

**EFFECT OF CAPITAL ADEQUACY ON THE FINANCIAL
PERFORMANCE OF MICROFINANCE BANKS IN KENYA**

SUBMITTED BY

KEVIN KIBUNA NDEGWA

D61/81283/2015

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

NOVEMBER, 2018

DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

Signed Date.....

KEVIN KIBUNA NDEGWA

D61/81283/2015

This Research Project has been submitted for examination with our approval as the university supervisors.

Signed Date.....

MR. DOMINIC MURAGE

Lecturer, Department of Finance and Accounting

School of Business, University of Nairobi

Signed Date.....

DR. MIRIE MWANGI

Chairman, Department of Finance and Accounting

School of Business, University of Nairobi

ACKNOWLEDGEMENT

I would like to thank God for giving me the strength and peace of mind towards the completion of this study. He has been my comforter, encourager and my pillar of strength.

Special thanks goes to my supervisor, Mr. Dominic Murage, for his support and patience throughout the study. For the amount of time he put in towards shaping the final project through guidance, invaluable input, positive criticism and contribution. Thank you so much.

Finally I give a special thanks to my wonderful family. Their support was well worth it.

DEDICATION

This study is dedicated to my family for the overwhelming support, prayers and encouragement they provided for me during the duration of my study. To my parents who provided a strong foundation for me to not only succeed in education but also in other areas of my life.

TABLE ON CONTENTS

DECLARATION	ii
ACKNOWLEDGMENT	iii
DEDICATION	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABBREVIATIONS AND ACRONYMS	x
ABSTRACT	xi
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the Study	1
1.1.1 Capital Adequacy.....	2
1.1.2. Financial Performance.....	3
1.1.3 Relationship between Capital and Financial Performance.....	4
1.1.4. Microfinance Banks in Kenya.....	6
1.2 Research Problem	7
1.3 Objective of the Study	9
1.4 Value of the Study	9
CHAPTER TWO: LITERATURE REVIEW	11
2.1 Introduction	11
2.2 Theoretical Framework	11
2.2.1 Capital Buffer Theory.....	11
2.2.2 Agency Costs Theory.....	13
2.2.3 Profit Incentive Theory.....	15
2.3 Determinants of financial performance of Microfinance Banks.....	16
2.3.1 Capital.....	16
2.3.2 Asset Quality.....	16
2.3.3 Management Efficiency.....	17
2.3.4 Liquidity.....	18
2.3.5 Size.....	18

2.4 Empirical Literature Review.....	19
2.5 Conceptual Framework.....	22
2.6 Summary of Literature Review and Knowledge Gaps.....	23
CHAPTER THREE: RESEARCH METHODOLOGY	25
3.1 Introduction	25
3.2 Research Design.....	25
3.3 Population of the Study	26
3.4 Data and Data Collection Instruments.....	26
3.5 Data Analysis.....	27
3.5.1 Diagnostic Tests.....	27
3.5.1.1 Panel Data Normality Test.....	27
3.5.1.2 Panel Multicollinearity Test.....	28
3.5.1.3 Panel Unit Root Test.....	29
3.5.1.4 Hausman Test.....	29
3.5.2 Conceptual Model.....	29
3.5.3 Analytical Model.....	30
3.5.4 Tests of Significance.....	31
3.5.5 Parametrization and Measurement.....	31
CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND	
INTERPRETATIONS.....	33
4.1 Introduction	33
4.2 Descriptive Statistics.....	33
4.3 Panel Data Diagnostic Tests.....	35
4.3.1 Panel Data Normality Test.....	35
4.3.2 Panel Unit Root Test.....	37
4.3.3 Panel Multicollinearity Test.....	39
4.3.4 Hausman Test.....	40
4.4 Correlation Analysis.....	41
4.5 Panel Model Regression Results.....	43
4.6 Discussion of the Findings.....	45

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS.....	47
5.1 Introduction	47
5.2 Summary.....	47
5.3 Conclusion	48
5.4 Recommendation.....	50
5.5 Limitations of the study.....	51
5.6 Suggestions for further research.....	51
REFERENCES.....	53
APPENDICES.....	65
Appendix I.....	65
Appendix II.....	66
Appendix III.....	67

LIST OF TABLES

Table 4.1 Descriptive statistics.....	24
Table 4.2 Panel data Normality test results.....	26
Table 4.3 Post elimination of outliers Panel Variables Normality Test Results.....	26
Table 4.4 Panel Unit Root Test results.....	27
Table 4.5 Variance Inflation Factors Test results.....	27
Table 4.6 Hausman Test results.....	29
Table 4.7 Pairwise correlation matrix results.....	29
Table 4.8 Panel Fixed Effects Regression Results.....	31

LIST OF FIGURES

Figure 2.1 Conceptual Framework.....	17
--------------------------------------	----

ABBREVIATIONS AND ACRONYMS

ADF	Augmented Dickey Fuller
CAR	Capital Adequacy Ratio
CBK	Central Bank of Kenya
DRD	Descriptive Research Design
EPS	Earnings per share
FEM	Fixed Effects Model
MFB	Microfinance Banks
MFI	Microfinance Institutions
NPLs	Non-Performing Loans
OLS	Ordinary Least Squares
PIT	Profit Incentive Theory
PP	Phillips-Perron
REM	Random Effects Model
ROA	Return on Assets
ROE	Return on Equity
TRWA	Total Risk Weighted Assets

ABSTRACT

Regulated financial institutions are required to strictly adhere to the prescribed minimum statutory requirement on capital adequacy set by the regulator. The minimum standards on capital adequacy are set to ensure a stable and sound financial sector. The key concern for microfinance banks is ensuring that they meet the minimum required capital and also hold sufficient capital to compensate for the risks they are exposed to. This study sought to establish the effect of capital adequacy on the financial performance of microfinance banks in Kenya. The study adopted descriptive research design and the target population was thirteen microfinance banks in Kenya. The study period was for five years from 2013 to 2017. Secondary data was collected for only eight microfinance banks due to the availability of data for a five year period. A regression model (fixed effect model) was developed to determine the relationship between the dependent variable (financial performance) and the independent variable (capital adequacy) while the control variables used were asset quality, management efficiency, liquidity and size. The results indicated that the relationship between capital adequacy and ROA is positive and significant. Also, the relationship between size and ROA is shown to be positive but not significant. Liquidity and management efficiency are shown to have a negative and significant relationship with ROA. The study further show the relationship between asset quality and ROA to be negative and insignificant. The study concluded that capital adequacy, liquidity and management efficiency significantly affects financial performance of microfinance banks in Kenya while capital adequacy was found to have a positive relationship with financial performance. This indicates that the higher the capital held by a microfinance bank the higher the profitability. The study recommended that the microfinance banks' regulator, CBK, ensure that all microfinance banks are well capitalized and meet the minimum capital adequacy ratios.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Microfinance is offering access of financial services to the low income and underprivileged people through the normal formal financial sector by structuring the products and services into small-scale. Microfinance is an instrument that can be used to fight poverty, however, to escape poverty demand for funds must meet supply of funds (Helms, 2006). Muriu (2011) noted that to maintain a stable micro-banking system it is important to have a microfinance industry that is profitable. Lower profits reduce the capability of MFIs to soak up negative economic shocks eventually affecting their solvency. MFIs' profitability is determined by how they are operated by management considering the prevailing environment, competitive strategies, the quality of management, risk management capabilities and their capitalization. Muriu (2011) indicated that firm value is affected by changes in financial leverage. During good economic times return on equity capital can be improved by high debt ratio. However, high debt ratio poses a risk on the firm's earnings stream. Furthermore, pressure is exerted on MFI management to increase profitability and improve their capacity to honour debt obligations due to the presence of debt.

Theoretically, capital is seen as an enabler of banks to undertake additional risks since an adequate capital provides stability and cushion against adverse economic shock. Capital Buffer Theory suggests that banks aim at having excess capital of the minimum required. Excess capital aides a bank in absorbing adverse economic shocks and therefore reduces the possibility of failure (Berger, 1995). Profit Incentive Theory argue that use of commercial funding by MFIs tend to raise outreach, efficiency and cost consciousness.

According to Aghion and Morduch (2005) MFIs with a motive of making a profit will tend to increase their revenues while keeping their operational costs at a minimum to ensure they are able to offset their expenses and make a profit.

MFIs in Kenya are regulated by Central Bank of Kenya and are of two kinds, nationwide and community. The major source of funding for microfinance banks in Kenya is customer deposits which accounted for 58% of the total funding as at December 2015 (CBK, 2015). According to Kiiru (2013) debt or borrowing adversely affected MFIs' financial performance. However, Muriu (2011) noted that MFIs that were more profitable had a capital structure that incorporated higher amounts of debt.

1.1.1 Capital Adequacy

Capital adequacy demonstrate the efficiency and capacity of banks to manage their risks by measuring and controlling it (Almazari & Alamri, 2017). Adequate capital is defined as the amount that cushions banks from economic shocks by absorbing losses in the event they occur (Musyoka, 2017). According to Fatima (2014), sufficient capital adequacy make certain that a bank has an appropriate level of capital for expansion of its business and its net assets are sufficient cushion it during financial downturns without risk of insolvency.

According to Almazari and Alamri (2017) in the financial sector capital adequacy ratio (CAR) is considered a crucial indicator in assessing the financial solvency of banks. In promoting financial safety and soundness and efficiency in banking and also to aide in protecting depositors' money the ratio is regarded as a safety valve. CAR indicates inner strength of financial institutions to combat economic shocks and shows resiliency of financial institutions during crisis situations (Nazir & Sangmi, 2010). It is the ratio that

protects financial institutions from insolvency and hard economic times (Fatima, 2014). Adequate capital adequacy ratio easily helps banks in absorbing unexpected losses and reduce their cost of funds which eventually lead to a marked improvement in profitability. There are different ways of measuring capital adequacy. Different variables are used in the measurement. These include loan loss provisions against total assets, log of total assets, overhead expenses against total assets, tax against profit before tax, loans to assets, shareholders equity against total assets, total revenue against number of employees and non-interest income against total assets. The different measures aim to assess capital adequacy in different perspectives (Otwani et al., 2017). According to Fatima (2014) CAR is the amount of capital of a bank in relations to the total assets that are risk weighted and current liabilities. Risk weighted assets are the total assets of the bank adjusted for risks. It portrays the capability of the bank to offset liabilities as they arise including market risk, credit risk and operational risk.

1.1.2 Financial Performance

Financial performance is a firm's capacity to generate profits. Profit is total income generated by a firm at a given trading period. A firm is said to be operating efficiently when it is capable of generating profits (Dietricha & Wanzenried, 2009). A profitable firm is capable of generating profits. A profitable firm is capable of generating adequate return on capital (Harward & Upton, 1961). Therefore, a firm's financial performance is its capability to utilise the resources at its disposal to generate sustainable profits that will in addition strengthen its capital base by retaining earnings to ensure future profitability and maximise shareholders' wealth.

Financial performance indicators include profitability and return, risk indicators comprise interest coverage ratio and indicators of level and structure such as liquidity solvency, leverage and assets turnover (Sichigea, Ganea & Tupangiu, 2011). Leverage, risk taking, efficiency and earnings are considered key drivers to measurement of financial performances (Kuria, 2013). European Central Bank (2010) in measuring financial performance has classified the measures in three major categories as traditional, market based and economic measures. Traditional measures include ROE and ROA. The Economic measures aim at evaluating economic returns derived by a firm's economic assets. Market based measures are determined on the value placed by capital market on a firm's performance in relation its accounting and economic value. In this study, the financial performance will be measured by use of ROE.

According to Simerly and Li (2000), scholars and practitioners have had a challenge in measuring firm performance. Performance is considered multidimensional construct and therefore understanding of performance relative to constructs of interest cannot only be provided by any single index (Chakravathy, 1986). Laing and Dunbar (2015) established that traditional accounting ratios like earnings per share (EPS) and ROA were found to provide information on earnings but were criticised for failing to recognise differences in earnings capability because of the cost of capital having variations (Jackson, 1996). This is crucial when assessing earnings relevance to shareholder wealth.

1.1.3 Relationship between Capital Adequacy and Financial Performance

The amount of core capital was considered by Mathuva (2009) to be a factor that contributes to banks' profitability. He indicated that the capital enabled banks to expand

their deposit base and advance more loans to the public thereby generating higher revenues and eventually higher profits. Adequate capital is considered a core driver of earnings of any financial institution thus has been of interest to many studies and regulators (Demirguc-Kunt, Merrouche & Detragiache, 2013).

Bank profitability as was noted by Berger and Bouwman (2013) is directly associated and considerably impacted on by capital. They indicated that banking regulators demand banks with international operations to have high level of capital for them to be in a position to manage the extra risks with operations of trading globally. A study of commercial banks in Europe showed a direct association between bank profits and capital levels (Goddard, Molyneux & Wilson, 2004).

According to Gropp and Heider (2010) earnings of local banks had a connection with the core capital held. They asserted that banks with high capital generate more profits because of their ability to invest in projects that offer high returns due to having sufficient financial resources. They emphasized that capital of banks play a key role in their performance, as undercapitalized banks perform poorly in relation to banks with higher capital.

A study on the Nigerian banking sector was conducted by Onaolapo and Olufemi (2012). On selected banks they examined how the banks are affected by conditionality of capital adequacy. They found that in the Nigerian banking sector all the indicators of performance tested such as Efficiency Ratios, Returns on Capital Employed together with Returns on Assets their impact on the Capital Adequacy Ratio was not significant.

For banks' perpetual continuity as a going concern capital is critical and essential (Athanasoglou, Brissimis & Delis, 2005). To ensure a bank's safety and soundness and

build confidence and trust of customers a minimum amount of capital should be maintained. Maintaining adequate amount of capital banks are capable of effectively pursuing viable opportunities and also possess flexibility and sufficient time in handling unexpected losses thereby achieving increased profitability.

1.1.4 Microfinance Banks in Kenya

Kenya's MFBs supports investments in small-scale that generates revenues that yields sufficient return on the investment from unrealized market activities (Kiiru, 2013). Microfinance Act 2006 of Kenya sets requirements to streamline the operations of MFBs. It sets minimum statutory capital requirements together with minimum statutory liquid assets, licensing conditions, stipulates time of submission of financial accounts and returns to Central Bank, guides supervision conducted by Central Bank and sets limits on credit facilities. The licensed MFBs accept funds from the public whilst contributing to the alleviation of poverty and still in compliance with minimum regulatory requirement of financial safety and soundness.

MFBs in Kenya are of two kinds. A nationwide MFB is one licensed to engage in microfinance business of deposit-taking in any particular area of Kenya while a community MFB is restricted to engage in microfinance business of deposit-taking within only one Government Administrative District, Division or a region specified by the Central Bank (CBK, 2015). Currently, there are thirteen Microfinance Institutions in Kenya which include Faulu MFB, Kenya Women MFB, Rafiki MFB, Remu MFB, SMEP MFB, Uwezo MFB, Century MFB, SUMAC MFB, Caritas MFB, U & I MFB, Daraja MFB, Maisha MFB and Choice MFB. All these MFBs have their Headquarters in Nairobi (CBK, 2017).

Holding capital adequacy ratio that is regarded as high indicates that financial institutions are being overly cautious and are foregoing opportunities that could be profitable. This signifies a relationship between equity to asset ratio and financial performance that is negative (Goddard et al., 2004). Banks that exhibit a high ratio of equity to assets will generally tend not to source for external financing due to high profits. Well capitalized financial institutions will therefore post higher profitability as compared to their peers that are undercapitalized (Staikouras & Wood, 2005).

1.2 Research Problem

The capital held by banks act as shield against losses arising from unexpected risks. Therefore, capital adequacy ratios are imperative to gauge the solvency of banks, their safety and soundness from unexpected events that may occur due to risks such as credit and liquidity (Rime, 2001). Capital buffer theory argues that when banks approach the required minimum level of capital they continue to boost their capital ratio and reduce risk with the aim of avoiding costs associated with regulation prompted by violation of the statutory capital requirements thereby negatively affecting the profits (Whalley & Milne, 2002). This is supported by Agency theory which states that regulators of MFIs may set minimum equity capital with the aim of deterring taking unnecessary risks, consequently, affecting directly the costs associated with agency relationship and ultimately impacting on the profits. However, Profit incentive theory states that commercially funded MFIs with a motive of making a profit will tend to increase their revenues while keeping their operational costs at a minimum to ensure they are able to offset their expenses and make a profit (Aghion & Morduch, 2005).

Outreach and sustainability are some of the challenges experienced by MFIs which require sufficient funding to address. Of late, MFIs have been pressurized to stop relying on grant funding and seek commercial funding and also concentrate on operational efficiency (Aghion & Morduch, 2005). MFIs in Kenya mostly use the deposits they collect from customers to fund their advances to customers. The other main source of funding are borrowings. According to Orua (2009) when long term debt was employed as capital MFIs posted satisfactory performance. However, when total debt was used MFIs financial performance was negatively affected.

Generally, a relationship that is positive exists between banks' capital and their own financial performance (Gul et al., 2011). Soundness and strength of banks is reflected by higher capitalization. According to Repullo (2004) in his study, granting credit the probability of a bank to act prudently is more certainly to reduce given a level of capital that is high. This can be challenged since the study has been done at a different jurisdiction from this study. Daher and Le Saout (2002) found that MFIs are more profitable when they are well capitalized.

During bank failure shareholders incur losses given high magnitudes of capital. Further, Goddard et al. (2004) in his study indicated a negative relationship existed between profitability and capital. Banks that are overcapitalized suggest that there are untapped opportunities for investments. The study did not consider the impact of regulation on maintaining a minimum capital ratio. Altunbas et al. (2007) noted that European banks that were inefficient held more capital. This is supported by Aymen (2013) who noted that the relationship of ROE and capital was not statistically significant. In addition, Ayaydin and Karakaya (2014) found a relationship that was negative and significant between ROE and

the capital. The studies contradict each other could be because they failed to consider the effects of control variables.

Previous empirical researches have majorly centred on the immediate effect of capital on financial performance of MFIs with limited research studies testing controlling or moderating effect of asset quality, management efficiency and liquidity. Moreover, previous studies done in Kenya have focused on effect of capital structure on financial performance of MFIs. Additionally, the previous studies have not assessed the role played by prudential regulation where a minimum statutory capital requirement has been imposed. The study will seek to fill the gaps identified. The research question for the study is: Does Capital Adequacy affect the Financial Performance of Microfinance Banks in Kenya?

1.3 Objective of the Study

To establish the effect of capital adequacy on the financial performance of MFBs in Kenya.

1.4 Value of the Study

The study would provide an invaluable insight to various stakeholders. The management of MFBs will derive important information from this study. The findings can be used by the MFBs to determine how efficient they can allocate their capital and increase their profitability while also maximizing shareholder wealth. The study will also help the MFBs assess their capital requirements to expand their business.

Policy makers would obtain knowledge of how capital will impact the performance of MFBs thereby help them articulate policies geared towards enhancing the performance of MFBs through regulation that encourages stability of MFBs. It will help policy makers

appreciate the benefit of creating policies that aim at maintaining minimum capital requirement that ensure the MFBs hold adequate capital that are sufficient to withstand economic shocks during times of hard economic conditions.

The Study will be beneficial to the academic community. It will provide a body of knowledge on capital and its effect on MFBs' financial performance. Furthermore, this will act as a basis for further research into the main source of funding for MFBs in Kenya. It will, also, provide a point of reference for other researchers who will want to expound on the topic and cover a longer study period.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter reviews literature on theories relating to capital. The chapter also summarizes other researchers' information based on their research in same relevant field of study by highlighting their methodology and findings of their work. In conclusion, the theoretical framework and empirical studies are summarized and research gap is identified.

2.2 Theoretical Framework

There are numerous theories that describe effect of capital. This study will look into three theories.

2.2.1 Capital Buffer Theory

The proponents of buffer theory were Rob and Calem (1996). Buffer refers to the capital that exceeds the minimum statutory requirement. When banks approach the required minimum level they continue to boost their capital ratio and reduce risk with the aim of avoiding costs associated with regulation prompted by violation of the statutory capital requirements. The main assumptions are banks cannot adjust their capital base and at the same time adjust their risk profile. Breaching the minimum statutory capital requirements will trigger the regulator to undertake remedial actions which could be costly (Whalley & Milne, 2002).

The foundation of the theory is based on dependability and reliability on capital and variability of capital adequacy ratio to aide in the long term planning. If a bank is incapable

of mobilizing deposits it will be faced with the possibility of capital erosion (Almazari & Alamri, 2017). In such a situation, the bank may experience a variability of capital adequacy ratio. Therefore, to avoid breaching the minimum statutory capital requirements given a volatile capital adequacy ratio the theory suggests that banks are more willing to maintain a buffer of capital exceeding the minimum required (Whalley & Milne, 2002). This is in preparation of under capitalization, if indeed it materializes, and avoiding penalties, sanctions and possibility of receivership by the regulator who regard violation of minimum statutory capital requirements as contravention of the banking legislation.

The theory stipulates that banks aim at having excess capital of the minimum required. Regulators support the use of countercyclical buffers in order to reduce lending which is pro-cyclical in nature by having regulations targeting banks to maintain adequate capital buffers (Von Thadden, 2004). The theory suggests that banks will aim to boost their capital buffer if they are low by seeking additional capital while those having excess capital buffers will maintain them at that level. Excess capital aides a bank in absorbing adverse economic shocks thus reduces the possibility of failure (Rime, 2001). According to Levine and Laeven (2009) a rise in portfolio risk prompts a bank to raise additional capital and maintain the capital buffer at a high level which relate to performance of the banks and capital adequacy. Whalley and Milne (2002) noted banks with capital slightly above the minimum requirement are prompted to raise additional capital and lower risk to avoid a penalty by the regulatory authority for non-compliance with minimum statutory capital requirement.

According to Berger (1995) by holding excess capital banks are capable of taking advantage of investment opportunities in the near future. Undercapitalized banks may

prevent financial stability and increase systemic risk in the event of financial distress. However, banks with sufficient capital including excess capital buffers will experience no impact on their behavior in case there are changes in capital requirements. Therefore, holding a buffer helps banks to avoid their own capital falling under the minimum statutory requirement (Rime, 2001).

The theory is relevant to the study due to the fact the MFBs are regulated by CBK and is a requirement to hold minimum prescribed capital. Violation of the minimum statutory capital requirement will lead to the regulator imposing penalties, sanctions and even possibly putting the MFB in receivership. Maintaining the minimum statutory capital requirement, MFBs are able to focus on increasing their lending and therefore boost their profitability. By having a capital buffer, MFBs will be able to take and absorb more risk since the buffer will act as a cushion to any adverse shocks.

2.2.2 Agency Costs Theory

It was the brainchild of Meckling and Jensen (1976) and Myers (1977). Different groups of agents have conflicts of interest which result in agency costs. Jensen (1986) stated that motivating managers to relinquish cash rather than them mismanage it on organizational inefficiencies or investing it below cost of capital was the problem. The main assumptions of the theory is the goal of shareholders' wealth maximization is separated from the goal of managers' personal objectives. The managers will strive to fulfil their short-term interests instead of seeking to meet long-term wealth creation for shareholders.

Agency costs may result in managers indulging in perquisites, choosing outputs or inputs that aligns with their own preferences, exerting insufficient work effort, or otherwise not

maximizing firm value (Meckling & Jensen, 1976). The agency costs characterized by outside ownership, in effect, is equal to the lost value generated by professional managers that maximize their satisfaction instead of value of firm (Mersland & Strøm, 2009). The theory is appropriate in microfinance industry. Incentives aligning the interest of stakeholders with those of managers function differently in microfinance. Interests of MFIs' management may not be aligned with those of social investors.

Development agencies have continued to offer grants and subsidized loans to some MFIs to help them transition into fully fledged deposit-taking institutions. Granted funds may create incentive issues or moral hazard with respect to the operations of micro-banking and eventually profitability. Social investors and donors have vested goals that are inclined towards strengthening outreach (Cull et al, 2007). On the contrary, MFIs management may be motivated to increase profitability.

The microfinance industry may experience high agency costs because, by their nature, MFIs are informationally opaque in that they hold borrowers' private information. Furthermore, regulators of MFIs may set minimum equity capital with the aim of deterring taking unnecessary risks, consequently, affecting directly the costs associated with agency relationship and tamper with MFIs' preference of financing ultimately impacting profits. Overall MFIs profitability maybe impacted on, in either direction, by this. MFIs usually hold private information on their customers' loan account and other credit counterparties. Furthermore, MFIs may experience an increase in incentives for lax risk management or risk shifting when they gain access to funding by grant and other safety net protections.

2.2.3 Profit Incentive Theory

According to Bogan (2008) application of different commercial sources of financing at various stages of MFI development will allow them to achieve the microfinance promise. By use of commercial funding MFI raise outreach, efficiency and cost consciousness. PIT, in support of institutionalist paradigm, notes that donor funding has its limitations in amount of funds and therefore donor funding cannot help MFI to expand and fund projects of a mega scale given rising demands of services of MFIs. The main assumption for the theory is that firm's main objective is to maximize its profitability by ensuring the revenues exceed costs. The firms ensure they are operationally efficient.

The theory states that MFIs with a motive of making a profit will tend to increase their revenues while keeping their operational costs at a minimum to ensure they are able to offset their expenses and make a profit. MFIs that use funds from donors do not have a motive to operate efficiently and therefore are not obliged to make a profit. They prefer depth of outreach rather than efficiency and thus concentrate their service on the rural and poor clients where costs of lending tend to be higher (Aghion & Morduch, 2005). According to Aghion and Morduch (2005) there has been growing concerns of the risks posed by excessive subsidies in MFIs which has led to the goal of reaching the poor being substituted by the objective of achieving financial self-sufficiency over the long term. Bogan (2008) note there is growing pressure both internally and internationally on MFIs to cut dependency on subsidies and grants and look for capital sources.

The theory is beneficial to this study since it shows that MFIs that rely on donor funding will not seek to make a profit therefore prefer depth of outreach to efficiency. The theory also indicate that MFIs that have profit maximization motive will focus on operational

efficiency and will not rely on donor funding but rather find capital to finance their operations. Bogan (2008) argued that embracing commercial orientation and stopping donor dependency can MFIs start to attract the much needed capital and improve savings base they require to lower lending rates, increase outreach, increase their micro loan portfolios, meet their demands and increase sustainability.

2.3 Determinants of Financial Performance of Microfinance Banks

2.3.1 Capital

The capital has various basic functions for banks. They include: it helps to boost depositors confidence in their deposits, it indicates the amount of risk the owners are willing to take, acts as buffer in absorbing losses and it indicates the cost of financing method used (Hasan & Aykut, 2014). Capital adequacy is measured using capital adequacy ratio, Dang (2011). CAR indicates the MFIs capacity and internal financial strength to withstand economic shocks and losses in periods of crisis.

According to Hassan (2001) high capital contributes to high profitability. This is further supported by Abreu (2002) who found banks possessing sufficient capital experienced minimal funding costs and lower bankruptcy costs which resulted into higher profitability. Hartarska and Nadolnyak (2007) found MFIs with less leverage had a financial performance that was better than more leveraged ones. Ngendahayo (2008) noted private MFIs' ROA was influenced negatively by leverage.

2.3.2 Asset Quality

MFIs' biggest asset is loan portfolio, Nelson (2011). It is the loan asset that helps to generate income. The profits will be determined by the quality of loan assets. Quality of

the loan asset together with risk associated with the asset can be a challenge to measure. Portfolio quality is the greatest source of risk for MFIs and therefore an important area to assess performance. Delinquent loans are the biggest source of risk for MFIs (Dang, 2011). For MFIs having loans that are not adequately covered by sufficient collateral, it is imperative to have a quality portfolio (Jansson, 2002).

A determinant of bank profitability is quality of portfolio of loans which exerts influence on profitability of banks. Credit risk is the biggest risk facing banks and losses are incurred from delinquent loans (Dang, 2011). Good proxies for asset quality are non-performing loan ratios. Banks strive to have low levels of non-performing loans since it affects their profitability. Good health of a portfolio is indicated by low non-performing loans to total loans ratio. A better performing bank has a lower ratio (Nazir & Sangmi, 2010).

2.3.3 Management Efficiency

Management Efficiency is a key internal factor that influences the profitability of a bank. Management quality is determined by operational efficiency which is observed by how operating expenses are managed. Management performance is usually qualitatively expressed subjectively by quality of staff, control systems, organizational discipline and management systems evaluation. Financial ratios can be used to measure management capability to efficiently deploy resources, minimise operating costs, maximize income.

A ratio used in measuring the quality of management is operating profit to income ratio (Nazir & Sangmi, 2010). MFIs' management is regarded to be efficient if it yields high operating profits to total income based on income generation and operational efficiency.

Operating expenses is determined by the quality of management which eventually impacts on profitability (Athanasoglou et al, 2005).

2.3.4 Liquidity

Liquidity is defined as capacity of bank to offset its immediate obligations, such as depositors, as they mature or fall due. According to Idama et al. (2014) liquidity risk in a microfinance bank arises when payment obligations fall due or cash requirements are not met in a timely and cost-efficient manner. Bank profitability has a positive correlation with an adequate level of liquidity (Dang, 2011). According to Ongore and Kusa (2013), banks holding high levels of liquid assets usually have a small capital buffer target and are more willing to have increased levels of risk. Marketable securities and cash are regarded as the most liquid assets.

According to Ayaydin and Karakaya (2014) liquidity risks in a bank can be reduced by high cash holding which could contribute to their stability. High liquid assets that back demand liabilities of a bank lead to reduced liquidity risk and margins of the bank. Microfinance banks having insufficient liquidity are less immune towards future uncertainty, are unlikely to meet growth targets, have an increase in risk around the portfolios and delays in refinancing (Brom, 2009). For microfinance bank to reduce liquidity risk, each branch will have to draft a daily funding plan that matches the cash inflows from deposits and loan repayments with the cash outflows (Idama et al., 2014).

2.3.5 Size

The financial performance of MFIs is significantly and positively affected by size (Cull et al, 2007). Size as a variable is important since it highlights the economies of scale or

diseconomies of scale. Organisations benefit from synergies and economies of scale upto a definite level of size. Past the given level, the organisations grow large and become complex where the diseconomies of scale sets in. According to Muriu (2011) for MFIs that are not profitable is due to their inability to achieve economies of scale.

According to Hermes et al (2011) MFIs' size is measured by assessing the value of the assets. As a proxy of size, natural logarithm of MFIs' total assets is employed. Cull et al. (2007) indicated that loan size negatively affected financial performance. Further, by controlling the other variables financial institutions that give smaller loans do not make fewer profits.

2.4 Empirical Literature Review

Thakor (1996) stated that an increase in minimum statutory capital ratios for banks operating in an environment characterised with high competition will lead to an increase in lending rates thereby causing a reduction in bank profitability. For this reason, banks will favor government securities investments since no requirement for holding capital against them is prescribed. Färe et al. (2004) noted that a bank's operating efficiency is highly affected by capital requirements. This is contrasted by Altunbas et al. (2007) who argued that banks holding excess capital tend to be inefficient. On the other hand, Ngo (2006) examined banks profitability and capital adequacy to test the extent of their relationship. He found no significant relationship.

A survey study in Kenya on MFIs was undertaken by Kitaka (2001) to assess the importance of financial performance indicators. He observed that performance indicators such as portfolio at risk, arrears rate, average number of performing loans and delinquent borrowers' quick ratio were regularly used by MFIs. Further, he also observed that for

MFIs in Kenya donors are the major source of finances, self-help groups follow in second and deposit mobilization. His conclusion was performance indicators used by MFIs had a relationship with financiers of the MFIs. The use of financial performance indicators by a particular MFI was determined by the financiers.

Daher and Le Saout (2002) found that MFIs are more profitable when they are well capitalized, cost efficient, have large loan book, possess high total assets and among their assets they hold a high proportion of microcredit portfolios. However, MFIs faced with high credit risk experience high costs which negatively affect their profitability.

Berger and Bonaccorsi di Patti (2006) studied effect of CARs on earnings of banks in United States between the period 1995 and 2007. The study used both bank specific and macroeconomic factors by applying the GMM system estimator. The results found the profitability's relationship to capital ratios to be negative, thereby being in concurrence that banks resist to take up additional risks in the event their capital is slightly above the minimum statutory ratios. They therefore concluded that banks' operating efficiency is increased by lower capital requirement ratios.

A study to examine the sources of financing available for MFIs based on geographic areas was done by Bogan (2008). He also assessed how to improve efficiency, facilitate future growth and attain financial sustainability of MFIs by exploring the amount of capital employed. Data was collected over a three year period between 2000 and 2003 in the regions of Eastern Europe, Eastern Africa, Eastern Middle East, Eastern Latin America and East Asia. To determine success of MFIs the data were examined to find the role played by each source of finance. He concluded that embracing commercial orientation and stopping donor dependency can MFIs start to attract the much needed capital and improved

savings base they require to lower lending rates, increase outreach, increase their micro loan portfolios, meet their demands and increase sustainability. In addition, he found that use of financing tools could potentially increase liquidity and decrease transaction costs in MFIs.

According to Dietrich and Wanzried (2009) who studied determinants of profitability of Switzerland's commercial banks, classified determinants of profitability of banks into institutionalized factors, macroeconomic and bank specific factors. They used panel data that was unbalanced for the period starting on 1999 and ending on 2006 from sampled 453 banks. Linear regression method was used. They concluded that the capital ratio exerted a significant and positive influence on profitability of the banks in Switzerland. Return on average assets was used to measure.

Chan and Vong (2010) studied determinants of profitability of banks in Macao. Data set for a 15-year period covering 1993 to 2007 was used. They analyzed the external and internal determinants of profitability of banks by using generalized least squares estimation techniques and panel regression. The results showed a significant influence on profitability of the banks by capital asset ratio. This indicated that banks' capital was efficiently managed as provided by equity to total assets ratio which had a positive coefficient estimate.

A study by Muriu (2011) on the determinants of African MFIs profitability used 210 MFIs panel data set. He found capital adequacy of MFI to exert a significant and positive influence on MFIs' profitability. Across the specifications the equity to assets ratio was shown to exhibit a relatively high coefficient. After the external factors are included the effect remains unchanged. This was a sign that MFIs that are adequately capitalized are

well prepared and adaptable to handle challenges emanating from unforeseen losses, lower external funding or experienced a reduction in cost of funding.

Onaolapo and Olufemi (2012) investigated in the Nigerian banking sector the influence of capital adequacy on financial performance of sampled banks. The study used a ten year period secondary data from 1999 to 2008. Ordinary Least Square (OLS) estimation was espoused for analysis of the variables relationship and Augmented Dickey Fuller (ADF) was employed for testing of stationary of time series of data. Findings noted the parameters tested including Efficiency Ratios, Return on Capital Employed and Returns on Assets had no significance on Capital Adequacy Ratio (CAR).

A study on MFIs in Kenya was conducted by Kipkoech and Muturi (2014) to determine the factors that influence their performance. The study hypothesized that branch network, capital adequacy, capital structure, and number of borrowers' influence the earnings of MFIs. It sought to explore the relationship of MFIs' performance and these factors. Return on Assets was the main measure used to assess the financial performance. They found that branch network, borrowers and capital adequacy greatly impacted MFIs' financial performance.

2.5 Conceptual Framework

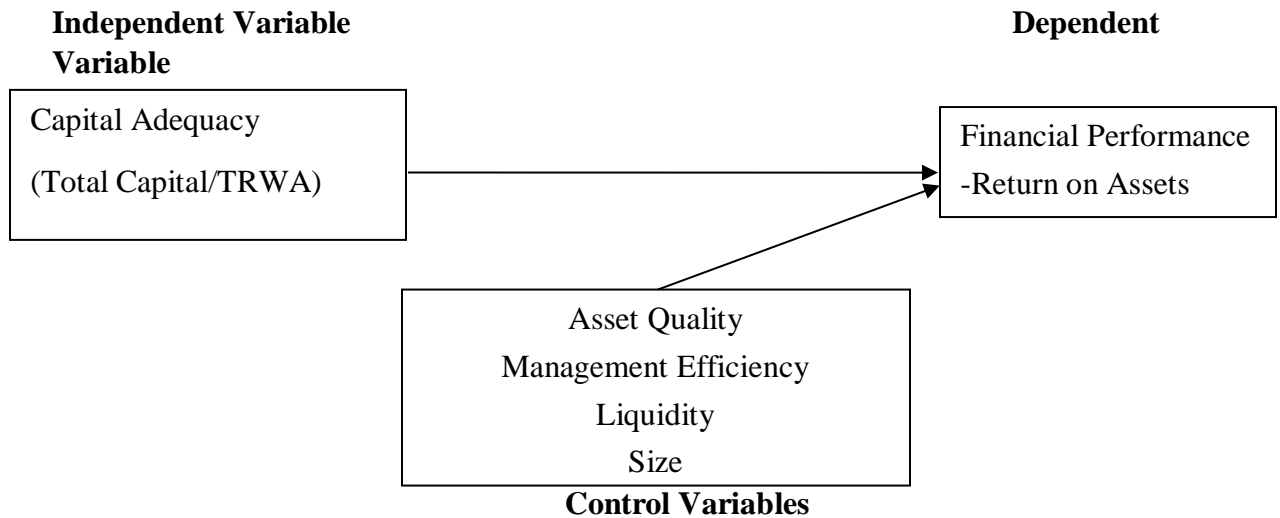
The basic ideology for designing a conceptual framework for a study is aimed at developing a guiding process that can best explain the problem stated by logically integrating all the relevant variables (Brown, Renwick & Raphael, 1995).

Sources of finance for any firm are separated into two main categories, borrowed funding (debt) and owners' funding (equity), Kamau and Kagiri (2015). The objective of the owners

of businesses is to increase the performance of firms and subsequently their wealth. In line with this objective, firm performance is measured by return on shareholders' funds.

The independent variables include debt capital, equity capital and retained earnings while profitability is the dependable variable. Therefore, it is assumed that each of the independent variables will affect profitability of MFIs. The conceptual framework is represented by the figure below.

Figure 2.1 Conceptual Framework



2.6 Summary of Literature Review and Knowledge Gaps

The previous studies pose theoretical gaps. Capital buffer theory state that excess capital aides a bank in absorbing adverse economic shocks and therefore reduces the possibility of failure. Profit incentive theory argue that use of commercial funding by MFIs tend to raise outreach, efficiency and cost consciousness thereby generating a profit as they will increase revenues to exceed the operational costs. On the contrary, Agency cost theory argue that regulators of MFIs may set minimum capital with the aim of deterring taking

unnecessary risks, consequently, affecting directly the costs associated with agency relationship and ultimately impacting profits.

The studies relating to financial performance and capital have yielded inconclusive results relating to total capital impact on performance. Some of the studies have reported positive relationships while others have indicated a negative relationship. It is not always that banks holding excess capital will increase their capital as some of the studies have shown that the excess capital can lead to inefficiency. The contradictory relationship could be because the studies excluded the control variables.

Majority of the studies were not conducted in Kenya while the studies undertaken in Kenya focused on effects of Capital Structure on the financial performance of Microfinance Institutions and not capital. The studies were done in different economies to Kenya with differing legal and regulatory requirements. Therefore, this is a gap that requires further research. Also, the studies done did not include control variables.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodology of research that was applied in the study. It explains the process and ways at which data was collected, collated and presented. It comprises of research design, population of study, data collection instruments, diagnostic tests and the analysis of data.

3.2 Research Design

Research design, according to Trochim (2005) helps to structure research by showing how the research project's different parts are connected together in addressing the research questions. Research design has been defined by Kumar (2005) as a plan which a researcher adopts to objectively, validly, economically and accurately answer questions. Creswell (2003) defined research design as a plan or outline that answers to research problems are generated. According to Bhattacharjee (2012) research design is categorized into three types, namely exploratory, descriptive and explanatory.

The study applied the descriptive research design (DRD). DRD is useful since it collates information on the existing status of the subjects with the aim of describing what exists in respect to variables. Mugenda and Mugenda (2003) defines DRD as a system of collecting relevant data to address concerns relating to the prevailing status of subjects. The descriptive research design considers aspects like the variables used in the design, sampling size in relation to population of the study, methods to be used in data collection and approaches to research.

3.3 Population of Study

Population is described by Polit and Beck (2003) as the collection of those adhering to a set of certain specifications. According to Schindler and Cooper (2003) population is a collection of objects that possess common observable characteristics. Population refers to a complete class of things, people or items of particular appeal that a researcher wants to explore and from the same population draw a sample to be studied.

Populations are characterized by large sizes making it harder for researchers to conduct a test of each data because it is time consuming and too expensive. The target population for this study were the 13 MFBs in Kenya (CBK, 2017). However, only 8 MFBs were used in the study as the other 5 MFBs did not have a five year period data resulting in their exclusion. The selection of MFBs was due to them being regulated and licenced by CBK and the requirement for them to publish audited financial statements every year.

3.4 Data and Data Collection Instruments

Data collection is a systematic and exact way of accumulating information that is relevant to the problems in research by use of methods such as focus group discussion, participant observations, case histories, interviews and narratives (Burns & Grove, 2010). It is a way information is sourced and acquired from selected subjects in a study. Data collection refers to techniques that are applied in extracting data that is required for analysis.

Secondary data on Capital adequacy and Financial Performance was sourced from the annual reports of the MFBs and also from CBK Bank Supervision annual report. The

secondary data was adopted to examine the relationship between the variables. In the research study, data for the periods 2013 to 2017 was collected.

3.5 Data Analysis

Kothari (2008) describes data analysis as the methodology of examining, cleaning, transfiguring, and modelling data aiming to discover insightful information, deriving conclusions, and aiding in arriving at a decision. It contains numerous approaches that encompass a wide range of techniques under a variety of names, social science domains, science and in different business. To establish the relationship between financial performance and capital from data obtained, quantitative method was applied.

To summarise the data, descriptive statistics was employed. According to Bickman and Rog (1998) descriptive studies are appropriate in answering questions as what was and what is. Descriptive studies are the preferred methods for gathering information that can be used to determine relationships and describe the data as it is.

3.5.1 Diagnostic Tests

The linear regression model is characterised by various assumptions: panel data normality, panel unit root, panel multicollinearity, and hausman test. The diagnostic tests to be conducted on the data were as follows:

3.5.1.1 Panel Data Normality Test

It is imperative for variables to be panel data normal as a requirement by linear regression analysis. This is carried out to test the normality of the variables. Sampling distribution of mean is assumed to be normal by Panel Data Normality. For linear regression, it is

important for the data to be normal. Panel Data normality test was run to remove any outliers found in a set of data in order to ensure data normality.

The Jarque Bera normality test was used on the study variables. The test checked the third and fourth moments of the residuals in relation to normal distribution residuals. The Jarque Bera test statistics considered the significance of p-values where values exceeding 5% the data was normally distributed while values lower than 5% the data was considered to be not normally distributed.

3.5.1.2 Panel Multicollinearity Test

When the independent variables lack independence from each other it gives rise to multicollinearity. This means that with a certain degree of accuracy one independent variable can linearly be predicted from others (Ondigo, 2016). An imperative assumption of independence is independence for error of mean from the independent variables. A high correlation of independent variables will result in regression having individual coefficients with high standard errors ensuring that regression model will be very sensitive changes small in nature in the specification.

Multicollinearity was tested using pairwise correlation matrix. Correlation coefficient whose value is 1 points to a correlation of variables that are perfect and positive while correlation coefficient whose value is -1 points to a correlation of variables that are perfect and negative. Variables with coefficient correlation with a value nearer to zero indicate a weak positive or negative correlation. Also, Multicollinearity was tested using Variance Inflation Factors (VIF). This was done to observe independence of the independent

variables. Multicollinearity does not exist when $VIF < 10$. If this condition is not met then the independent variables will be considered to have no impact on the dependent variable.

3.5.1.3 Panel Unit Root Test

It is a stochastic trend in time series and shows a sequence that is systematic and uncertain. The unit root test is done to test data for stationarity in a time series. Unit root are usually the cause for non-stationarity. A time series is considered to have stationarity in the event that a shift in time doesn't result in a change of the distribution shape. Many tests are done due to none having the best overall result. Data was expected to be stationary at levels. When data was non-stationarity at levels, the data was to be subjected to another test at 1st difference and 2nd difference.

3.5.1.4 Hausman Test

The Hausman test was applied to help in deciding on the appropriate model to be applied between random effects model (REM) and fixed effects model (FEM). The p-value was considered significant at 5% and any value below that FEM was to be selected while a value above that then REM was to be selected.

3.5.2 Conceptual Model

The model examines the effects of the independent variable and control variables on dependent variable. The function below is the mathematical relationship between the variables: control, dependent and independent.

$$Y_{it} = f(X1t, X2t, X3t, X4t, X5t)$$

Y = financial performance

$X_1 = \text{Total Capital}$

$X_2 = \text{Asset Quality}$

$X_3 = \text{Management Efficiency}$

$X_4 = \text{Liquidity}$

$X_5 = \text{Size}$

Subscript i - denote the cross-section ranging from microfinance banks 1 to bank 8 and,

Subscript t -denote the time-series dimension ranging from year 2013 to year 2017.

3.5.3 Analytical Model

The study's main focus is the link between capital and financial performance. The following multiple regression model will be used:

$$FP_{it} = B_0 + B_1 X_1 + \sum_{i=1}^n \theta_i \pi_{it} + \epsilon_{it}$$

Where:

FP = dependent variable (financial performance variable that measured using ROA for Microfinance Bank i at time t).

B_0 = intercept or regression constant.

B = coefficients of independent variable.

X = represent the independent variable measured by CAR (Total Capital/TRWA).

θ = represent the coefficients control variables, namely; Asset Quality Ratio (NPLs/Gross Loans), Management Efficiency Ratio (Costs to Total Income ratio), Liquidity (Cash + Deposit balances at banks + Government Securities)/Customer Deposits, Size (Natural log of total assets).

π = represent a matrix of the control variables.

ε Represent the error term which accounts for unexplained variations.

Subscript i - denote the cross-section ranging from microfinance bank 1 to bank 8 and,

Subscript t -denote the time-series dimension ranging from year 2013 to year 2017.

3.5.4 Tests of Significance

Significance of regression was determined by use of F-test at 95% confidence level while coefficient of determination (R²) was employed to establish level of variability of dependent variable that was explained by independent variable and control variables. The variation will be assessed at 5% significant level.

3.5.5 Parametrization and Measurement

Parametrization is the mathematical process which expresses the model, system or process as a function of independent variable called parameters. The variables included in the study were Financial Performance, Capital, Size, Asset Quality, Liquidity and Management Efficiency.

Dependent Variable: Financial Performance			
Variable	Parameter Definition	Indicator	Measurement
Financial Performance	Objective of shareholders' interest	Earning Ability	Return on Assets
Independent Variable: Total Capital			
Total Capital	Amount of capital employed	CAR	Total Capital to TRWA

Control Variables: Asset Quality, Management Efficiency, Liquidity and Size of firm			
Asset Quality	Quality of loan portfolio	Asset Quality Ratio	NPLs to Gross/Total loans
Management Efficiency	Management of resources	Operational Efficiency Ratio	Costs to Total Income
Liquidity	Management of liquid assets	Liquidity Ratio	Liquid Assets to Customer Deposits
Size	Value of Total Assets	Total Assets	Natural Logarithm

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND INTERPRETATIONS

4.1 Introduction

This chapter displays the analysis of secondary data. It showcases the diagnostic tests undertaken. It also shows the descriptive statistics of Capital Adequacy, Asset Quality, Liquidity, Management Efficiency, Size and Financial Performance. Measures of dispersion, central tendency and sleekness including skewness, kurtosis and standard deviation are also presented.

4.2 Descriptive Statistics

Descriptive statistics contained measures of minimum, maximum, mean, standard error of estimate, kurtosis and skewedness. Standard error is defined as the standard deviation of the set data. The mean is defined as a central tendency measure used to describe the average of values. Skewedness checks extent variables deviate from normal distribution. Kurtosis is a measure of peakness or flatness of a data in comparison to normal distribution (Ondigo, 2016). Secondary data was obtained for 8 MFBs for a 5 year period from 2013 to 2017. This resulted in 40 total number of observations for the study. The table 4.1 shows results of descriptive statistics of the study variables.

Table 4.1: Descriptive statistics

	Return on Asset	Asset Quality	Capital Adequacy	Liquidity	Management Efficiency	Size
Mean	-0.0046	0.1932	0.4705	0.4226	0.8115	7,610

Median	0.0070	0.1565	0.3345	0.2950	0.7735	1,800
Maximum	0.0500	0.7250	1.6500	2.1700	1.2340	32,400
Minimum	-0.0700	0.0370	0.1000	0.1500	0.5350	80.2
Std. Dev.	0.0318	0.1548	0.3593	0.3420	0.1932	11,000
Skewness	-0.7193	1.6248	1.6017	3.6375	0.4279	1.2566
Kurtosis	2.3292	5.5380	5.3292	18.3978	2.2511	2.9169

All the variables with the exception of size are expressed as ratios. Size is expressed in terms of Ksh. Millions

Table 4.1 shows summary statistics of study variables, data collected for the MFBs for the period 2013 to 2017.

The mean return on asset was -0.46% . This shows that on average the MFBs were loss making. The maximum ratio recorded was 5% by U&I MFB in 2015 and minimum ratio recorded was -7% by REMU MFB in 2017. The corresponding value 0.0318 of standard deviation shows fairly low variations of the data across the years. However, the coefficient of skewedness of -0.7193 shows that ROA was negatively skewed along the mean. The mean asset quality was 19.3% meaning that 19.3% of the loans advanced by MFBs were problematic loans and MFBs had a challenge in recovery. The standard deviation stood at 0.1548 showing minimal variations across MFBs. The maximum value of 72.5% was recorded and indicates that there is an MFB that had a poor quality of loans.

The mean CAR was 47.05% . This shows that MFBs on average were adequately capitalized above the minimum statutory requirement of 14.5% . This shows that the MFBs are able to handle negative economic shocks due to adequate capital. The standard deviation of 0.3593 shows less variations across the MFBs with minimum CAR at 10%

and maximum CAR at 165%. The mean liquidity was registered at 42.26%. This was more than the minimum statutory requirement of 20%. The maximum ratio was 217% while the minimum ratio was 15% and a standard deviation of 0.342 indicating less variations across the MFBs.

The table shows mean size of the MFBs to be Kshs.7.6 billion with the biggest MFB shown to have total assets of Kshs.32.4 billion while the smallest MFB is shown to have total assets of Kshs.80.2m. The large standard deviation depicts exceptionally large variations across MFBs under study. The mean management efficiency of 81.15% shows that the management were not very efficient in using the assets to generate revenues. The highest management efficiency was recorded at 123.4% while the lowest was 53.5%. The standard deviation of 0.1932 shows there was a reasonably less variations across the MFBs.

4.3 Panel Data Diagnostic Tests

To analyse the data, diagnostics tests were undertaken to check the suitability of the data. The aim of the tests was to establish if the selected panel data adhere to the basic requirements of linear regression. The tests applied included: panel data normality test, panel unit root test, panel multicollinearity test. Upon detection of the presence of breach to the basic requirements corrective measures were employed.

4.3.1 Panel Data Normality Test

Normality test is an important test under OLS requirements. It assumes that the error terms tend to have an asymmetric distribution which is centered at zero. If the requirement is violated it may lead to inaccurate results due to magnified test statistics. The Jarque Bera

normality test checks the third and fourth moments of the residuals in relation to normal distribution residuals. The table 4.2 shows the normality test results.

Table 4.2: Panel data Normality test results

	Jarque-Bera	p-value	Observations
Return on Asset	4.1989	0.1225	40
Capital Adequacy	26.1445	0.0000	40
Asset Quality	28.3359	0.0000	40
Liquidity	483.3625	0.0000	40
Management Efficiency	2.1555	0.3404	40
Size	3.5873	0.1664	40

The table shows the Jarque Bera test statistics together with their corresponding p-values. The variables Capital Adequacy, Asset Quality and Liquidity had their Jarque Bera test statistics with associated p-values of 0.0000. The p-values were less than 5%. This indicated that the data was not normally distributed and therefore contained data that had outliers. The variables Return on Asset, Management Efficiency and Size had Jarque Bera test statistics with p-values greater than 5%. Their data was found to be normally distributed.

The non-normality problem on the study variables as observed in the panel data normality test was eliminated by use of outliers variables elimination technique. This helped to obtain a relative normal distribution set of data. The elimination involved considering values outside the following ranges: 0% < liquidity > 70%, 0% < asset quality > 40% and 0% < capital adequacy > 80%. The table 4.3 shows the results after elimination of the outliers.

Table 4.3: Post elimination of outliers Panel Variables Normality Test Results

	Return on Asset	Management Efficiency	Size	Liquidity	Capital Adequacy	Asset Quality
Mean	-0.0046	0.8115	7,610	0.3322	0.3572	0.1543
Median	0.0070	0.7735	1,800	0.2900	0.2720	0.1210
Maximum	0.0500	1.2340	32,400	0.6700	0.7910	0.3530
Minimum	-0.0700	0.5350	80.2	0.1500	0.1000	0.0370
Std. Dev.	0.0318	0.1932	11,000	0.1287	0.1846	0.0942
Skewness	-0.7193	0.4279	1.2566	1.3754	0.6474	0.7837
Kurtosis	2.3292	2.2511	2.9169	3.9921	2.1437	2.5903
Observations	40	40	40	33	33	33

All the variables with the exception of size are expressed as ratios. Size is expressed in terms of Ksh. Millions

The results from the table shows the coefficients of kurtosis values are between zero to three which is the range for a normal distribution with the exception of liquidity. However, the liquidity coefficient value was closer to normal distribution. From the above data, it was good for further analysis.

4.3.2 Panel Unit Root Test

To establish if the panel data was either non-stationary or stationary, panel unit root test was used on the study variables. Table 4.4 shows the summary of the results on the panel unit root test.

Table 4.4: Panel Unit Root Test results

Variable	Test	Statistic	
		individual intercept	p-value
Return on Asset	Levin, Lin & Chu t*	-6.5392	0.0000
	ADF - Fisher Chi-square	24.1870	0.0855
	PP - Fisher Chi-square	25.4008	0.0631
Capital Adequacy**	Levin, Lin & Chu t*	-15.7833	0.0000
	ADF - Fisher Chi-square	51.2792	0.0000
	PP - Fisher Chi-square	62.4832	0.0000
Asset Quality**	Levin, Lin & Chu t*	-30.9482	0.0000
	ADF - Fisher Chi-square	38.1164	0.0015
	PP - Fisher Chi-square	43.4631	0.0002
Liquidity**	Levin, Lin & Chu t*	-7.8936	0.0000
	ADF - Fisher Chi-square	19.8178	0.1360
	PP - Fisher Chi-square	21.4424	0.0908
Management Efficiency	Levin, Lin & Chu t*	-6.9647	0.0000
	ADF - Fisher Chi-square	24.8485	0.0725
	PP - Fisher Chi-square	35.5404	0.0033
Size	Levin, Lin & Chu t*	-4.5040	0.0000
	ADF - Fisher Chi-square	32.3118	0.0091
	PP - Fisher Chi-square	50.4240	0.0000

*** The variables were estimated at 1st difference. All other variables were estimated at levels.*

The results are based on Levin, Lin & Chu t*, ADF - Fisher Chi-square and PP - Fisher Chi-square. They indicate the panel unit root test for the study variables that was used in the study. The variables were subjected to all the three tests and assessed against their p-values at the statistical level of significance of 5%. LLC presume across cross-sections there is commonality of persistence parameters. The assumption is important since it accommodates non-homogeneous cross-sectional effects. ADF Fisher and PP Fisher differ across cross-sections. Hence crucial for the tests to be applied for comparison. The ADF Fisher test being a parametric necessitate the use of PP Fisher which is non-parametric thereby improving the robustness of the model in the event of presence of serial correlation of error term ignoring the adding of lagged difference term.

For return on asset, management efficiency and size the data was found to be stationary at levels. The variables capital adequacy ratio, asset quality and liquidity were discovered to be non-stationary at levels. This was a breach of OLS basic requirement. To correct this breach, the first difference of the study data was employed. In the first difference, the study data were found to be stationary.

4.3.3 Panel Multicollinearity Test

To conduct this test, the variance inflation factors (VIF) was used. The VIF test affirms there was no presence of multicollinearity in the model. This is so as all the study variables as shown by centered VIF met the VIF threshold of $0.1 < VIF > 10$. Table 4.5 depicts the VIF test results.

Table 4.5: Variance Inflation Factors Test results

Variance Inflation Factors			
Observations: 33			
Variable	Coefficient Variance	Uncentered VIF	Centered VIF
Management Efficiency	0.000475	51.38013	2.620494
Size	8.11E-26	2.882286	1.777545
Liquidity	0.000456	9.718777	1.234061
Capital Adequacy Ratio	0.0003	8.122818	1.671452
Asset Quality	0.001716	9.376544	2.48741
Constant	0.000323	54.45307	NA

4.3.4 The Hausman Test

Hausman test was employed in selecting the most appropriate model to be adopted between the random effect model (REM) and fixed effect model (FEM). The hausman test considers chi-square with its corresponding p-value at 5% significant level. Selection was dependent on the p-value being higher or lower than 0.05. When the p-value was high REM would be preferred while if it was low then FEM would be chosen. Table 4.6 shows the results of hausman test.

Table 4.6: Hausman Test results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	p-value
Cross-section random	22.415049	5	0.0004

The results show the chi-square of 22.42 and its corresponding p-value of 0.0004. The p-value was statistically significant at a significance level of 5%. Since p-value was lower than 5%, the FEM was found to be the most appropriate model for adoption.

4.4 Correlation Analysis

Correlation analysis was applied to assess the strength and degree of association among the variables. Correlation coefficient whose value is 1 show the correlation of variables that are perfect and positive while correlation coefficient whose value is -1 show the correlation of variables that are perfect and negative. Furthermore, correlation coefficient with a value nearer to 1 or -1 shows the variables have a strong positive or negative correlation respectively. Variables with correlation coefficient with a value nearer to zero indicate a weak positive or negative correlation. The table 4.5 below shows the pairwise correlation matrix results.

Table 4.7: Pairwise correlation matrix results

	Return on Asset	Asset Quality	Capital Adequacy	Liquidity	Size	Management Efficiency
Return on Asset	1.00					
Asset Quality	-0.65	1.00				
Capital Adequacy	0.10	0.23	1.00			
Liquidity	-0.13	0.46	0.53	1.00		
Size	0.12	-0.31	-0.77	-0.33	1.00	
Management Efficiency	-0.80	0.74	0.29	0.21	-0.43	1.00

The results found a weak positive correlation between return on asset and capital adequacy depicted by value of correlation coefficient of 0.1. This implies that as MFBs increase their capital there will be a slight but not significant increase in profits. There was a negative correlation between return on asset and asset quality as depicted by the coefficient of -0.65. This indicates that asset quality is significantly but negatively correlated. As the quality of loans deteriorated the profitability of MFBs significantly dropped and to a large extent the MFBs registered losses.

The liquidity was found to possess a negative correlation with return on asset as shown by the coefficient of -0.13. However, the correlation between the two variables was weak. This implies that as MFBs increase their liquidity subsequently their profits dip. This is because the liquid cash held is not invested in assets that earn returns above the costs of the MFBs. Size has a positive but weak correlation with ROA. This suggest that as the MFBs increase their total assets eventually the profits will also increase though not substantially.

Management efficiency was found to have a negative correlation with the return on asset as shown by the coefficient of -0.8. The correlation between the variables was established to be strong. This implies that as the management efficiency increases the earnings significantly drop and eventually the MFBs incur a loss. This indicates that the management have not sufficiently used the assets of the MFBs to generate income above the costs of running the MFBs.

4.5 Panel Model Regression Results

After undertaking the panel data diagnostic tests as outlined in section 4.3 and also taking the necessary corrective measures to address the violations of cardinal OLS that were identified, the study conducted a panel regression analysis as elaborated in this section. The overall aim of this study was to establish the effect of capital adequacy on financial performance of MFBs in Kenya. This was achieved by using the panel fixed effect model.

Table 4.8: Panel Fixed Effects Regression Results

Dependent Variable: Return on Assets

Method: Panel Least Squares

Total panel (unbalanced) observations:33

Variable	Coefficient	Std Error	t-statistics	p-value
Capital Adequacy Ratio	0.038652	0.011282	3.425912	0.0028
Asset Quality	-0.037004	0.038861	-0.952213	0.3529
Liquidity	-0.011554	0.004561	-2.532987	0.0203
Management Efficiency	-0.165726	0.023168	-7.153087	0.0000
Size	0.000000	1.37E-12	-1.557669	0.1358
Constant	0.129306	0.023617	5.475127	0.0000

Statistics

R-squared	0.841452
Adjusted R-squared	0.804474
F-statistic	25.46
Prob (F-statistic)	0.000000

The coefficient of determination (R-squared) equals 0.8415. This indicates that financial performance as shown by return on asset will be explained by 84.15% changes in independent variables while the remainder of 15.85% is as a result of factors not contained in the regression model. The p-value of 0.0000 implies the model is significant at 5% significant level.

Durbin-Watson statistic was used to check autocorrelation in data. If the results of the data lie outside the bounds of $1.5 < d < 2.5$ there will be existence of linear autocorrelation and data thus cannot be relied upon. For the data to be relied upon it has to lie within the bounds. The results show a Durbin-Watson statistic of 2.3637. This shows that our data can be relied upon.

The coefficients of independent variables and the intercept show p-values of below 0.05 with the exception of asset quality and size. This implies that they are statistically significant. Asset quality and size have a p-value greater than 0.05 meaning they are not significant. The constant represents where the line of regression intercepts the y-axis. It shows the ROA when all independent variables are at zero. The constant has a p-value of 0.0000.

The other variables liquidity and management efficiency have p-value of 0.0203 and 0.0000 respectively and have negative but significant relationship with the ROA. While asset quality and size have p-values of 0.3529 and 0.1358 respectively whose relationships with ROA is not significant. However, asset quality relationship with ROA is shown to be negative.

4.6 Discussion of the Findings

The variable liquidity has a p-value of 0.0203 and has a negative but significant relationship with the ROA. This result indicates that as MFBs hold a high liquidity ratio their profitability will fall. This is so because the liquid assets are less risky and do not bear high rates of return. The result contradicts Onyeka et al. (2018) who indicated that the relationship between liquidity and profitability ratio of banks is positive. The contrasting result is due to the study focusing on effect of liquidity on the financial performance of deposit taking banks with considering the effect of control variables. Also, the study concentrated on five banks and data collected was for a ten year period.

Management efficiency has a p-value of 0.0000 and has a negative but significant relationship with the ROA. This indicates that as management efficiency ratio increases the profitability reduces. This is due to the rising costs which far outweigh the increase in income thereby reducing the earnings. This result is contrasted by Musyoka (2017) who found a negative but insignificant relationship between management efficiency and ROA. The contrasting result is mainly due to the study focusing on the 42 commercial banks operating in Kenya in comparison to the study which focuses on eight Microfinance Banks in Kenya.

The asset quality has a p-value of 0.3529 and its relationship with ROA is not significant but is shown to be negative. This suggests that MFBs have a low credit risk appetite and will only increase their credit risk provided that the credit is granted upon perfection of collateral. This is supported by Kioko et al. (2017) who found that credit risk proxied using NPLs ratio did not exert a significant influence on financial performance.

Firm size has a p-value of 0.1358 and its relationships with ROA is not significant but positive. This indicates that a given size of MFB will determine its financial performance. This suggests that large MFBs will be more profitable than small MFBs. Kioko et al. (2017) found that financial performance is positively influenced by size a similar finding to this study.

The results show the capital adequacy, which has a p-value of 0.0028, relationship with the ROA to be positive and significant. This indicates that as MFBs hold more capital they will experience an increase in profitability. Further, Berger and Bouwman (2013) suggested that bank profitability is directly associated and considerably impacted on by capital. This is further supported by Gropp and Heider (2010), indicated banks with high capital generate more profits because of their ability to invest in projects that offer high returns due to having sufficient financial resources.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The objective of this study was to determine the effect of capital adequacy on the financial performance of MFBs in Kenya. Control variables used were asset quality, management efficiency, liquidity and size. This chapter shows the summary of study findings, from findings conclusions made, recommendations made, limitations of study and finally suggestions, based on the study, for further research is recommended.

5.2 Summary

From the study objective, the dependent variable was financial performance depicted by ROA while the independent variable was the capital adequacy. The study also incorporated control variables which included asset quality, management efficiency, liquidity and size. Secondary data was collected from financial statements and annual reports of the MFBs and CBK Bank Supervision report. The descriptive measures of data used included: minimum, skewness, maximum, kurtosis, mean, standard deviation, and median. The panel diagnostic tests applied on the data were: panel data normality, panel unit root, panel multicollinearity and hausman test.

The descriptive statistics results showed the variables with varying mean and standard deviations. The ROA had a mean of -0.0046 and standard deviation of 0.0318, asset quality had a mean of 0.1932 and standard deviation of 0.1548, capital adequacy had a mean of 0.4705 and standard deviation of 0.3593, liquidity had a mean of 0.4226 and standard

deviation of 0.3420, management efficiency had a mean of 0.8115 and standard deviation of 0.1932 and firm size had a mean of 7.6m and standard deviation of 0.

The correlation of the independent variables with the dependent variable had mixed results. The capital adequacy and firm size had a positive but weak correlation with the return on assets. The correlation with capital adequacy and firm size was 0.1 and 0.12 respectively. Asset quality and management efficiency had a negative but strong correlation with the return on assets. The correlation with the asset quality and management efficiency was -0.65 and -0.8 respectively. Liquidity had a negative but weak correlation with the ROA as indicated by result of -0.13.

The coefficients of independent variables and the intercept show p-values of below 0.05 with the exception of asset quality and size. This implies that they are statistically significant. Asset quality and size have a p-value greater than 0.05 meaning they are not significant. The coefficient of determination of 0.8415 indicates that financial performance as shown by return on asset will be explained by 84.15% changes in independent variables.

The study demonstrated that a positive and statistically significant association exists between the capital adequacy and financial performance. Furthermore, the study found that liquidity and management efficiency had a negative and statistically significant relationship with financial performance while asset quality and size were found not to have a statistically significant association with financial performance.

5.3 Conclusion

From the data analysis results found in chapter four, capital adequacy was a key determinant of financial performance for MFBs in Kenya. The relationship between ROA

and capital adequacy was positive which implies that a rise in capital adequacy will ultimately lead to a rise in financial performance of MFBs in Kenya. Further, the relationship was found to be statistically significant this was evident from the computed p-value. The study concludes that capital adequacy positively and significantly exerts and impact on financial performance of MFBs in Kenya.

Liquidity and management efficiency were found to be negatively and significant determinants of financial performance. As the MFBs maintained more liquidity the financial performance of MFBs deteriorated as the liquid assets could not generate sufficient returns above the costs associated with running the business. Further, the management efficiency was considered to negatively impact the financial performance. As the ratio increases the financial performance deteriorates. This is due to the rising costs which far outweigh the increase in income thereby reducing the earnings. The study concludes that liquidity and management efficiency significantly influences financial performance of MFBs in Kenya.

The study concluded that asset quality did not possess a significant impact on the financial performance of MFBs in Kenya. Also, firm size did not possess a significant impact on the financial performance of MFBs in Kenya. This indicates that profitability of MFBs does not depend on the size and the asset quality. Whether large or small, MFBs would still be able to make profits. Further, good asset quality will not cause an MFB to have superior profits over an MFB with poor asset quality.

5.4 Recommendation

From the findings, the capital adequacy positively and significantly influences financial performance of MFBs in Kenya. Recommendation from the study is that the MFBs' financial regulator, Central Bank of Kenya, ensure that all MFBs are well capitalized and meet the minimum capital adequacy ratios. Further, the regulator can introduce capital buffers above the minimum statutory requirement of 14.5% to shield the MFBs from any unforeseen economic shocks likely to arise from their operating environment. This will make certain that MFBs maintain an absolute capital over and above the minimum required.

There is a need for MFBs to control their costs to ensure that they improve on their operational efficiency. Management efficiency was found to exert a negative but significant effect on financial performance. MFBs should ensure that the operational costs are contained within manageable levels and the investable assets generate sufficient returns to boost the earnings. This should lead to an improved management efficiency and ultimately increase in financial performance.

The study found liquidity to possess a negative but significant association with financial performance. The management of MFBs should manage the liquidity appropriately. The management should introduce a minimum internal ratio which is above the minimum statutory requirement of 20%. They should also maintain a contingency plan that shows the matching of assets and liabilities. This should be the guiding tools upon which management address their liquidity concerns.

5.5 Limitations of the Study

The study applied secondary data acquired from the CBK Bank Annual Supervisory Reports and financial statements of Microfinance Banks. The reports are general purpose and are easily obtained. The reports may contain limitations which could hinder the dependability of the data and eventually affect the dependability of final results of the study. This could lead the final results being regarded as inconclusive.

The study focused on the 13 MFBs in Kenya. Some of the MFBs were newly formed with less than five years in operations and did not provide meaningful data for a five year study period. These MFBs had to be excluded from the study due to inadequate data. Only eight MFBs provided meaningful data that was used in the study. The other five omitted MFBs provided data between two and three years.

The CAR used to measure the capital adequacy was total capital against TRWA. The total capital is described by CBK to include not just core capital but also subordinated debt and statutory loan loss reserves. Other measures of CAR include core capital against TRWA and also core capital to total deposits. Adopting either of these measures may lead to different results.

5.6 Suggestions for Further Research

From the limitations and findings of the study, a few suggestions could be made for further research. The study focused on MFBs in Kenya only, further research could be made on a similar study but replicated to other financial institutions like foreign exchange bureaus, Savings and Credit Co-operative Societies and money remittance companies. The study

will also be interesting if it was also done in regional countries. The results from those countries could help in validating and generalizing the findings from the study.

A similar study could be done on only one MFB but with a study period of more than five years. Also, a similar study could be done on the MFBs with the study period increased to more than the study period. The study focused on only eight MFBs due to the data of other MFBs being insufficient, a similar study could be done to cover all the MFBs in Kenya at a point in time when data for all the MFBs are available.

The study focused only on the factors that can be controlled internally. The independent variable (capital adequacy) and control variables which include asset quality, management efficiency, liquidity and size mainly are factors subject to MFB control. Further research based on external factors such as macroeconomic factors influencing MFBs could be undertaken to establish their impact on the financial performance.

REFERENCES

- Abreu, M. (2002). Commercial Bank Interest Margins and Profitability: Evidence from E.U Countries. *Working paper, 112*, University of Porto, Porto.
- Aburime, U. (2005). *Determinants of Bank Profitability: Company-Level Evidence from Nigeria*. (University of Nigeria, Nigeria).
- Aghion, A. B., & Morduch, J. (2005). *The Economics of Microfinance*. Cambridge MA: MIT Press.
- Almazari, A.A., & Alamri, A.A. (2017). The Effect of Capital Adequacy on Profitability: A Comparative study between SAMBA and SAAB Banks of Saudi Arabia. *International Journal of Economics, Commerce and Management*, 5(11), 86-102.
- Altunbas, Y.S., Carbo, E., Gardener, P.M., & Molyneux, P. (2007). Examining the Relationships between Capital, Risk and Efficiency in European Banking. *European Financial Management*, 13(1), 49–70.
- Ayaydin, H., & Karakaya. A. (2014).The Effect of Bank Capital on Profitability and Risk in Turkish Banking. *International Journal of Business and Social Science*, 5(1), 252-271.
- Aymen, M. M. (2013). Impact of Capital on Financial Performance of Banks: The Case of Tunisia. *Journal of Banks and Bank Systems*, 8(4), 47-54.
- Athanasoglou, P., Brissimis, S. & Delis, M. (2005). Bank-Specific, Industry-Specific and Macroeconomic Determinants of Bank Profitability. *Working Paper, 25*, Economic Research Department, Bank of Greece,

- Bartual, C. R., Cervelló, R., & Moya, I. C. (2013). Measuring Performance in Social, and Non-Profit Microfinance Institutions (MFIs): An Application of Multi-Criteria Methodology. *Mathematical and Computer Modeling*, 57(7-8), 1671-1678.
- Berger, A.N. (1995). The Relationship between Capital and Earnings in Banking. *Journal of Money, Credit and Banking*, 27(2), 432–456.
- Berger, A.N., & Udell, P. (2006). Capital Structure and Firm Performance: A New Approach to Testing Agency Theory and An Application to the Banking Industry. *Journal of Banking and Finance*, 30(4), 1065-1102.
- Berger, A.N., & Udell, P. (2013). How Does Capital Affect Bank Performance During Financial Crises? *Journal of Financial Economics*, 109(1), 146-176.
- Bhattacharjee, A. (2012). *Social Science Research: Principles, Methods, and Practices*. Florida: Textbooks Collection, Book 3.
- Bickman, L., & Rog, D. J. (1998). *Handbook of Applied Social Research Methods*. USA: SAGE Publications Limited.
- Bogan, V. (2008). *Microfinance Institutions: Does Capital Structure Matter?* Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1144762.
- Bos, T. & Fetherston, T.A. (1993). Capital Structure Practices on the Specific Firm. *Research in International Business and Finance*, 10(3), 53-66.
- Brom, K. (2009). Asset and Liability Management for Deposit-Taking Microfinance Institutions. *CGAP focus note 55*, World Bank.

- Brown, I., Renwick, R., & Raphael, D. (1995). Frailty: Constructing a Common Meaning, Definition, and Conceptual Framework. *International Journal of Rehabilitation Research*, 18(2), 93-102.
- Burns, N., & Grove, S. K. (2010). *Understanding Nursing Research: Building an Evidence-Based Practice*. Grand Prairie, Texas: Saunders.
- CBK (2015). Central Bank of Kenya. Annual report on Performance of the Kenyan banking Sector for the period ended 31st December 2015, www.centralbank.go.ke/downloads.
- CBK (2017). Central Bank of Kenya. Annual report on Performance of the Kenyan banking Sector for the period ended 31st December 2017, www.centralbank.go.ke/downloads.
- Chakravathy, B. S. (1986). Measuring Strategic Performance. *Strategic Management Journal*, 7(5), 437-458.
- Chan, H., & Vong, A. (2010). *Determinants of Bank Profitability in Macao*. (Project, University of Macau, Macau).
- Creswell, J. W. (2003). *Research Design: Qualitative, Quantitative, and Mixed Method Approaches*. Thousand Oaks, California: Sage Publications.
- Cull, R., Demirgüç-kunt A., & Morduch, J. (2007). Financial Performance and Outreach: A Global Analysis of leading Microbanks. *The Economic Journal*, 117(517), 107 – 133.

- Daher, L., & Le Saout, E. (2002). The Determinants of the Financial Performance of Microfinance Institutions: Impact of the Global Financial Crisis. *Strategic Change*, 24(2), 131–148.
- Dang, U. (2011). *The CAMEL Rating System in Banking Supervision: A Case Study*. (Degree Project, Arcada University of Applied Sciences, Finland).
- Demirguc-Kunt, A., Detragiache, E., & Merrouche, O. (2013). Bank Capital: Lessons from the Financial Crisis. *Journal of Money, Credit and Banking*, 45(6), 1147-1164.
- Dietricha, A., & Wanzenried, G. (2009). Determinants of Bank Profitability Before and During the Crisis: Evidence from Switzerland. *Journal of International Financial Markets, Institutions and Money*, 21(3), 307-327.
- European Central Bank. (2010). *Beyond ROE - How to Measure Bank Performance (Appendix to the Report on EU Banking Structures)*. Retrieved from www.ecb.europa.eu/pub/pdf/other/beyondroehowtomeasurebankperformace201009.pdf
- Färe, R., Grosskopf, S., & Weber, W., (2004). The Effect of Risk-Based Capital Requirements on Profit Efficiency in Banking. *Applied Economics*, 36(15), 1731–1743.
- Fatima, N. (2014). Capital Adequacy: A Financial Soundness Indicator for Banks. *Global Journal of Finance and Management*, 6(8), 771-776.
- Ganka, D. (2010). *Financial Sustainability of Rural Microfinance Institutions in Tanzania*. (PhD Thesis, University of Greenwich, Australia).

- Goddard, J., Molyneux, P., & Wilson, J. (2004). The Profitability of European Banks: A Cross-Sectional and Dynamic Panel Analysis. *The Manchester School*, 72(3), 363-381.
- Gropp, R., & Heider, F. (2010). The Determinants of Bank Capital Structure. *Review of Finance*, 14(4), 587–622.
- Gul, S., Irshad, F., & Zaman, H. (2011). Factors Affecting Bank Profitability in Pakistan. *The Romanian Economic Journal*, (39), 61-81
- Hartarska, V., & Nadolnyak, D. (2007). Do Regulated Microfinance Institutions achieve better Sustainability and Outreach? Cross-Country Evidence. *Applied Economics*, 39(10), 1207 – 1222.
- Harward, B., & Upton, M. (1961). *Introduction to Business Finance*. New York: McGraw Hill.
- Hasan, A., & Aykut, K. (2014). The Effect of Bank Capital on Profitability and Risk in Turkish Banking. *International Journal of Business and Social Science*, 5(1), 252-271.
- Hassan, K. (2001). *Determinants of Islamic Banking Profitability*. (Ph.D. Thesis, University of New Orleans, New Orleans).
- Helms, B. (2006). *Access for All: Building Inclusive Financial Systems*. Washington DC: World Bank Group.
- Hermes, N., Lensink, R., & Meesters, A. (2011). Outreach and Efficiency of Microfinance Institutions. *World Development*, 39(6), 938–948.

- Inanga, E. L., & Ajayi, C. A. (1999). *Accountancy*. Lagos: The CIBN Press Limited.
- Idama, A., Asongo, A. I., & Nyor, N. (2014). Credit Risk Portfolio Management in Microfinance Banks: Conceptual and Practical Insights. *Universal Journal of Applied Science*, 2(6), 111-119.
- Jackson, A. (1996). The How and Why of EVA. *Journal of Applied Corporate Finance*, 9(1), 98-115.
- Jansson, T. (2002). *Performance Indicators for Microfinance Institutions: Technical Guide*, MicroRate and Inter-American Development Bank. Washington, DC, Retrieved at www.microrate.com.
- Jensen, M. (1986). Agency Cost of Free Cash Flow, Corporate Finance and Takeovers. *American Economic Review*, 76(2), 323-329.
- Kajiriwa, H.I. (2015). Effect of Debt on Firm Performance: A Survey of Commercial Banks listed on Nairobi Securities Exchange. *Global Journal of Advanced Research*, 2(6), 1025-1029.
- Kamau, L. W. & Kagiri, A. W. (2015). Influence of Inventory Management Practices on Organizational Competitiveness: A Case of Safaricom Kenya Ltd. *International Academic Journal of Procurement and Supply Chain Management*, 1(5), 72-98.
- Kashyap, A.K., Rajan, R., & Stein, J.C. (2002). Banks as Liquidity Providers: An Explanation for the Co-Existence of Lending and Deposit-Taking. *The Journal of Finance*, 57(1), 33-73.

- Kariuki, M. S. (2015). *Effect of the Kenya Banks Reference Rate on the Performance of Commercial Banks in Kenya*. (MBA Project, University of Nairobi, Nairobi).
- Kiiru, M. (2013). *The Effect of Funding Structure on the Financial Performance of Deposit Taking Microfinance Institutions in Kenya*. (MBA project, University of Nairobi, Nairobi).
- Kioko, W. C., King'ori, S. N., & Shikumo, H.D. (2017). Determinants of Financial Performance of Microfinance Banks in Kenya. *Journal of Finance and Accounting*, 8(16), 1-7.
- Kipkoech. B.J., & Muturi, W. (2014). Determinants of Financial Performance of Microfinance Institutions in Kenya: A Case of Microfinance Institutions in Nakuru Town. *International Journal of Accounting and Financial Management*, 4(6), 1-16.
- Kitaka, P. (2001). *A Survey of the use of Financial Performance Indicators by Microfinance Institutions in Kenya*. (MBA Research Project, University of Nairobi, Nairobi).
- Kothari, R. (2008). *Research Methodology*. New Delhi: New Age International Publishers.
- Kumar, R. (2005). *Research Methodology a step-by-step guide for beginners*. Great Britain: SAGE Publications Ltd.
- Kuria, F. B. (2013). The Effect of Capital Structure on the Financial Performance of Commercial Banks in Kenya. (MBA Research Project, University of Nairobi, Nairobi).

- Laing, G., & Dunbar, K. (2015). EVA™, EPS, ROA and ROE as Measures of Performance in Australian Banks: A Longitudinal Study. *Journal of Applied Management Accounting Research* (Winter): 41-48.
- Ledgerwood, J. (1998). *Microfinance Handbook: An Institutional and Financial Perspective*. Washington, DC: World Bank.
- Levine, R., & Laeven, L. (2009). Bank Governance, Regulation and Risk Taking. *Journal of Financial Economics*, 93(2), 259-275.
- Maina, W. M. (2015). *Determinants of Interest Rate spread among Commercial Banks of Kenya*. (MBA Project, Jomo Kenyatta University of Agriculture and Technology, Nairobi).
- Majumdar, S. K., & Chhibber, P. (1999). Capital Structure and Performance: Evidence from A Transition Economy on An Aspect of Corporate Governance. *Public Choice*, 98, 287- 305.
- Mathuva, D.M. (2009). Capital Adequacy, Cost Income Ratio and The Performance of Commercial Banks: The Kenyan Scenario. *The International Journal of Applied Economics and Finance*, 3(2), 35-47.
- Mbithi, B. K. (2003). *The Relationship between Financial Structure and Performance of Micro and Small Enterprises in Nairobi*. (MBA Project, University of Nairobi, Nairobi).
- Meckling, W. & Jensen, M. C. (1976). Theory of the Firm: Managerial Behaviour, Agency Costs, and Ownership Structure. *Journal of Financial Economics*, 3(4), 305-360.

- Mersland, R., & Strøm, R. (2009). Performance and Governance in Microfinance Institutions. *Journal of Banking and Finance*, 33(4), 662 – 669.
- Mugenda, A., & Mugenda, O. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: Africa Center for Technology (ACTS).
- Muriu, P. (2011). Microfinance Profitability: What explains the Low Profitability of African Microfinances? *African Journal of Social Sciences*, 2(3), 85-115.
- Musyoka, B.K. (2017). *The Effect of Capital Adequacy on the Financial Performance of Commercial Banks in Kenya*. (MBA Project, University of Nairobi, Nairobi).
- Myers, S.C. (1977). The Determinants of Corporate Borrowing. *Journal of Financial Economics*, 5(2), 147-75.
- Nazir, T., & Sangmi, M. (2010). Analyzing Financial Performance of Commercial Banks in India: Application of CAMEL Model. *Journal Commercial Social Sciences*, 4(1), 40-55.
- Nelson, S. (2011). *Performance Assessment of Micro Finance Institution in the Ashaiman Municipality*. (MSc thesis, Kwame Nkrumah University of Science and Technology, Ghana).
- Ngendahayo, E. (2008). *Legal Status, Governance and Performance of the Institutions of Microcredit: An Empirical study on MIX Data*. (Masters Project, University of Lille, Lille).
- Ngo, P.T. (2006). Endogenous Capital and Profitability in Banking. *Working Paper, 464*, ANUCBE School of Economics.

- Njeri, K. M., & Kagiri, W. A. (2013). Effect of Capital Structure on Financial Performance of Banking Institutions Listed in Nairobi Securities Exchange. *International Journal of Science and Research*, 4(7), 924-930.
- Nthiwa, P. K. (2001). *A Survey of use of Financial Performance Indicators by Microfinance Institutions in Kenya*. (MBA Project, University of Nairobi, Nairobi).
- Olalekan, A., & Adeyinka, S. (2013). Capital Adequacy and Banks' Profitability: An Empirical Evidence from Nigeria. *American International Journal of Contemporary Research*, 3(10), 87-93.
- Onaolapo, A., & Olufemi, A. (2012). Effect of Capital Adequacy on the Profitability of the Nigerian Banking Sector. *Journal of Money, Investment and Banking*, (24), 61-72.
- Ondigo, H. O. (2016). *Corporate Governance, Risk Management, Firm Characteristics and Financial Performance of Commercial Banks in Kenya*. (PHD Project, University of Nairobi, Nairobi).
- Ongore, V. O., & Kusa, G. B. (2013). Determinants of Financial Performance of Commercial Banks in Kenya. *International Journal of Economics and Financial Issues*, 3(1), 237-252.
- Onyeka, V.N., Onyekwelu, U.L., & Chukwuani, V.N. (2018). Effect of Liquidity on Financial Performance of Deposit Money Banks in Nigeria. *Journal of Economics and Sustainable Development*, 9(4), 19-28.

- Orua, E. A. (2009). The Relationship between Capital Structure and Financial Performance of Microfinance Institutions in Kenya. (MBA Research Project, University of Nairobi, Nairobi).
- Otwani, M.N., Simiyu, G.N., & Makokha, E.N. (2017). Impact of Capital Adequacy on the Financial Performance of Companies Listed on the Nairobi Securities Exchange in Kenya. *International Journal of Social Sciences and Information Technology*, 3(9), 2506-2513.
- Polit, D.F., & Beck, C.T. (2003). *Nursing Research: Principles and Methods*. Philadelphia: Lippincott Williams and Wilkins.
- Repullo, R. (2004). Capital Requirements, Market Power, and Risk-Taking in Banking. *Journal of Financial Intermediation*, 13(2), 156–182.
- Rime, B. (2001). Capital Requirements and Bank Behaviour: Empirical evidence for Switzerland. *Journal of Banking & Finance*, 25(4), 789-805.
- Rob, R., & Calem, P. S. (1996). The Impact of Capital-Based Regulation on Bank Risk-Taking: a Dynamic Model. *Finance and Economics Discussion Series 96-12*, Board of Governors of the Federal Reserve System.
- Schindler, P., & Cooper, R.D. (2003). *Business Research Methods*. New Delhi: Tata McGraw-Hill Publishing Company.
- Sichigea, F. D., Ganea, M., & Tupangiu, L. (2011). Financial Performance Indicators – Instruments in Lending Decision Making. *Journal of Finance – Challenges of the Future*, 1(13), 168-174.

- Simerly, R., & Li, M. (2000). Environmental Dynamism, Capital Structure and Performance: A Theoretical Integration and An Empirical Test. *Strategic Management Journal*, 21(1), 31-49.
- Staikouras, C., & Wood, G. (2004). The Determinants of European Bank Profitability. *International Business and Economics Research Journal*, 3(6), 57-68.
- Thakor, A. (1996). Capital Requirements Monetary Policy and Aggregate Bank Lending: Theory and Empirical Evidence. *The Journal of Finance*, 51(1), 279-324.
- Trochim, W. M. (2005). *Research methods: The Concise Knowledge Base*. Texas: Atomic Dog Publishing.
- Von Thadden, E.L. (2004). Bank Capital Adequacy Regulation under the new Basel Accord. *Journal of Financial Intermediation*, 13(2), 90-95.
- Whalley, E. A., & Milne, A. L. (2002). Bank Capital Regulation and Incentives for Risk-Taking. *Research Paper*, Cass Business School.

APPENDICES

Appendix I: List of Sampled MFBs

1. Faulu Microfinance Bank
2. Kenya Women Microfinance Bank
3. Rafiki Microfinance Bank
4. Remu Microfinance Bank
5. SMEP Microfinance Bank
6. SUMAC Microfinance Bank
7. Uwezo Microfinance Bank
8. U & I Microfinance Bank

Appendix II: List of MFBs in Kenya

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

Source: CBK Report (2017)

Appendix III: Research Data

	Microfinance Bank	Year	Return on Asset	Capital Adequacy Ratio	Liquidity	Asset Quality	Management Efficiency	Size
1	Faulu Microfinance Bank	2017	0.8%	20.0%	27.3%	16.8%	55.3%	24.0
		2016	0.4%	20.1%	30.0%	9.2%	53.5%	24.0
		2015	0.7%	21.0%	31.0%	3.7%	57.9%	24.0
		2014	2.1%	22.0%	24.0%	4.2%	57.3%	23.7
		2013	1.9%	10.0%	23.0%	5.4%	65.2%	23.2
2	Kenya Women Microfinance Bank	2017	0.1%	23.0%	29.0%	21.0%	74.6%	24.1
		2016	1.0%	24.0%	29.0%	17.4%	70.1%	24.2
		2015	1.8%	23.0%	28.0%	11.6%	70.1%	24.2
		2014	2.6%	24.0%	28.0%	5.5%	72.4%	24.0
		2013	2.6%	19.8%	27.0%	7.5%	70.3%	23.8
3	Rafiki Microfinance Bank	2017	-6.7%	11.2%	18.6%	59.7%	118.9%	22.6
		2016	-6.3%	17.0%	65.0%	35.3%	93.4%	22.7
		2015	0.6%	21.0%	53.0%	12.0%	72.0%	22.8
		2014	0.3%	24.0%	35.0%	9.0%	75.0%	22.5
		2013	0.4%	26.0%	42.0%	10.0%	74.0%	22.0
4	Uwezo Microfinance Bank	2017	-5.7%	91.1%	108.0%	72.5%	123.4%	19.2
		2016	1.6%	89.6%	48.9%	44.5%	93.4%	19.2
		2015	-0.9%	122.0%	217.0%	44.8%	88.9%	19.2
		2014	1.1%	55.0%	15.0%	25.8%	85.8%	18.9
		2013	-3.5%	66.0%	25.0%	31.7%	110.3%	18.5
5	U & I Microfinance Bank	2017	0.7%	50.3%	21.2%	8.8%	68.8%	19.8
		2016	3.5%	56.5%	26.5%	5.0%	60.5%	19.7
		2015	5.0%	79.1%	27.6%	7.4%	62.6%	19.0
		2014	2.5%	145.0%	57.0%	8.2%	81.8%	18.7
		2013	2.7%	165.0%	63.4%	8.9%	85.5%	18.2
6	SUMAC Microfinance Bank	2017	0.9%	27.2%	60.0%	8.5%	54.3%	20.9
		2016	2.2%	32.0%	28.8%	6.1%	59.0%	20.5
		2015	2.0%	35.0%	39.7%	17.2%	56.4%	20.2
		2014	1.0%	51.1%	27.0%	15.9%	74.0%	19.8
		2013	-5.2%	63.0%	21.0%	10.5%	105.8%	19.5

	Microfinance Bank	Year	Return on Asset	Capital Adequacy Ratio	Liquidity	Asset Quality	Management Efficiency	Size
7	SMEP Microfinance Bank	2017	-4.4%	13.2%	23.1%	18.8%	96.6%	21.7
		2016	-2.5%	20.7%	30.0%	20.0%	87.6%	21.7
		2015	-0.2%	28.0%	24.0%	18.9%	88.3%	21.7
		2014	-4.9%	34.9%	29.2%	15.4%	103.2%	21.6
		2013	1.1%	40.1%	29.8%	12.1%	82.4%	21.6
8	Remu Microfinance Bank	2017	-7.0%	53.5%	54.2%	35.2%	114.8%	19.8
		2016	-4.6%	58.3%	36.0%	33.9%	97.6%	19.7
		2015	-5.2%	59.1%	40.0%	28.7%	109.4%	19.8
		2014	0.9%	79.4%	80.9%	25.0%	79.7%	19.8
		2013	-1.7%	60.9%	67.0%	20.7%	96.0%	19.6