age) | | 0.274 (0.081) | 0.147 (.088) | 0.126 (0.086) | 0.149 (0.083) |
| **Interaction term** | | | | | |
| X1 | | | -0.181 (0.058) | -0.046 (0.07) | 0.025 (0.069) |
| X2 | | | | -0.25 (0.076) | 0.098 (0.116) |
| X3 | | | | | -0.500 (0.129) |
| **Model Summary** | | | | | |
| R | .039 | .686 | .708 | .729 | .756 |
| R Square | .002 | .470 | .501 | .532 | .572 |
| Adjusted R Square | -.010 | .451 | .479 | .509 | .548 |
| St. Error of the Estimate | .99355334 | .73251773 | .71342680 | .69289245 | .66449266 |
| **Change Statistics** | | | | | |
| R Square Change | .002 | .037 | .030 | .031 | .040 |
| F Change | .126 | 11.504 | 9.840 | 10.744 | 15.056 |
| df1 | 2 | 1 | 1 | 1 | 1 |
| df2 | 167 | 163 | 162 | 161 | 160 |
| S. F Change | .882 | .001 | .002 | .001 | .000 |

**Source: Research Data (2022)**

### 4.7 Summary of Hypotheses Results

A final summary of the hypotheses results are as shown in table 4.12.

**Table 4.12: Hypothesis Testing**

| Hypothesis Formulated<br>**Main Effects** | **Beta**<br>**β** | **ρ**<br>**Values** | **Decision** |
|---|---|---|---|
| **$H_{01}$:** There is no significant effect of management efficiency measures on performance of microfinance institutions in Kenya. | .056 | .125 | Fail to Reject |
| **$H0_2$:** There is no significant effect of liquidity management measures on performance of microfinance institutions in Kenya. | -.1871 | .818 | Fail to Reject |
| **$H0_3$:** There is no significant effect of capital adequacy measures on performance of microfinance institutions in Kenya. | .672 | .000 | Reject |
| **Moderation: Firm Size** | | | |
| **H04a** Firm size does not moderate the relationship between management efficiency measures and financial performance of microfinance institutions in Kenya. | .025 | .002 | Reject |
| **H04b** Firm size does not moderate the relationship between liquidity management measures and financial performance of microfinance institutions in Kenya | .098 | .001 | Reject |
| **H04c** Firm Size does not moderate the relationship between capital adequacy measures and financial performance of microfinance institutions in Kenya | -.500 | .000 | Reject |

**Source, Research Data (2022)**

### 4.8 Discussion of the Research Findings

#### 4.8.1 Management Efficiency and Financial Performance

The first objective of the study was to determine the effect of management efficiency measures on the financial performance of Micro finance institutions in Kenya. It hypothesized that management efficiency measures have no significant effect on financial performance of Microfinance Institutions in Kenya. Findings of the study revealed a positive and insignificant association between management efficiency measures and performance of microfinance institutions ($\beta = .056$, $\rho = .125$) which is

more than $\alpha = 0.05$) implying that management efficiency measures do not result in increased financial performance. This finding is in agreement with extant literature (Barus, 2017). This finding echoes the results of Mugun, (2019). The results indicated that the relationship between management efficiency and ROA to be positive and significant. The same findings were established by Kaneza (2016) whose study established that Management efficiency had a positive effect or association with both ROA and ROE. It however contradicts the results by Momanyi (2016) which established that management efficiency had a negative influence on financial performance.

### 4.8.2 Liquidity Management and Financial Performance

The second objective of the study was to establish the effect of liquidity management measures on the financial performance of Microfinance institutions in Kenya. It hypothesized that liquidity management measures have no significant effect on financial performance of Microfinance Institutions in Kenya. Findings of the study revealed a negative and insignificant association between liquidity management and performance of microfinance institutions ($\beta = -.1871$, $\rho = .818$) which is more than $\alpha = 0.05$). This finding corroborate the results of a study by Vaita (2017) on the effect of liquidity on financial performance which concluded liquidity coverage ratio had no significant effect on ROE. Similarly, it supports the findings of a study by Lamberg and Valming (2009) which concluded that the adaptation of liquidity strategies do not have a significant impact on ROA. It however contradicts the results of a study by Achach (2021) and Kavale and Ali, (2016) which made the conclusion that Liquidity management had a positive and statistically significant impact on the financial performance.

### 4.8.3 Capital Adequacy and Financial Performance

The third objective of the study was to establish the effect of capital adequacy measures on the financial performance of Microfinance institutions in Kenya. The study hypothesized that capital adequacy measures have no significant effect on financial performance of Microfinance Institutions in Kenya. Results shows that there was a positive and significant association between capital adequacy measures and performance of microfinance institutions ($\beta$ = .672, $\rho$= .000 which is less than $\alpha$ = 0.05). This implies that capital adequacy measures result in increased financial performance.

The finding of this study resonates with that of Nestor, Okoyo and Leonard, (2018) which concluded that there is a positive and significant relationship between capital adequacy and financial performance of Nigerian banks. This result lends support to prior literature that examined capital adequacy-performance relationship (Barnor & Odonkor, 2012). Mathina, Jagogo and Wamugo (2022) was also of the same opinion that capital significantly influenced financial performance of commercial banks in Kenya. The findings however contradict the findings of whose study concluded that financial performance is not majorly influenced by capital adequacy and Lekaaso, Cherono and Rintari (2020) which found out that that capital adequacy did not have a significant influence on the financial performance of SACCOs in Samburu County.

### 4.8.4 The Moderating Effect of Firm Age on Financial Performance

The fourth objective of the study was to determine the moderating effect of firm age on the relationship between management efficiency measures and financial performance of Microfinance institutions in Kenya. It hypothesized that there is no significant moderating effect of firm age on the relationship between management

efficiency measures and financial performance of microfinance institutions in Kenya. The study indicated that the interaction term between management efficiency and firm age was positive and significant (β=.025; p<0.05). This imply that firm age moderates the relationship between management efficiency and financial performance.

The study also sought to establish the moderating effect of firm age on the relationship between liquidity management measures and financial performance. The study hypothesized that there is no significant moderating effect of firm age on the relationship between liquidity management measures and financial performance of microfinance institutions in Kenya. The study indicated that the interaction term between liquidity management and firm age was positive and significant (β=.098; p<0.05). Findings reveal that firm age moderates the relationship between liquidity management measures and financial performance.

The sixth objective of the study was to establish the moderating effect of firm age on the relationship between capital adequacy measures and financial performance of Microfinance institutions in Kenya. It was hypothesized that there is no significant moderating effect of firm age on the relationship between capital adequacy measures and financial performance of microfinance institutions in Kenya. The study indicated that the interaction term between capital adequacy measures and firm age was positive and significant (β=-.500; p<0.05). The regression results of this model established that firm age negatively moderated the relationship between capital adequacy measures and financial performance of microfinance institutions

# CHAPTER FIVE

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 5.0 Introduction

This chapter discusses the empirical results of the study as presented in chapter four. It presents a summary of the results of the hypothesis testing. Managerial and theoretical implications are then discussed, as well as the limitations of the study and suggestions for further research.

## 5.1 Summary of Findings

The basic premise of this study was to determine the effect of selected determinants and moderating effect of firm age on financial performance of Microfinance institutions in Kenya. The study was conducted across 34 MFIs in Kenya for the period 2012 to 2020. This involves the investigation to determine the effect of management efficiency, liquidity management measures and capital adequacy measures on the financial performance of Microfinance institutions in Kenya. In addition, the study also sought to establish how firm age moderated the relationship between management efficiency, liquidity management and capital adequacy requirement. The theories that supported this study were public interest theory, buffer theory of capital adequacy and regulatory capture theory. The results of the study advanced knowledge on the role of firm age in enhancing financial performance of MFIs. The summary and discussion followed the study hypothesis formulated in chapter one and highlight key findings of the study.

### 5.1.1 Effect of Management Efficiency Measures on Financial Performance

The study had proposed the null hypothesis;

> $H_{o1}$: *Management efficiency measures have no significant effect on financial performance of Microfinance Institutions in Kenya*

This relationship was found to be positive and insignificant ($\beta = 0.056$, $p > 0.05$). The study therefore failed to reject the hypothesis and the study concluded that management efficiency measures had a positive but insignificant effect on performance of microfinance institutions in Kenya. The coefficient 0.056 implies that management efficiency measures explain the variability in financial performance of microfinance institutions in Kenya. This means that an increase in management efficiency measures leads to a improved in financial performance of microfinance institutions.

### 5.1.2 Effect of Liquidity Requirement on Financial Performance

The study had proposed the null hypothesis;

> $H_{o2}$: *Liquidity management measures have no significant effect on financial performance of Microfinance Institutions in Kenya*

This relationship was found to be positive and insignificant ($\beta = -0.1871$, $p > 0.05$). The study therefore failed to reject the hypothesis and the study concluded that liquidity management measures had a negative but insignificant effect on performance of microfinance institutions in Kenya. The coefficient -0.1871 implies that liquidity management measures explain the variability in financial performance of microfinance institutions in Kenya. This means that liquidity management negatively affect financial performance of microfinance institutions

### 5.1.3 Effect of Capital Adequacy Measures on Performance

The study had proposed the null hypothesis;

> $H_{o3}$: *Capital adequacy measures have no significant effect on financial performance of Microfinance Institutions in Kenya*

Findings of the study established a positive and significant effect ($\beta = 0.672$, $p < 0.05$). The study therefore rejects the hypothesis and the study concluded that capital adequacy measures had a positive and significant effect on performance of microfinance institutions in Kenya. The coefficient 0.672 implies that management efficiency measures significantly explain the variability in financial performance of microfinance institutions in Kenya. This means that an increase in management measures leads to an increase in the performance of microfinance institutions.

### 5.1.4 Moderating Effect of Firm Age on the Relationship between Selected Determinants

The study sought to determinants how firm age moderated the relationship between selected determinants and financial performance of microfinance institutions in Kenya. The study found that the firm age had a significant moderating effect on the relationship between selected determinants and financial performance of microfinance institutions in Kenya. Specifically, the study found that firm age had a significant effect on the relationship between both management efficiency, liquidity management as well as capital adequacy and the prediction of financial performance.

Hypothesis four (a) postulated There is no significant moderating effect of firm age on the relationship between management efficiency measures and financial performance of microfinance institutions in Kenya. The results of the study that interaction term between firm age and management efficiency was positive and

significant ((β= 0.025 p< 0.05). The finding led the study to reject the stated null hypothesis. Thus, accepted the alternative hypothesis that concluded that firm age has a significant moderating effect on the relationship between management efficiency and financial performance of MFIs in Kenya.

Hypothesis four (b) postulated There is no significant moderating effect of firm age on the relationship between liquidity management measures and financial performance of microfinance institutions in Kenya. The results of the study that interaction term between firm age and management efficiency was positive and significant ((β= 0.098, p< 0.05). The finding led the study to reject the stated null hypothesis. Thus, accepted the alternative hypothesis that concluded that firm age has a significant moderating effect on the relationship between liquidity management and financial performance of MFIs in Kenya.

Hypothesis four (c) postulated There is no significant moderating effect of firm age on the relationship between capital adequacy measures and financial performance of microfinance institutions in Kenya. The results of the study that interaction term between firm age and adequacy measures was negative and significant ((β= -0.500, p< 0.05). The finding led the study to reject the stated null hypothesis. Thus, accepted the alternative hypothesis that concluded that firm age has a significant moderating effect on the relationship between capital adequacy and financial performance of MFIs in Kenya.

## 5.2 Conclusion

The following conclusions are made from the study. Capital adequacy measures had a positive and significant effect on performance of microfinance institutions in Kenya. The study concluded that capital adequacy affects the financial performance of

Microfinance banks greatly. In this case, the study deduced that the core capital/ total risk weighted assets (TRWA) ratio of 10% and total capital/ total risk weighted assets (TRWA) ratio of 12% are high; and the capital of Kshs. 60 million for nationwide Microfinance banks is high while minimum capital of Kshs. 20 million for community Microfinance banks is moderate. The study deduced that the ratio of core capital/ total risk weighted assets (TRWA) of 10% lead to reduced financial performance and that the ratio of deposit liabilities/ total risk weighted assets (TRWA) of 8% leads to reduced financial performance

The study also concludes that firm age moderates the relationship between capital adequacy measures; liquidity requirements; management efficiency and financial performance of Microfinance institutions in Kenya.

### 5.3 Recommendations of the Study.

The study provides valuable recommendations to both theory and practice. The researcher believes that these recommendations will create vital insights to both management, scholars and practitioners and help fill the knowledge gap in the model of selected determinants affecting financial performance of microfinance institutions in the context of the moderating role of firm age. The following sections highlights the recommendations

#### 5.3.1 Theoretical Implications

This study contributes conceptually to developing theoretical links and improving the theoretical rationale for the existing links. More specifically, the study contributes to extending the body of knowledge with regard to the moderation of firm age on the relationships between selected determinants and financial performance of microfinance institutions. The results show that firm age moderates the relationship.

Moreover, despite the abundant literature, to the author‘s best knowledge, no studies have examined the linkages between the moderating effect of firm age on the relationship between selected determinants and financial performance in the context of microfinance institutions. Thus, the current study is one of the pioneer studies that link firm age as a moderator between selected determinants and performance of microfinance institutions.

### 5.3.2. Policy implication

The study findings have important implications for future policy formulation by the Kenyan Government in the financial sector and in particular the microfinance sub-sector. The MFls should focus more effort on formulating plans, strategies and policies that directly enhance and influence asset quality and other factors, which directly influence asset quality to achieve an improvement on financial performance besides working on improving the overall organization efficiency.

The CBK should consider reviewing the regulatory framework to allow for more ways of resource mobilization by the microfinance institutions. It might lead to performance improvement generating more funds that will allow for cheaper funds to the clients. The increase in non-performing loans as witnessed will go down and customers assets used as collateral will not be at risk.

### 5.3.3 Managerial Implications

It is recommended that microfinance institutions managers must develop systems and operational strategies that will minimize overreliance on debt to safeguard the equity at risk. It is recommended that they should establish proper and seamless loan documentation systems that will thoroughly scrutinize the authenticity of clients’ collateral to minimize the rates of loan defaults by the customers. It is recommended

that one, the MFI managers should keep up pursuing the objectives of the microfinance institutions and not their own objectives.

### 5.4 Suggestions for Further Research

The study was not exhaustive of the determinants affecting the financial performance of microfinance institution in Kenya. Thus, the study recommends that further studies be done incorporating other variables like growth opportunities, industry practices, and political stability among other variables on the financial performance of microfinance institutions in Kenya. This will enrich policymakers with tools to use when maximizing shareholders' wealth. Future research could consider other items as moderating variable. Moreover, other researchers should also consider including more control variables such as leverage as they may have an implication towards microfinance performance.

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# APPENDICES

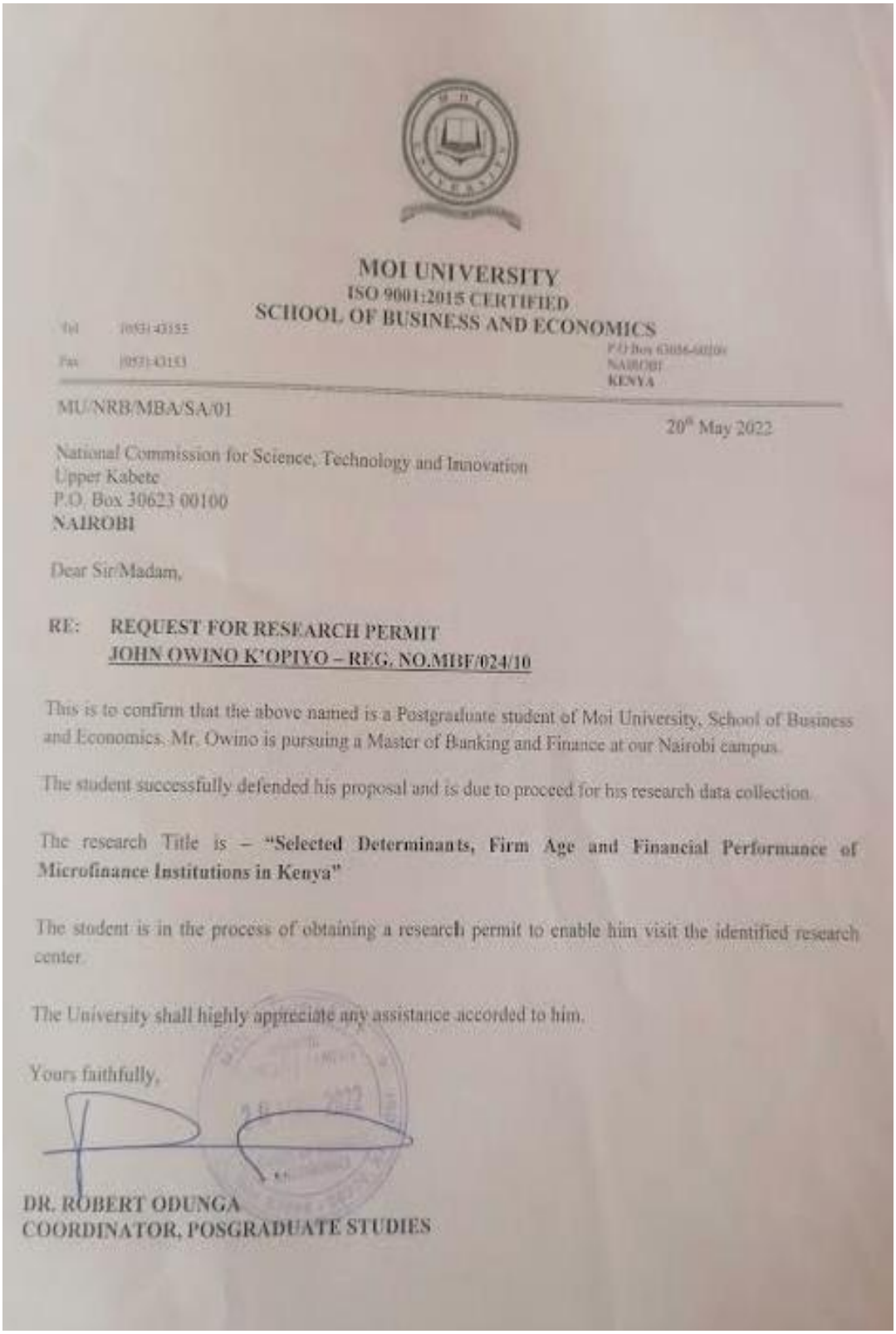
## Appendix I: Data Collection Sheet.

| Years | Financial Performance | | Management Efficiency | | Capital Adequacy | | Liquidity Requirement | |
|---|---|---|---|---|---|---|---|---|
| | PAT | Shareholders' Equity | Total Expenses | Total Assets | Core Capital | TRWA | Total Loans | Total Deposit |
| 2012 | | | | | | | | |
| 2013 | | | | | | | | |
| 2014 | | | | | | | | |
| 2015 | | | | | | | | |
| 2016 | | | | | | | | |
| 2017 | | | | | | | | |
| 2018 | | | | | | | | |
| 2019 | | | | | | | | |
| 2020 | | | | | | | | |

**Appendix II: Regulated MFIS**

| No. | Microfinance institutions Regulated by Central Bank of Kenya |
|---|---|
| 1 | Faulu Microfinance Bank Limited |
| 2 | Kenya Women Microfinance Bank Ltd |
| 3 | Uwezo Microfinance Bank Limited |
| 4 | SMEP Microfinance Bank Limited |
| 5 | Remu Microfinance Bank Limited |
| 6 | Rafiki Microfinance Bank Limited |
| 7 | Century Microfinance Bank Limited |
| 8 | SUMAC Microfinance Bank Limited |
| 9 | U&I Microfinance Bank Limited |
| 10 | Daraja Microfinance Bank Limited |
| 11 | Choice Microfinance Bank Limited |
| 12 | Cartis Microfinance Bank Limited |
| 13 | Maisha Microfinance Bank Limited |
| 14 | Jitegemea Credit Scheme |
| 15 | Juhudi Kilimo Co.Ltd |
| 16 | Kenya Agency for Development & enterprise Technology (KADET) |
| 17 | Kenya Ent Empowerment Fund (KEEF) |
| 18 | Micro Africa Ltd |
| 19 | Milango Financial Services |
| 20 | Molyn Credit Ltd |
| 21 | Musoni Kenya Ltd |
| 22 | Opportunity Kenya |
| 23 | PWDP |
| 24 | Platinum Credit Limited |
| 25 | SISDO |
| 26 | Springboard Capital |
| 27 | Taifa Options Microfinance |
| 28 | Women Enterprise Solutions |
| 29 | Yehu Microfinance Trust |
| 30 | Youth Initiatives – Kenya (YIKE) |
| 31 | Greenland Fedha Ltd |
| 32 | ECLOF Kenya |
| 33 | BIMAS |
| 34 | AAR Credit Services |

**Appendix III: Moi University Letter**



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NAIROBI
KENYA

MU/NRB/MBA/SA/01

20th May 2022

National Commission for Science, Technology and Innovation
Upper Kabete
P.O. Box 30623 00100
**NAIROBI**

Dear Sir/Madam,

**RE: REQUEST FOR RESEARCH PERMIT**
**JOHN OWINO K'OPIYO – REG. NO.MBF/024/10**

This is to confirm that the above named is a Postgraduate student of Moi University, School of Business and Economics. Mr. Owino is pursuing a Master of Banking and Finance at our Nairobi campus.

The student successfully defended his proposal and is due to proceed for his research data collection.

The research Title is – **"Selected Determinants, Firm Age and Financial Performance of Microfinance Institutions in Kenya"**

The student is in the process of obtaining a research permit to enable him visit the identified research center.

The University shall highly appreciate any assistance accorded to him.

Yours faithfully,

**DR. ROBERT ODUNGA**
**COORDINATOR, POSGRADUATE STUDIES**

## Appendix IV: Research Licence

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **530588**

Date of Issue: **22/October/2022**

**RESEARCH LICENSE**

**This is to Certify that Mr.. John Owino K'opiyo of Moi 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: SELECTED DETERMINANTS, FIRM AGE AND FINANCIAL PERFORMANCE OF MICROFINANCE INSTITUTIONS IN KENYA for the period ending : 22/October/2023.**

License No: **NACOSTI/P/22/21270**

**530588**

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

**See overleaf for conditions**

**THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)**

Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

**The National Commission for Science, Technology and Innovation**, hereafter referred to as the Commission, was the established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

**CONDITIONS OF THE RESEARCH LICENSE**

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
    i. Endanger national security
    ii. Adversely affect the lives of Kenyans
    iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
    iv. Result in exploitation of intellectual property rights of communities in Kenya
    v. Adversely affect the environment
    vi. Adversely affect the rights of communities
    vii. Endanger public safety and national cohesion
    viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. The license any rights thereunder are non-transferable
5. The Commission reserves the right to cancel the research at any time during the research period if in the opinion of the Commission the research is not implemented in conformity with the provisions of the Act or any other written law.
6. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research.
7. Excavation, filming, movement, and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
8. The License does not give authority to transfer research materials.
9. The Commission may monitor and evaluate the licensed research project for the purpose of assessing and evaluating compliance with the conditions of the License.
10. The Licensee shall submit one hard copy, and upload a soft copy of their final report (thesis) onto a platform designated by the Commission within one year of completion of the research.
11. The Commission reserves the right to modify the conditions of the License including cancellation without prior notice.
12. Research, findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time.
13. The Licensee shall disclose to the Commission, the relevant Institutional Scientific and Ethical Review Committee, and the relevant national agencies any inventions and discoveries that are of National strategic importance.
14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

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