LIQUIDITY REGULATION AND PROFITABILITY GROWTH OF MICROFINANCE BANKS IN KENYA

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF BANKING AND FINANCE IN THE SCHOOL OF BUSINESS AND ECONOMICS

MOI UNIVERSITY

NOVEMBER, 2019

DECLARATION

Declaration by the Student

I declare that this research project is my original work and has not been presented for a degree or other award in any other University. No part of this document may be reproduced or transmitted in any form or by any means without prior written permission of the author and Moi University.

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DEDICATION

This project is dedicated to the Almighty GOD, my Essence, and to my loving parents Jonathan and Pauline Vaita, who have supported and encouraged me each step in accomplishing this task. Thank you and may GOD richly bless you.

As well, this project is dedicated to all stakeholders in the Microfinance industry in a bid to provide new knowledge and insight for a vibrant industry that seeks to empower.

ABSTRACT

Microfinance banks, MFBs, being deposit-taking institutions providing financial services to the low-income segment of the market, strike a balance in complying with the regulator's requirements as well as maintaining their financial growth through profit achievement. Three commercial banks were placed under receivership by the Kenyan regulator Central Bank of Kenya CBK between August 2015 and April 2016, and CBK reacted by providing a facility to all banks including MFBs facing liquidity problems. The problem statement was to determine the relationship between liquidity regulation and capital adequacy regulation on profitability growth of MFBs in Kenya that previous studies had not done in the period between 2013 and 2017 using secondary quantitative data and measurements prescribed by CBK. This study examined liquidity regulation and profitability growth of microfinance banks in Kenya in the period of 2013 to 2017. The main objective of the study was to establish the effect of liquidity regulation on profitability growth of MFBs in Kenya. Specific objectives included investigating the effect of liquidity ratio and capital adequacy on profitability growth of Kenyan MFBs. The theory that underpinned this study was the public interest theory and was complemented by the shiftability theory and buffer theory. The study adopted quantitative explanatory research design. The target population was the 13 MFBs licensed as at December 31, 2017. Inclusion-exclusion criteria was used to determine the size of sample from the population to be used, whereby 9 MFBs licensed in the entire five-year study period of 2013 to 2017 were analyzed while 4 MFBs licensed between 2015 and 2017 being a lesser period than the five-year study period were not analyzed. The list of licensed MFBs from the CBK was used as the sampling frame. The study focused on secondary data that was analyzed. The multiple regression model used logarithm to bring uniformity. Descriptive and inferential statistics analytical tools were used. The findings were presented in form of tables, graphs, charts and short narrations. The study results found a positive relationship between liquidity ratio, LR, and profitability growth, PG, at 0.036, and capital adequacy, CA, and profitability growth at 0.601. A statistically significant relationship was found that existed between LR and CA with profitability growth at $p = 0.000$. A unit increase in LR results in a 0.084 increase in PG and a unit increase in CA results in a 0.607 increase in PG. The study concluded that the relationship between liquidity regulation and profitability growth of MFBs was statistically significant and positive where a unit increase in liquidity resulted in an increase in profitability growth hence regulation being for the interest of the public whom the MFBs serve as the MFBs profitably operate is good. The study recommended that regulators and policymakers introduce a requirement for MFBs to hold unencumbered high quality liquid assets to survive a 30-calendar day liquidity stress scenario, and the study supported the proposed increment of core capital requirement for the MFBs. Also recommended was further research on capital adequacy ratios as prescribed by the regulator, and their effect on profitability growth of MFBs.

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OPERATIONAL DEFINITION OF TERMS

Core Capital	Shareholders equity in the form of issued and fully paid-up shares of common stock, plus all disclosed reserves, less goodwill or any other intangible assets (Central Bank of Kenya, 2006). Core Capital was used in this study as the measurement for the capital adequacy independent variable.
Capital Adequacy	Maintenance of minimum capital requirements at all times in accordance with the Act and Regulations (Central Bank of Kenya, 2008). Capital Adequacy was one of the independent variables collected and analyzed in this study.
Cost	The original price of an asset (New York State Society of Certified Public Accountants [NYSSCPA], 2019). Cost in this study is used in the context it is applied in including as part of a definition, explanation, the stated financial value or other use.
Expenses	Something spent on a specific item or for a particular purpose (NYSSCPA, 2019). Expenses are used in this study as defined.
For-Profit	Established, maintained, or conducted for the purpose of making a profit. (https://www.merriam-webster.com/dictionary/for-profit) For-profit is used in this study to mean an organization whose main objective is to make a profit.
Income	Inflow of revenue during a period of time (NYSSCPA, 2019). Income is used in this study as applied including as a financial value.
Liquidity	Available money on hand to pay bills when they are due and to take care of unexpected needs for cash (NYSSCPA, 2019). In this study, liquidity was one of the independent variables collected and analyzed.
Logarithm	It is the exponent that indicates the power to which a base number is raised to produce a given number. (https://www.merriam-webster.com/dictionary/logarithm)

	The natural logarithm of the number; Log base e of the number was used in this study.
Profit	Also being operating profit, is the difference between the revenue of a business and the related costs and expenses, excluding income derived from sources other than the business' regular activities and before income deductions (NYSSCPA, 2019). Profit is used in this study as the foundation of the dependent variable, profitability growth.
Profitability Growth	Progress of profit in each successive financial period. Profitability growth is the dependent variable in this study.
Regulation	Imposition of rules by government, backed by use of penalties. (https://stats.oecd.org/glossary/detail.asp?ID=3295) Regulation in this study is specific to the banking industry.
Revenue	Sales of products and services. Earnings from interest, dividend, rents (NYSSCPA, 2019). Revenue in this study is used as an alternate word for income and as defined.
Supplementary Capital	General provisions which are held against future and presently unidentified losses that are freely available to meet losses which subsequently materialize and revaluation reserves on the premises of an institution which arise periodically from the independent valuation of those premises and any other form of capital as may be determined by the Central Bank, (Central Bank of Kenya, 2008). Supplementary Capital was used in the study as a measurement for the capital adequacy regulation requirement which is one of the independent variables.
Total Capital	Is the sum of the core capital and the supplementary capital (Central Bank of Kenya, 2008). Total Capital was used in this study as the measurement for capital adequacy regulation, one of the independent variables.

LIST OF ABBREVIATIONS AND ACRONYMS

BSD – Bank Supervision Department

CA – Capital Adequacy

CBK – Central Bank of Kenya

DTMI – Deposit-taking Microfinance Institution

KE – Kenya

LOG 'Log' – Logarithm

LogLR – Logarithm of Liquidity Ratio

LogPATBD – Logarithm of Profit after Tax before Donations

LogTC – Logarithm of Total Capital

LR – Liquidity Ratio

MF – Microfinance

MFB – Microfinance Bank

MFI – Microfinance Institution

PATBD – Profit after Tax before Donations

ROA – Return on Asset

ROE – Return on Equity

TC – Total Capital

ACKNOWLEDGMENT

I thank my supervisors Dr. Lucy Rono and Mr. Julius Kirui for their guidance and patience throughout the project, along with Moi University and the Kenya School of Monetary Studies fraternity for their understanding, provision and availability of resources any time I needed them.

Thank you and GOD bless you.

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter presents the background of the study, statement of the problem, research objectives, hypotheses, significance and scope of the study.

1.1 Background of the Study

Profitability is a measurement of the financial performance of a for-profit organization, an organization that seeks a financial goal of making a profit, a net positive difference of income or revenue to the costs or expenses, in each financial period. It is a crucial determinant of sustainability in the long-run (Yu, Damji, Vora & Anand, 2014). Wafula, Mutua and Musiega (2016) stated that profitability persists to a moderate extent. Monyi (2017) stated that low profitability weakens the capacity of institutions to absorb negative shocks. Ekpo and Mbobo (2016) stated that the concern of profitability is maintaining or increasing the firm's earnings by giving attention to cost control, pricing policy, turnover, asset management and capital expenditures. It is the most important financial objective for an entity seeking to have a profit. Growth through the years is therefore expected of for-profit organizations. As Monyi further stated highly consistent profitable firms are successful hence determined to reduce operational costs. Microfinance banks being for-profit banking entities that provide financial services to the lower income-earning people in the population, have a need to remain consistently profitable with levels of growth in each successive financial period. Ekpo and Mbobo further stated that microfinance banks being profit-oriented, low profitability contributes to under-capitalization because of

heavy reliance on external capital and lower retained earnings, which are funds from the profits earned and used in the entity. It is imperative for microfinance banks to maintain and grow their profit in each financial period while remaining compliant to the regulator's requirements. Microfinance banks being deposit-taking microfinance institutions are subject to the regulator, which is a government institution that licenses, regulates and supervises deposit-taking microfinance business, hence the banks have to meet and remain compliant to the set requirements by the regulator. As a regulated institution, its compliance to the regulatory requirements does not negate its desire to remain profitable throughout its existence.

Such regulatory requirements include liquidity, capital adequacy, preparation and submission of financial accounts in prescribed formats at set times among other regulations. Liquidity regulatory requirement requires a minimum holding of liquid assets, assets that are easily converted to cash through sale hence transfer of ownership with little or no loss of financial value. Mwangi (2014) stated that liquidity a term used to describe how easy it is to convert assets to cash, is the amount of capital that is available for investment and spending. Its lack thereof causes more financial problems than almost any other aspect of finance. The primary reason for the attention is to ascertain the company's ability to pay its bills, determining the financial health of the business. Buseretse (2015) stated that liquidity is the ability of an institution to generate sufficient cash or its equivalent in a timely manner at a reasonable price to meet its commitments as they fall due. Buseretse further stated that it is the probability that an asset can be converted into an expected amount of value within an expected amount of time. With this in mind, microfinance banks ensure they maintain a healthy liquidity. Examples of

various countries statutory minimum as prescribed in their Regulations and Guidelines include, Prudential Regulations for Microfinance Banks by the State Bank of Pakistan (2014), for Pakistan microfinance banks is ten percent of its net total deposit liabilities and time liabilities of a tenor of less than one year, Revised Regulatory and Supervisory Guidelines for Microfinance Banks MFBs in Nigeria by the Central Bank of Nigeria (2012), for Nigerian microfinance banks is twenty percent of its deposit liabilities, The Banking and Financial Institutions Microfinance Activities Regulations by the Bank of Tanzania (2014), for Tanzanian microfinance banks is twenty percent of its deposit liabilities, and Microfinance DTMI Regulations by the Central Bank of Kenya (2008), for Kenyan microfinance banks is twenty percent of all its net deposit liabilities, matured and short-term liabilities. Capital Adequacy also a regulatory requirement requires the maintenance of a minimum capital base. Capital is the amount of own funds available to support the bank's business and act as a buffer in case of adverse situation (King'ori, Kioko & Shikumo, 2017). They further stated that capital adequacy is normally proxied using proportion of equity to total assets. Monyi (2017) further stated that a strong capital base provides a firm foundation upon which the financial excellence of the institution is built. Microfinance banks seek to maintain a healthy capital base at all times of operation. Various countries minimum capital requirement to be maintained at all times by microfinance banks is as prescribed in their Regulations and Guidelines. These include, for Pakistan is three hundred million rupees for a microfinance bank licensed to operate in a specified district, four hundred million rupees for a microfinance bank licensed to operate in a specified region, five hundred million rupees for a microfinance bank licensed to operate in a specified province, one billion rupees for a microfinance bank

licensed to operate at national level. For Nigeria, a minimum paid-up capital of twenty million Naira for a Unit microfinance bank which is authorized to operate in one location, one hundred million Naira for a State microfinance bank which is authorized to operate in one state or federal capital territory, two billion Naira for a National microfinance bank which is authorized to operate in more than one state or federal capital territory. For Tanzania, a core capital of five billion Shillings for Tanzanian microfinance banks. For Kenya, core capital of twenty million Shillings for a community microfinance bank, which is authorized to operate in one government administrative district or division, and sixty million Shillings for a nationwide microfinance bank, which is authorized to operate countrywide, as stated in the Regulations and the Guidelines on the Licensing Procedures/Steps for Deposit-taking Microfinance Business in Kenya by the Central Bank of Kenya (2008).

Such regulation is applied on the deposit-taking microfinance institutions, which are referred to as microfinance banks. Microfinance, which is financial products and services provided at a small 'micro' scale, dates back to the 1970s when globally scattered institutions started providing commercial microfinance programs according to Robinson (2001). Dr. Muhammad Yunus credited as the pioneer of modern vision microfinance began offering small loans to basket weavers in Bangladesh in the 1970s and formed the Grameen Bank in 1983 as stated by Kiarie (2016). Mamati, Ayuma and Mwirigi (2017) stated that Indonesian People's Credit Banks opened in 1895 and became the largest microfinance system in Indonesia, then various models of microcredit started rising in parts of South America from the beginning of the 1900s. Various authors including Ekpo and Mbobo (2016) and Kiarie (2016) stated that "susu" in West Africa was among the

earliest form of savings and credit in Africa, this coupled by further statement by Ekpo and Mbobo on the names these financial services were given by communities across the world such as “ajo” by the Yoruba people, “akawo” by the Igbo people, “adashi” by the Hausa people in Nigeria, “tandas” by the people in Mexico, “arisan” by the Indonesian people, “cheetu” by the people of Sri Lanka, “chit funds” in India and the “pasanaku” by the people of Bolivia whereby members of a group would contribute a specified amount of money periodically into a common pool, and the total amount was given to one member or a group of members until every member benefits in turn. In Ghana, the targeted group receiving microfinance services include low income entrepreneurs who are usually self-employed provisions store operators also known as convenient or grocery stores, petty traders, carpenters, seamstresses, hairdressers, artisans, small farmers, commercial drivers and street vendors (Boohene, Aboagye, Lakshmi, Maxwell & Singh, 2018). From an initial provision of government- and donor-subsidized microcredit to savings and commercial finance that enabled the microfinance institutions to become self-sufficient hence sustainable in the long term. Kiarie further stated that the Catholic Church in Europe founded pawn shops to protect people from high interest charging moneylenders, and that more formal ways of lending were already established in Ireland with the Irish Loan Fund system in 1720 using peer monitoring to enhance weekly repayment. Further stated by Ashenafi and Kingawa (2018) on the Loan Fund was that having been initiated by Jonathan Swift, it slowly began and was widespread with about 300 funds all over Ireland by the 1840s, by making small loans with interest for short periods. Microfinance institutions had developed in the United States in the 1980s and 1990s, as stated by Bernanke (2007) the then Chairman of the Federal Reserve Bank

during the Accion Texas Summit on microfinance. As Robinson stated, microfinance primarily provides credit and savings which help low-income people reduce risk, improve management, raise productivity, obtain higher returns on investments, increase income while improving their lives and those of their dependents. Microfinance has seen its growth from being credit provided in the informal financial sector at high borrowing costs to the borrowers, to non-government organizations and non-bank financial institutions with appropriate credit methodologies though operating at a small scale, to microfinance banks with deposit-taking authorization with a wide array of service and product provision while being subject to regulation by the government agency, the regulator. In Zimbabwe, national sustained rise in unemployment found many people unable to access formal banking system whose services were mainly salary-based, hence there was a shift towards microfinance whose services were suitable and convenient to the unbanked poor and informal businesses (Mbira & Tapera, 2016). In Ethiopia, microfinance institutions sprang after the July 1996 Licensing and Supervision of Microfinance Institution Proclamation establishment by the government which enabled their legal registration and delivery of services to the people in the rural and urban areas (Shibru & Menza, 2017). Microfinance in Kenya began as church-based programs for the unbanked, as stated by Ndung'u (2011) the Central Bank of Kenya CBK Governor at the time, during the launch of a recently licensed microfinance bank which began microfinance activities in 1975. The Microfinance Act by the Central Bank of Kenya (2006) provided for the deposit-taking microfinance business in Kenya and was operationalized in 2008 as Ndung'u further stated. To this effect, a microfinance bank, which is a deposit-taking microfinance institution as defined in Kenya's the Microfinance

Amendment Act of the Central Bank of Kenya (2013), accepts money on deposit from members of the public for a period, holds the deposit in current accounts and pays and accepts cheques, employs part or whole of that money by lending, investing, providing short-term loans to small or micro enterprises or low-income households while using collateral substitutes. Other services include insurance products. Micro being small, hence microfinance being finance provided in small amounts, implies that low-income persons make the majority if not all of customers for microfinance banks due to their need for financial services of micro amounts. Since the Act was operationalized, thirteen MFBs have been licensed as at December 31, 2017, as shown in Appendix IV.

According to Ghalib (2017), the 1998 banking crisis left one surviving microfinance bank, Bank Rakyat Indonesia, standing proving that a regulated microfinance bank is a strong deposit-taking financial institution. In Kenya, within a few months between August 2015 and April 2016, three commercial banks were placed under receivership by the regulator Central Bank of Kenya. The regulator reacted by providing a facility to any bank which included microfinance banks that were facing liquidity problems of no fault of the banks, as a measure of dealing with any fear that the public may have on the safety of their deposits held in the banks, as stated by Obulutsa (2016) in a Reuters news report. The banks under receivership being licensed, supervised hence regulated by CBK failed to independently survive calling for the need of this study on liquidity regulation and profitability growth of microfinance banks measuring liquidity regulation using the Central Bank of Kenya prescribed liquidity and capital measurements, to determine the relationship between the variables. Further reiterated by Gietzen (2017) that modern microfinance which targets its activities to groups otherwise barred from formal financial

services, has been widely accepted as a viable business model, noting further quote on the belief that microfinance is resilient to most traditional risks in banking thanks to its unique business model.

Several studies have been carried out to ascertain the effect of regulation on financial performance of microfinance banks.

1.2 Statement of the Problem

Studies such as David and Muendo (2018) on the effect of CBK Regulations on the financial performance of 13 MFBs in the period ending December 31, 2016, found that a strong positive and statistically significant relationship existed between liquidity and capital adequacy regulations and financial performance. However, the study was carried out on 82 respondents from the Risk, Compliance and Finance departments of the MFBs, with primary data collected from completed questionnaires analyzed to investigate the effect that statutory requirements which included liquidity ratio, and capital adequacy requirements have on financial performance. Other related studies' results with diverse measurements and study periods from this study that further justified this study included King'ori *et al*., (2017) on the determinants of financial performance of 7 Kenyan microfinance banks between 2011 and 2015, along with Nderitu (2016) on the effect of growth on profitability of 9 Kenyan MFBs in 2011 and 2015, and Buseretse (2015) study on the effect of liquidity on profitability of 6 Kenyan MFBs between 2011 and 2014, which found that a negative and statistically significant relationship existed between liquidity and capital adequacy on financial performance and profitability respectively. However, Mwangi (2014) on the effects of liquidity on financial performance of Kenyan

DTMIs secondary data in 2009 to 2013, found a strong positive statistically significant relationship. Otieno, Nyagol and Onditi (2016) on the empirical analysis on relationship between liquidity risk management and financial performance of 6 Kenyan microfinance banks in the period 2011 to 2015, and Afude (2017) on the effect of financial regulation on the performance of Kenyan MFIs 2000 to 2016 post-regulation, analyzed secondary data found a positive and statistically significant relationship between liquidity and financial performance and profitability. Shibru and Menza (2017) on the determinants of financial profitability of Ethiopian MFIs over the period 2004, 2006 and 2008, found capital asset ratio having a positive and statistically significant effect on financial profitability.

This study therefore sought to investigate liquidity regulation and profitability growth by determining the relationship between liquidity ratio and capital adequacy on profitability growth of microfinance banks through the analysis of secondary data from the Central Bank of Kenya Bank Supervision Department audited annual reports in the period 2013 to 2017, and using measurements prescribed in the Microfinance Deposit-taking Microfinance Institutions Regulations by CBK (2008).

1.3 Research Objectives

1.3.1 General Objective

To establish the effect of liquidity regulation on profitability growth of microfinance banks in Kenya.

1.3.2 Specific Objectives

This study was guided by the following specific objectives:

i. To investigate the effect of liquidity ratio on profitability growth of microfinance banks in Kenya

ii. To determine the effect of capital adequacy on profitability growth of microfinance banks in Kenya

1.4 Research Hypotheses

The hypotheses underlying this study were as follows;

H_{o1}: There is no significant effect of liquidity ratio on profitability growth of microfinance banks in Kenya

H_{o2}: There is no significant effect of capital adequacy on profitability growth of microfinance banks in Kenya

1.5 Significance of the Study

This study is important in providing new knowledge for use by;

Firstly, regulators such as the Kenyan regulator, the Central Bank of Kenya, in its supervisory role to the microfinance banks, will have additional knowledge in recent times on the significant effect that liquidity regulation has had on the profitability growth of microfinance banks.

Secondly, policy makers, as they make amendments to existing laws and regulations and any new policies created and effected in the regulation of microfinance banks, in respect to liquidity and capital adequacy, they will have new empirical knowledge to draw from.

Thirdly, scholars and researchers, as they carry out new research in the field of banking will use this study in their empirical review, since this study builds on existing knowledge on the effect of liquidity on profitability growth of microfinance banks.

Lastly, consultants and industry players, as they perform their duties in the day-to-day operations and growth of the microfinance and banking industry at large, will use this study's knowledge on the liquidity regulation and profitability growth of microfinance banks.

1.6 Scope of the Study

The study was on the effect of liquidity regulation on profitability growth of microfinance banks in Kenya during the five-year period between 2013 and 2017. It focused on the nine licensed microfinance banks in the entire study period, excluding 4 microfinance banks licensed after 2013. Explanatory research design was used, with secondary data analyzed, being the microfinance banks' data from the Central Bank of Kenya Bank Supervision Department audited annual reports for the period availed through the CBK website.

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This chapter presents theoretical and empirical literature on profitability growth, liquidity and capital adequacy regulations, microfinance, research gap and conceptual framework.

2.1 Concepts Review

The concepts reviewed included profitability growth, regulation, liquidity, capital adequacy and microfinance.

2.1.1 Concept of Profitability Growth

Profitability a financial measure on the net result or difference of the income, cash flowing in, and expenditure, cash flowing out, of a for-profit institution is a measure of success. Hence, growth of profit through time is a consistent desire and met need in the existence of the institution. According to Apalia (2017), profitability defined as the capacity to make a profit or as a quality or state of being profitable, is both a measure of performance and a determinant of sustainability, and one of the most important indicators for measuring success of a business. Profitability comes into play in sustainability, that is maintaining the present into the future, of the institutions as they seek to ensure that they net a positive financial return in the provision of services to the low-income customers. Sustainability of a microfinance bank, being a going-concern institution, meaning that it is an entity that remains in business and is making a profit in the foreseeable future, is critical to its consistent provision of products and services hence importance of positive

financial performance. Profitability is used as a measurement of management efficiency in the use of organizational resources in adding value to the business, with profit maximization said to be the main objective of all firms (Butsili & Miroga, 2018). Further stating that increasing profitability involves determining areas of a financial strategy that are working and those that need improvement, hence economic success which is determined by the magnitude of the net profit.

Yu *et al*. (2014) stated that profitability of a microfinance institution is a crucial determinant of sustainability in the long-run. They further stated that authorities must consider the impact their policies have on the firm-level profitability when establishing regulations. Mwangi (2016) explained it as the ability of a firm to realize profits from its business operations, an indication of how efficiently the management of a firm can make a profit through maximum utilization of available resources, and the ability of an investment to make a profit from its use. According to Wafula *et al.* (2016), profitability, a measure of financial performance of a microfinance institution, is used to determine the bottom line and is important to managers and owners. Hence an indicator of efficiency. Monyi (2017) stated levels of capitalization as one of the factors in the operating environment in determining profitability.

Profit is measured as the net difference of income and expenses, with the positive net difference being a profit, since a negative net difference is a loss. In this study, profit was measured using net profit after tax before donations, PATBD. This measurement was as prescribed by the Central Bank of Kenya Bank Supervision Department ‘CBK BSD’ Annual Reports, the source of the study’s secondary data.

2.1.2 Concept of Regulation

Yu *et al.* (2014) stated that regulation is prudential or non-prudential, where the former intends to preserve the stability of the bank by establishing penalties that deter institutions from taking excessive risks, and the latter seeks to promote good behavior in the system by requiring consumer protection, information disclosure and fair business practices. Axmann (2015) stated that prudential regulation aims specifically at protecting the financial system as a whole as well as protecting the safety of small deposits in individual institutions, while non-prudential regulation involves the regulatory policies governing day-to-day functions of the banks' operations. Yu *et al*. further stated that in an effort to protect the deposits accepted and held in microfinance institutions, governments around the world have expanded these institutions' regulations. Ali (2015) agreed that the purpose of prudential regulation is to ensure the financial soundness of financial intermediaries, which include microfinance banks, and to prevent financial system instability. Ali further stated that two instruments of regulation frequently adopted include, a) preventive regulation, a pre-crisis measure taken by external supervisors to reduce the probability of failure of financial institutions, that tries to control the risk exposure of the financial system where supervisors use entry and ongoing requirements ensuring only financially healthy institutions join the market place, hence considered a powerful action, and b) protective regulation, a post-crisis measure taken by external regulators to avoid a run on deposits by assuring depositors that they will be first to withdraw their funds from the financial institutions. On-site and off-site supervision by the regulator involves actual visits to the financial institutions for the former, and analysis of required data submitted by the financial institutions for the latter. As Atarere (2016)

stated, microfinance banks were introduced specifically to serve the poor segment of the Nigerian society.

According to Ledgerwood (1999), microfinance institutions should be regulated when they mobilize deposits from the public, when standards of good practice are clearly needed, and when they reach the size at which their failure would have consequences that reach far beyond owners and creditors.

In Kenya, the Central Bank of Kenya, under the Central Bank Act Cap 491, is the regulator with a mandate to foster liquidity, solvency and proper functioning of a market-based financial system, through development and continuous review of appropriate laws, regulations and guidelines governing the banking sector players, and ensuring they remain relevant to the operating environment, inspection of the sector players which include microfinance banks to ensure compliance, while protecting the interests of depositors and other users of the banking sector players, along with analysis of financial reports and other returns from these sector players, while contributing towards initiatives that promote financial inclusion (CBK website).

According to the Microfinance Act by the Central Bank of Kenya (2006), a deposit-taking microfinance business, which is a microfinance bank business, as per the Microfinance Amendment Act by CBK (2013), is a microfinance business in which the person conducting the business holds himself or herself out as accepting deposits on a day-to-day basis, and any other activity of the business which is financed, wholly or to a material extent, by lending or extending credit for the account and at the risk of the person accepting the deposit, including the provision of short-term loans to small or micro enterprises or low income households, and characterized by the use of collateral

substitutes. As per the Kenya Microfinance Deposit Taking Microfinance Institutions Regulations by CBK (2008), the Central Bank of Kenya oversees all matters relating to a) licensing, b) place of business, c) capital adequacy, d) liquidity, e) governance, f) internal controls, auditing, reporting, publication and submission of financial statements and disclosures, and g) risk classification and provisioning of loans of microfinance banks. The Microfinance Act by CBK (2006), categories of microfinance banks are based on geographical, administrative or other criteria as the Kenya government's Finance Minister may deem necessary. Currently, two categories exist being nationwide microfinance bank and community-based microfinance bank.

This study sought to measure regulation using liquidity and capital adequacy, noting the importance placed on them by regulators, with set minimum requirements, along with submissions as prescribed, and at any time they are requested, for the financial soundness of the microfinance bank in its operations and holding of public deposits. Also, in the premise of the consultative paper on the review of the microfinance legislations released by the Central Bank of Kenya on February 23, 2018, proposal for increase in the minimum capital requirements for existing and new microfinance banks, enhances the justification to study the effect that capital has had on the profitability growth of microfinance banks.

2.1.3 Concept of Liquidity

Mwangi (2014) defined liquidity as how easy it is to convert assets to cash, and it is used to determine the health of a business or personal investment portfolio. Kimathi, Mugo, Njeje and Otieno (2015) stated that liquidity is the capacity of the bank to fund increase in assets and meet both expected and unexpected cash and collateral obligations at

reasonable cost and without incurring unacceptable losses. King'ori *et al.* (2017) referred to liquidity as the ability of institutions to meet demands for funds. In banking, liquidity means the ability of the bank to maintain sufficient funds to pay for its maturing obligations, and can also be defined as the availability of funds, or guarantee that funds will be available quickly to cover all cash outflow commitments in a timely manner (Atarere, 2016). A healthy liquidity ensures that the institution is always well-funded, to handle everyday operational needs, which include depositor funds withdrawal as well as having a cushion in case of unforeseen needs arising. This could include the holding of certain levels of cash in-house as well as having contractual relationships with other industry players to avail cash as and when needed at an agreed cost. Such proactive measures are essential and critical in microfinance banks. Inability to pay short-term monetary commitments can cause a company to face serious financial problems (Boohene *et al.*, 2018). According to Mwangi, liquidity problems may affect a bank's earnings and capital, and in extreme circumstances may result in the collapse of an otherwise solvent bank. In addition, a firm with sufficient capital may fail if it is not maintaining adequate liquidity. It has a significant effect in the financial performance of a firm.

According to the Kenya Microfinance Deposit taking Microfinance Institutions Regulations by CBK (2008), every microfinance bank shall, a) plan and fund its liquidity requirement over specific time periods, b) have a liquidity risk management plan which shall at a minimum address management structures and information systems, measure and monitor net funding requirements, have contingency planning schemes and internal controls for liquidity management, failure to comply with these requirements a

microfinance bank is liable to administrative sanctions as prescribed by Central Bank of Kenya. Every microfinance bank shall provide returns to the Central Bank of Kenya on the 15th, and last day of each month on its liquidity information in the prescribed format, and failure to which administrative sanctions shall be prescribed.

As per the Kenya Microfinance Deposit Taking Microfinance Institutions Regulations by CBK (2008), every microfinance bank is to maintain a minimum holding of liquid assets of twenty percent of all its deposit liabilities, matured and short-term liabilities. Non-compliance of this requirement, a microfinance bank is liable to prescribed penalty and additional charge of up to one percent, of the deficiency amount for every day the default continues. This 20% liquidity ratio minimum requirement was used in the study.

2.1.4 Concept of Capital Adequacy

Yu *et al*. (2014) quoted that, capital adequacy requirements establish the maximum level of leverage that a microfinance institution can reach in its operations, and thereby limits the amount of risk that a microfinance institution can have in its portfolio.

The Kenya Deposit Taking Microfinance Institutions Regulations by CBK (2008) define capital adequacy as the maintenance of minimum capital requirements at all times in accordance with the Act and Regulations. A failure to meet and maintain this regulatory requirement is a capital deficiency. Further, the capital requirement basis is the basis upon which total capital, core capital and supplemental capital are measured to determine capital adequacy by the Central Bank of Kenya.

Capital is the financial base of a business. Mostly referred to as share capital because shareholders, who are owners of the business, inject capital, funds, when the business

was formed and continuously inject funds as and when required during the running of the business. It reflects the strength of the business. King'ori *et al.* (2017) stated that capital is the amount of own funds available to support the bank's business and act as a buffer in case of an adverse selection.

As stated in the Kenya Deposit Taking Microfinance Institutions Regulations by CBK (2008), capital requirement basis means the basis upon which total capital, core capital and supplementary capital are measured to determine capital adequacy. The common factor in capital adequacy computation is core capital. It is used and added to supplementary capital to get the total capital. It is imperative to study the effect that core capital has had on the profitability growth of a microfinance bank, noting that regulatory guidelines in microfinance bank operations consider core capital whereby, a) a microfinance loan to a single customer does not exceed 2%, b) restrictions in trading and investments in other undertaking shall not exceed 25%, c) the aggregate amount lent to a single person and his or her associates shall not exceed 5%, d) insider lending limit is limited to 2%, and e) an outstanding credit facility aggregate shall not exceed 20%.

In Kenya, microfinance banks are expected at all times to maintain financial records that enable the proper computation of the institution's capital adequacy and to maintain the prescribed minimum capital requirements. The regulator, Central Bank of Kenya, determines at the time, if the microfinance bank is in compliance with the requirements whereby a non-compliance would result in administrative sanctions. Higher capital ratios for each institution may be required if financial losses lead to a capital deficiency, there is significant exposure to risk, there is a high or severe volume of poor asset quality, rapid institutional growth internally or through acquisitions without adequate capitalization and

risk management system among other Central Bank of Kenya prescribed resource needs, or if there is a likelihood that the activities or conditions of the microfinance bank holding company, associates or subsidiaries will adversely affect the microfinance bank. These regulations are prescribed in the Kenya Microfinance Deposit Taking Microfinance Institutions Regulations of CBK (2008).

In the data period used for this study, the core capital minimum statutory requirement for the nationwide microfinance bank was Kenya Shilling Kes60 million, whereas for the community-based microfinance bank was Kes20 million, while the ratio of core capital to total deposit liabilities minimum statutory requirement was 8%, the core capital to total risk weighted assets ratio minimum statutory requirement was 10%, and the total capital being core capital and supplementary capital to total risk weighted assets ratio minimum statutory requirement was 12%. The study chose the total capital, the sum of core capital and supplementary capital, that most measures the strength of a microfinance bank.

2.1.5 Concept of Microfinance

Microfinance is the provision of financial services to the low-income earning people at the bottom of the pyramid, the poorest socio-economic group. Asongo and Adamu (2015) stated that microfinance is an effective tool to fight poverty, by providing financial services to those who do not have access to or are neglected by the commercial banks and other financial institutions. Financial services include credit, savings, insurance among other relevant services required by the group. Dr. Muhammad Yunus is famed as the father of microfinance, having met a need in Bangladesh of serving the people that traditional banks did not, and began in the 1970s. He was motivated to action by the fact that Bangladesh business owners were forced to repay much of their profits to loan

issuers (Otieno, *et al.*,2016). Two models microfinance banks use in the provision of financial services to their customers include, relationship-based which serves individual entrepreneurs and small business, and group-based models which serve individuals who are entrepreneurs and together as a group seek and are served with credit and other bank services (Ashenafi & Kingawa, 2018).

Microfinance institutions, MFIs, are the organizations providing these financial services. Further reiterated by Shibru and Menza (2017), microfinance institutions provide different financial services for the poor who are out of the conventional banking system, particularly in developing countries, and are considered as a tool for poverty alleviation through improving access to finance and financial services. The rise of microfinance institutions due to traditional banking institutions not reaching the millions of poor people was due to the rural location of the people, dispersed nature of their location, low education levels, high administrative cost of serving these people as customers, lack of assets for collateral which is required in traditional banking, and the poor peoples' access to exorbitantly high-interest loans from money lenders. Yu *et al.* (2014) stated that microfinance institutions bridge the financial inclusion gap in developing countries by providing poor individuals with capital in an effort to alleviate poverty. The goals of microfinance institutions as development organizations is to service the financial needs of unserved and underserved markets, as a means of meeting development objectives which include, a) reduce poverty, b) empower women and other disadvantaged population groups, c) create employment, d) help existing businesses grow or diversify their activities, and e) encourage the development of new businesses (Ledgerwood, 1999). Shibru and Menza (2017) agree that microfinance institutions are considered as a tool for

poverty alleviation through improving access to finance and financial services. Grameen Bank is credited as a pioneer microfinance institution. Microfinance institutions have since sprouted around the world.

Shibru and Menza (2017) further stated that the proclamation in July 1996 provided for the establishment of microfinance institutions in Ethiopia with the encouragement to spread microfinance institutions in both rural and urban areas that it authorized.

Ali (2015) stated that the earliest forms of microfinance in Kenya were church-based small geographic-limited lending programs in the 1980s, which advanced to non-government organizations NGOs in the 1990s with funding and functioning systems which grew to full commercial entities with more funding and formal structures. Kenya microfinance institutions structures span from informal to formal, unregulated to regulated, and not-for-profit to for-profit.

2.2 Theoretical Review

The theory underpinning this study is the public interest theory. Other theories that complemented the public interest theory were shiftability theory and buffer theory, and are explained in the review.

2.2.1 Public Interest Theory

The theory postulates that governments have to institute regulations since all individuals which include public servants are driven by self interest, hence the proposition as first developed by Pigou and quoted by Hertog, that government regulation is a response to public demand for government to rectify situations of market failure through imperfect

competition, market disequilibria, missing market or market outcomes that are undesirable for social reasons (David & Muendo, 2018). Yu *et al.* (2014) stated that depositors are vulnerable to banks engaging in risky high-profit operations that threaten the security of their deposits hence regulations are placed on the banks. Government being formed by the people and serving the people who appointed it, institutions receiving deposits from the public, these people which also include entities incorporated by the people, require the government to intervene in the protection of their deposits as the deposit-taking institutions perform their activities. David and Muendo further quoting Shleifer, Mabeya among others and Otieno stated that the theory had been used as a prescription of what governments should do, description of what they actually do, as a justification of the growth in public ownership and regulation in the twentieth century, as an exposition on governments critical role in regulation. This stands true for the stability of the population the government serves, and the economy thereof that the deposit-taking institutions are players in. A prime example is how the Federal Reserve Bank stepped in by providing funds to financial institutions that needed it following the crisis of 2008 (Appelbaum & McGinty, 2011), as well, the Central Bank of Kenya provided funds for banks facing liquidity crisis in 2016 (Obulutsa, 2016). Both regulators reactions through time calmed the public on the safety of their deposits while stabilizing the economy.

As stated by Posner (1974), assumptions of this theory include if left alone, economic markets are extremely fragile and apt to operate very inefficiently or inequitably, with another assumption being that government regulation is virtually costless. Also, stated by David and Muendo (2018) is that the theory assumes that market outcome represents a failure, and quoting Hertog and Shleifer on the assumption that regulatory regime

achieves economic efficiency. These assumptions negate thriving non-regulated sectors including non-deposit taking financial institutions operating efficiently in their markets. The theory stands true for the protection of the public's deposits and other assets as provided for in the regulations of the jurisdiction, and received and held by financial institutions. Regulation then in its supervisory role ensures efficiency in such institutions for the banks to optimize the public resources availed to them, while making them available to the rightful owners, the public, on demand, while being compliant to the regulator's requirements as they profitably operate with growth through each successive financial period. This is further confirmed by various empirical studies at the time, were reformulation of the theory included that regulated agencies are created for bona fide public purposes and that regulation is honest.

Therefore, government regulation is for the interest of the public. Relating to microfinance banks, regulation is for the protection of the public's funds held as deposits by the microfinance banks. Both prudential and non-prudential regulation satisfy this theory, because the stability of the microfinance banks hence industry and good behavior practices, are as a result of the microfinance banks being in line with compliance requirements. Therefore, the public interests are catered for. The preventive and protective regulatory approaches on crisis management also protect the interests of the public as they ensure stability within the industry and the public's funds.

In light of this theory, supervisory practices involving prudential, non-prudential, preventive and protective practices being generic to all industry players, fairly serve all industry players hence ensuring public's interest is catered for. Regulation being standard

and applying to all microfinance banks, provides the underlying purpose of public interest protection.

In this study, the public interest theory underpins the study noting that the independent variable liquidity regulation measured by liquidity ratio and capital adequacy is a regulatory requirement that is effected on deposit-taking institutions as part of the regulator's responsibility to protect the public's interest. The shiftability theory and buffer theory which respectively apply to liquidity and capital regulatory requirements complement the public interest theory in that they are applied in the public interest context.

2.2.1.1 Shiftability Theory

Enunciated by Moulton and Mitchell, any single bank will be in a liquid position if it only possesses assets regardless of their nature that can be shifted or sold readily to others when funds are needed, hence the problem of liquidity being one of shifting assets to other banks for cash at satisfactory prices and not a problem of maturing loans (Udoka & Anyingang, 2012). Propounded by Moulton, the theory contends that a bank's liquidity is maintained if it holds assets that could either be shifted or sold to other lenders or investors for cash and enhanced if it always has assets to sell provided the regulator, Central Bank of Kenya, and a ready secondary market are ready to purchase the assets (David & Muendo, 2018). They further stated that such assets being liquid in nature included credit instruments, commercial paper, prime banker's acceptances and treasury bills forming the liquidity reserves. These instruments were justified by the nature of their maturity being short-term, less than one year, hence marketable and easy to convert to cash for liquidity needs of the banks. This allows microfinance banks to hold assets as

allowed by the regulator as long as they are proved liquid by evidence of ready markets which will purchase at any time on agreed prices. The liquid reserves are held and maintained by the banks as prescribed by the regulator in the interest of the public, which on demand, collects on their funds held at the banks. Hence the need for the banks to know their liquidity needs beyond the regulator's minimum requirement and ensure that this is held and maintained at all times.

This theory stands true in the practice of microfinance banks holding a level of own liquid assets that are either in cash or deposits in cash, including interest-earning deposits, along with instruments that are easily convertible to cash noting that there exists a ready market at known or agreed prices. It is on the microfinance bank to ensure at all times that the held assets are and classifiable as liquid, while meeting their liquidity needs as well as the regulator's requirement as a compliance measure. The management would ensure a sound liquidity management policy with structures in place that sustain the liquidity position of the institution at all times, as allowable by the regulator's requirements guiding the operations of the microfinance bank.

2.2.1.2 Buffer Theory

Milne and Whalley (2001) inferred that banks seek to hold a buffer of capital over and above the regulatory minimum requirement. This counters the risk of a bank falling below the regulatory capital requirements at any time it is computed, hence saving costs involved if not compliant. They further stated that this buffer determines a bank's attitude towards risk. Such proactive measures reflect soundness in the structure of the institution, instilling confidence in stakeholders on the protection of their interests in its day-to-day operations, as well as having a counter to any risk arising that may require a need to

access funds. As Lotto (2016) stated, most banks maintain levels of capital ratios above what is set by the regulatory authorities as minimum capital requirement during their operations. And that banks strive to increase their capital ratios when they get closer to the minimum regulatory capital ratio. David and Muendo (2018) stated that banks face the danger of erosion of their capital base if they are unable to mobilize sufficient deposits, hence since the theory is anchored on the volatility of capital adequacy as well as reliability and dependability on capital for long-term planning, as a hedging technique against prolonged undercapitalization and regulatory sanctions and possible closure if in breach of regulatory requirements, banks may prefer to hold a buffer which is the excess capital above the minimum required capital, to reduce the probability of falling under the legal capital requirements especially if their capital adequacy ratio is very volatile. In the interest of the public, a bank with a strong capital base due to a large amount of capital signals stability of the institution and instills confidence in the public who in return choose to deposit funds with it and other alike financial institutions. On this premise, the regulator sets a minimum capital requirement for the nature of the operation and expanse of the bank that is to be maintained at all times. An additional amount of capital above the regulator minimum requirement, the buffer, cushions the bank by being compliant to the regulator and providing for any events that may require the additional capital to be used towards it, which all serves in the interest of the public as the bank operates in a public platform.

Such cushioning strengthens the financial base of a microfinance bank as the buffer is an availability of funds when needed for the purpose of capital requirement compliance. Microfinance banks with additional capital reserves have a stronger financial base as such

funds beyond satisfying the regulatory requirement are also an alternate protection. The buffer is insurance when the banks with poor capitalization come into a situation of losing public confidence and reputation hence the buffer is insurance against cost of unexpected loan losses, due to pure random shocks or asymmetric information between the lender and the borrower (Lotto, 2016). David and Muendo (2018) stated that the theory proposes that banks with low capital buffers attempt to rebuild an appropriate capital buffer by raising capital, and banks with high capital buffer attempt to maintain their capital buffer, because more capital tends to absorb adverse shocks and thus reduces the likelihood of failure.

This theory further supports the need of additional capital as a financial strength bolster as the microfinance banks consistently seek avenues of growth in the provision of their services. Compliance of the minimum requirement deters management from access to the capital funds and alternative options are sought in the day-to-day operations of the bank.

2.3 Empirical Review

Studies on the regulation effect on microfinance bank profitability have been carried out and included, Yu *et al*. (2014) on the regulation on microfinance effect upon profitability and loan diversity during the period 1995 and 2012, with results of the analysis of quantitative secondary data of 2,409 global microfinance institutions extracted from the microfinance information exchange platform and the World Bank showing that, stringent prudential regulation is associated with higher microfinance institutions' profitability, where profitability was measured using return on assets ratio and return on equity ratio. As Yu *et al*. stated, rapid growth and increasing profitability of microfinance has sparked

calls for increased regulation. This draws from the standpoint of regulation existing to protect public deposits and provide confidence in the stability of microfinance institutions. They further stated that compliance with regulations can prove costly to profitability and authorities must consider the impact of those policies on the profit. Noting that microfinance banks are for-profit entities that seek a profit at the end of each financial year, it is the onus of the regulator to ensure that the regulatory environment is conducive for industry players to achieve their objectives while serving the public diligently. Yu *et al.* agreed that when establishing regulations for microfinance institutions, authorities must consider the impact of the policies on firm-level profitability. Axmann (2015) on the effect of regulatory supervision on the profitability and outreach of microfinance institutions, analyzed 1,229 observations of the year 2009 of global microfinance institutions with secondary data obtained from the microfinance information exchange platform, analysis found that a positive association and a statistically significant relationship existed between regulation and profitability. However, Axmann stated that all things being equal, increase in regulation costs would decrease profitability. And further stated that the primary concern on regulation and supervision is its effect on profitability. Axmann further quoted a Zambian study on the potential effects of regulation whose results showed that increased regulation costs would severely decrease profitability, hence introducing a new dimension to a negative effect that regulation had on profitability of microfinance banks due to the financial cost implication which adversely affects profitability, a financial measure. Mbira and Tapera (2016) study on the key success drivers for microfinance institutions in Zimbabwe in the period between 2009 and 2015, results on the analyzed primary data of fifty completed

questionnaires by respondents who are employees of microfinance institutions in Matabeleland, Bulawayo, Masvingo and midlands provinces of Zimbabwe, showed that regulatory framework was statistically significant for the success and development of microfinance institutions. Ali (2015) on the regulatory and supervision framework of microfinance in Kenya, results showed that regulated microfinance institutions strategize their operations in such a way that voids poor financial and operational performance such that the microfinance sector must be regulated in order to have massive and sustainable delivery of financial services to the low-income people. Ochieng (2018) on the factors affecting profitability of deposit-taking microfinance institutions in Nairobi, the capital city of Kenya, primary data collected through fifty-eight completed questionnaires by respondents who were employees of the operations, business development and risk management departments of Faulu microfinance bank strongly agreed that government regulations stringent reporting requirements have an impact on financial performance.

Studies specific to the effect that liquidity regulation and capital regulation have had on profitability growth of microfinance banks in Kenya are detailed below.

2.3.1 Effect of Liquidity Ratio on Profitability Growth of Microfinance Banks

Ghalib (2017) on microfinance strategy and its impact on profitability and operating efficiency evidence from Indonesia, profitability measured by return on assets ratio as profit before tax to total asset and liquidity measured as the ratio of liquid assets to customer funds, results found a weak negative association of -0.0859 for liquidity and profitability.

David and Muendo (2018) on the effect of Central Bank of Kenya Regulations on the financial performance of thirteen microfinance banks in the period ending December 31, 2016, results from the analysis of the primary data collected from completed questionnaires by eighty-two respondents who were employees of the banks and working in the Risk, Compliance and Finance departments gave their opinion on whether liquidity as a statutory requirement affected financial performance, along with the extent of that effect on financial performance, while rating liquidity ratio as well as stating the effect of liquidity ratio on financial performance, respondents also indicated the return on assets and return on equity of the banks in the period between 2010 and 2016, at 5% confidence level 2-tailed correlation and regression results showed a strong positive association of 0.911 and a statistically significant relationship with a p-value of 0.000 for liquidity as a statutory requirement with financial performance of microfinance banks.

King'ori *et al*. (2017) on the determinants of financial performance of seven microfinance banks in Kenya that were in operation and licensed during the period between 2011 and 2015, secondary data collected from the microfinance banks' financial reports was analyzed to determine the relationship between liquidity and financial performance as measured by loan to asset ratio and return on assets ratio respectively. The correlation and regression analysis results found that a weak negative association of -0.142 and a statistically significant relationship with a p-value of 0.000 existed between the variables.

Wanjiru (2016) on the effect of regulation on the financial performance of microfinance banks in Kenya, sampled five of the thirteen licensed banks as at December 31, 2015, that were in operation in the period, and analyzed the secondary data being the audited

financial records collected from the Finance Directors or Chief Finance Officers for the five years before and after licensing from the regulator. Measurement of variables was total loans to total customer deposits for liquidity ratio and return on assets and return on equity ratios for performance. However, correlation and analysis of variance results were not reflected in the study.

Nderitu (2016) on the effect of growth on profitability of nine operational Kenyan microfinance banks as at December 31, 2015 in the period 2011 to 2015. Quantitative secondary data retrieved from the annual reports of the Central Bank of Kenya through the CBK website were analyzed and results showed a weak negative association of -0.133 for liquidity on profitability, with a statistically significant relationship between liquidity and profitability at $p = 0.000$. Liquidity was measured by the ratio of currents assets to current liabilities and profitability measured by return on assets ratio being net income to total assets.

Mwangi (2016) on the effect of firm size on profitability of nine microfinance banks in Kenya for the period 2011 to 2015, results on the analysis of the quantitative secondary data obtained from the Central Bank of Kenya annual reports and retrieved from the CBK website showed that a weak negative association of -0.139 existed between liquidity and profitability, and a statistically significant relationship at $p = 0.000$. Profitability was measured by the return on assets ratio while liquidity was measured by the ratio current assets to current liabilities.

Buseretse (2015) on the effect of liquidity on profitability of microfinance banks in Kenya in the period between 2011 and 2014, retrieved the secondary data of six microfinance banks from the Central Bank of Kenya Bank Supervision Department

annual reports available on the CBK website and analyzed the data of the audited financial statements of the microfinance banks. At 5% significance level with a 2-tailed test, correlation results of the analysis showed a weak negative association of -0.456 and a statistically significant relationship with a p-value of 0.000 existed between liquidity and profitability, as measured by gross loans and advances to customers' deposits ratio and return on assets ratio being net income after taxes to the total assets respectively. Buseretse further stated that in liquidity management, achieving the desired trade-off between liquidity and profitability which are effective indicators of the corporate health and performance is a constant matter. Proper liquidity enables an institution take advantage of profitable investments that increase the profitability potential in the future.

Mwangi (2014) on the effects of liquidity on financial performance of deposit-taking microfinance institutions in Kenya in the five-year period of 2009 to 2013, secondary quantitative data was collected from the financial statements of the association for microfinance institutions in Kenya and data of the microfinance institutions retrieved from the Central Bank of Kenya reports was analyzed, with results showing a 0.941 strong positive association and statistically significant relationship at $p = 0.020$ between liquidity and financial performance, with measurements for each variable being cash and cash equivalents to total assets ratio and return on assets ratio as profit before tax to average total assets respectively. Mwangi further stated that a bank must strike a balance between the objectives of liquidity and profitability, and that company management and investors spend time focusing on the company's liquidity to ascertain its level of financial performance noting that it is a key determinant.

Afude (2017) on the effect of financial regulation on the performance of microfinance institutions in Kenya who are registered members of the association for microfinance institutions in Kenya, studied five microfinance banks licensed by the regulator in the study period. Secondary data was collected from the Central Bank of Kenya annual bank supervisory reports and annual financial statements from the association along with the published accounts of the microfinance institutions in the study. Data analysis was carried out for the period between 2000 to 2016, eight years before and eight years after regulation. Post-regulation period analysis results found a statistically significant relationship at p-value of 0.000 for financial performance being profitability measured by net income to average total assets ratio, and solvency being liquidity measured as the ratio of liquid assets to current liabilities.

2.3.2 Effect of Capital Adequacy on Profitability Growth of Microfinance Banks

Yu *et al*. (2014) on regulation on microfinance effect upon profitability and loan diversity, analyzed secondary data for the period 2008 and 2009 of regulated global microfinance institutions which were collected from the microfinance information exchange platform and the World Bank. Results on the regulation on microfinance as measured by capital adequacy ratio being risk-weighted assets to equity and its effect upon profitability as measured by return on assets being the ratio of net income to total assets and return on equity being the ratio of net income to shareholders' equity, showed a statistically significant relationship at $p = 0.0002$, thus stringent prudential regulation is associated with higher microfinance profitability. Yu *et al*. further stated that higher capital adequacy ratio indicates stricter prudential regulation which can be linked to increases in profitability.

Ghalib (2017) on microfinance strategy and its impact on profitability and operating efficiency evidence from Indonesia, results showed 0.1855 a weak positive association for capital with profitability measured by capital ratio as total equity capital to total assets and return on assets ratio as profit before tax to total asset respectively. Ghalib further stated that banks with stronger capital were more successful than those with lower capital, because stronger capital meant excess capital for loan origination in the wider mass market and investing in facilities that improve operational efficiency.

Ashenafi and Kingawa (2018) on the factors affecting profitability of microfinance institutions being three registered banks in southern nations nationalities peoples regional state in Ethiopia, used secondary quantitative data from documents and journals on the population, for the period 2009 to 2013. Profitability was measured by the ratio of adjusted operating income net of tax to adjusted average total assets, financing structure being capital structure was measured as the ratio of total equity to total assets. Discussion of the results stated that a positive relationship existed between capital structure and profitability of microfinance institutions.

Shibru and Menza (2017) on the determinants of financial profitability of thirteen microfinance institutions in Ethiopia for the period 2002 to 2012, and analyzed available secondary data for thirteen microfinance institutions for the years 2004, 2006 and 2008 retrieved from the microfinance information exchange website, results of capital asset ratio as measured by capital to total assets and profitability measured by profit margin, conclusions stated that a positive relationship existed which is statistically significant between capital adequacy and profitability.

David and Muendo (2018) on the effect of the Central Bank of Kenya Regulations on the financial performance of thirteen microfinance banks as at December 31, 2016, were primary data collected from the eighty-two completed questionnaires by bank employees of the Risk, Compliance and Finance departments, respondents' opinion on whether capital adequacy affected financial performance, the extent of capital adequacy on financial performance, the rating of various aspects of capital adequacy and the effect of these aspects on financial performance, along with indicating the return on assets and return on equity for the banks in the period 2010 to 2016, at 5% confidence level 2-tailed correlation and regression results showed a statistically significant relationship was found, with a p-value of 0.000 and a strong positive association of 0.796 for capital adequacy with financial performance of microfinance banks.

Ochieng (2018) on the factors affecting profitability of deposit-taking microfinance institutions in Nairobi, the capital city of Kenya, Faulu Kenya microfinance bank employees in the operations, business development and risk management departments completed questionnaires and fifty-eight completed and returned ones formed the primary data collected and analyzed, were results showed that respondents strongly agreed that capital adequacy regulations put pressure on the microfinance banks to perform as they fulfil these regulatory requirements, further stating that they disagree that high capital requirements lead to low profits, implying that high capital requirements result in high profitability. A strong positive association of 0.635 was found between government regulations and profitability.

King'ori *et al*. (2017) on the determinants of financial performance of microfinance banks in Kenya in the five-year period of 2011 to 2015, correlation and regression

analysis results of the analyzed secondary data collected from seven licensed and operational microfinance banks' financial reports showed that the relationship between capital adequacy and financial performance measured by equity to total assets ratio and return on assets ratio is -0.323 a weak negative association, and a statistically significant relationship with a p-value of 0.000. King'ori, *et al.* (2017) stated capital levels as one of the major factors affecting financial performance.

Otieno, Nyagol and Onditi (2016) on the empirical analysis on relationship between liquidity risk management and financial performance of six microfinance banks in Kenya in the period 2011 to 2015, analyzed quantitative secondary data by determining the relationship between capital adequacy ratio and financial performance of microfinance banks in Kenya, as measured by the ratio equity to total assets, and return on average assets ratio as net income after tax to average total assets, and return on average equity ratio as net income after tax to average of total shareholders' equity respectively. Results found a strong positive association of 0.4519 and 0.5008 between capital adequacy ratio and financial performance measured by return on average assets and return on average equity respectively. According to Otieno *et al.* (2016), the higher the capital adequacy ratio, the lower the need for external funding, and the higher the profitability of the bank. They further stated that it shows the ability of the bank to absorb losses and handle risk exposure with shareholder.

Nderitu (2016) on the effect of growth on profitability of nine microfinance banks in Kenya that were licensed and in operation in the five-year period between 2011 and 2015, quantitative secondary data collected from the Central Bank of Kenya annual reports on the microfinance banks from the CBK website was analyzed, and results

showed that a statistically significant relationship existed between capital adequacy and profitability at p = 0.000, as well as a weak negative association of -0.041 for capital adequacy with profitability. The variables were measured as capital to total weighted assets ratio for capital adequacy, and return on assets ratio being net income to total assets for profitability.

Wanjiru (2016) on the effect of regulation on the financial performance of microfinance banks in Kenya, of the thirteen licensed banks as at December 31, 2015, a sample of five that were in operation in the period were used for analysis of the secondary data collected from the Finance Directors or Chief Finance Officers, being the audited financial records in the five years before and after licensing from the regulator. Capital adequacy and performance were measured using the ratios core capital to total assets, and return on assets and return on equity. The study did not show the correlation and analysis of variance results.

Buseretse (2015) study on the effect of liquidity on profitability of microfinance banks in Kenya, analyzed the secondary data of six microfinance banks for the period between 2011 and 2014 retrieved from the audited financial statements of the microfinance banks in the Central Bank of Kenya Bank Supervision Department annual reports available on the CBK website. Results of the analysis at a 5% significance level with a 2-tailed test showed a strong negative association of -0.748, and a statistically significant relationship of p-value 0.000 existed between capital adequacy and profitability measured by the ratio of total shareholders' equity to total assets, and return on assets ratio being net income after taxes to the total assets respectively.

Mwangi (2014) on the effects of liquidity on financial performance of deposit taking microfinance institutions in Kenya in the period 2009 to 2013, where quantitative secondary data for the five-year period was collected from the Central Bank of Kenya reports and analyzed, with results showing a 0.787 strong positive association and a statistically significant relationship at $p = 0.020$ between capital adequacy and financial performance, with capital adequacy ratio being measured by long-term debt to the sum of long-term debt and shareholders' equity, while financial performance was measured by return on assets ratio as profit before tax to total assets.

2.3.3 Profitability Growth of Microfinance Banks

Studies specific on profitability of microfinance banks and the effect of the regulatory requirements liquidity and capital adequacy had included, Yu *et al*. (2014) on regulation on microfinance, effect upon profitability and loan diversity analyzed secondary data for the period 2008 and 2009 of regulated global microfinance institutions where profitability was measured by return on assets being the ratio of net income to total assets and return on equity being the ratio of net income to shareholders' equity and capital adequacy ratio being risk-weighted assets to equity, profitability decreased with a unit increase in capital adequacy. Ashenafi and Kingawa (2018) on the factors affecting profitability of microfinance institutions being three registered banks in southern nations nationalities peoples regional state in Ethiopia, secondary data analysis of profitability and capital structure where profitability was measured by the ratio of adjusted operating income net of tax to adjusted average total assets and financing structure being capital structure was measured as the ratio of total equity to total assets, results found that profitability increased with a unit increase in capital structure. Nderitu (2016) on the effect of growth

on profitability of nine microfinance banks in Kenya which were operational as at December 31, 2015 in the period 2011 to 2015, were quantitative secondary data was obtained from Central Bank of Kenya through the CBK website, profitability was measured by return on assets ratio being the net income to total assets, liquidity was measured by current assets to current liabilities ratio and capital adequacy was measured by capital to total weighted assets ratio. The study results showed that profitability increased with a unit increase in liquidity and with a unit increase in capital adequacy. Mwangi (2016) on the effect of firm size on profitability of nine microfinance banks in Kenya for the period 2011 to 2015, obtained quantitative secondary data for the five-year period from the Central Bank of Kenya website measured profitability as the return on assets ratio with liquidity measured as the ratio of current assets to current liabilities, profitability increased as a result of a unit increase in liquidity. Buseretse (2015) on the effect of liquidity on profitability of six microfinance banks in Kenya in the period 2011 to 2014, regression results of the secondary data analysis of the banks' financial statements obtained from the Central Bank of Kenya annual supervision reports on the CBK website, showed that profitability decreased with a unit increase in liquidity and with a unit increase in capital adequacy.

Some studies did not reflect the beta coefficient results in order to determine the unit change in profitability from a unit change in the predictor variable(s). They included Ghalib (2017) on microfinance strategy and its impact on profitability and operating efficiency evidence from Indonesia, profitability was measured by return on assets ratio as profit before tax to total asset and liquidity was measured as the ratio of liquid assets to customer funds. Afude (2017) on the effect of financial regulation on the performance of

five microfinance institutions in Kenya analyzed secondary data collected from Central Bank of Kenya annual Bank Supervision Department reports and measured performance as profitability by return on assets and return on equity ratios being net income over average total assets, and solvency as liquidity measured by the ratio of liquid assets to current liabilities. Shibru and Menza (2017) on the determinants of financial profitability of microfinance institutions in Ethiopia for the period 2002 to 2012, analyzed available secondary data for thirteen microfinance institutions for the years 2004, 2006 and 2008 retrieved from the microfinance information exchange website, were measured as capital asset ratio being capital to total assets and profit margin being profitability. Ochieng (2018) on the factors affecting profitability of deposit-taking microfinance institutions in Nairobi Kenya, fifty-eight completed questionnaires by employees of operations, business development and risk management departments of Faulu Kenya microfinance bank formed collected and analyzed primary data.

2.4 Research Gap

Differing results in various studies in the relationship between the liquidity and capital adequacy regulations on profitability in various periods and with various measurements called for a new study on the variables with regulatory prescribed measurements in a new period.

The association between liquidity regulation and profitability was found to be strong and positive in the studies by David and Muendo (2018) at 0.911 and Mwangi (2014) at 0.941 whereas a negative association was found between liquidity regulation and profitability in

the studies by Ghalib (2017) of -0.0859, King'ori *et al.* (2017) at -0.142, Nderitu (2016) at -0.133, Mwangi (2016) at -0.139 and Buseretse (2015) at -0.456.

A statistically significant relationship was found between liquidity regulation and profitability in the studies by David and Muendo (2018), King'ori *et al.* (2017), Nderitu (2016), Mwangi (2016), Buseretse (2015) and Afude (2017) all studies at p = 0.000, and at p = 0.020 for Mwangi (2014).

The association between capital adequacy and profitability was found to be positive for studies by David and Muendo (2018) at 0.796, Mwangi (2014) at 0.787, Ochieng (2018) at 0.635, Ghalib (2017) at 0.1855 and Otieno, Nyagol and Onditi (2016) at 0.4519 and 0.5008 where financial performance was measured by return on average assets and return on average equity respectively. While a negative association was found between capital adequacy regulation and profitability for studies by King'ori *et al.* (2017) at -0.323, Nderitu (2016) at -0.041 and Buseretse (2016) at -0.748.

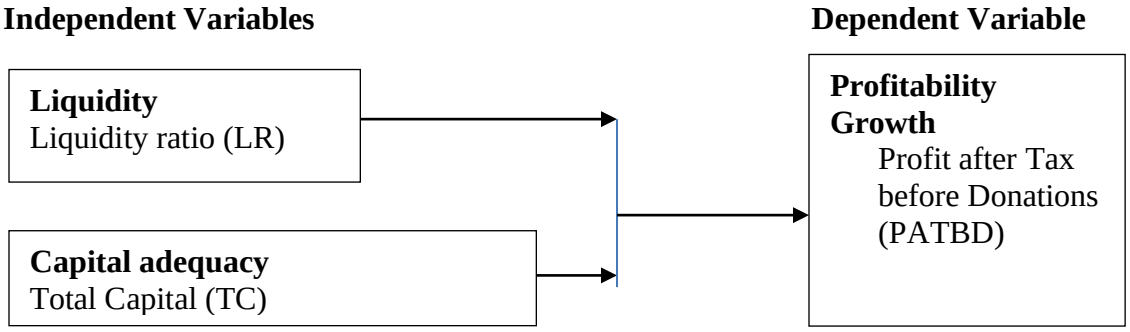
A statistically significant relationship was found between capital adequacy regulation and profitability for the studies by David and Muendo (2018), King'ori *et al.* (2017), Nderitu (2016), Buseretse (2015) all studies at p = 0.000, Yu *et al*. (2014) at p = 0.0002 and Mwangi (2014) at p = 0.020.

The effect that liquidity and capital adequacy had on profitability where a unit increase in liquidity and a unit increase in capital adequacy each independently led to an increase in profitability were in the study results by Ashenafi and Kingawa (2018), Nderitu (2016) and Mwangi (2016), whereas results which found a decrease in profitability were studies by Yu *et al*. (2014) and Buseretse (2015).

The studies' diverse results created a knowledge gap that this study has filled by introducing a new period of 2013 to 2017 of the nine microfinance banks licensed in that period, and measurements of liquidity, capital adequacy and profitability used in the study are as prescribed by the Kenya Deposit Taking Microfinance Institutions Regulations by the Central Bank of Kenya (2008) being different from measurements used in previous studies.

2.5 Conceptual Framework

The framework illustrates the relationship between the independent variables, liquidity and capital adequacy, and dependent variable profitability growth of the study.



Source: Researcher (2019)

Figure 2.1: Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Overview

This chapter presents the methodology used by the researcher to collect data, analyze data and present information of the study. The chapter states the research design, study area, target population, sampling design, data collection instrument and procedure, measurement of variables, data analysis and presentation, limitations and the ethical considerations of the study.

3.1 Research Design

Cooper and Schindler (2014) define research design as the blueprint for fulfilling the research objectives and answering the research questions, it also constitutes the blueprint for the collection, measurement, and analysis of data. This study was quantitative explanatory research design. It is causal-explanatory if a study is concerned with learning why, that is, how one variable produces changes in another variable as stated by Cooper and Schindler. This study investigated the effect of the independent variables on the dependent variable. Quantitative data was the individual microfinance bank financial data retrieved from the Central Bank of Kenya Bank Supervision Department annual reports for the period. The design adopted was suited for the analysis of the financial data collected from the financial reports to allow the researcher to quantitatively through hypothesis testing measure the relationship between the variables and make inferences on the relationship in the population.

3.2 Study Area

The study was conducted on all microfinance banks that were licensed by the regulator, the Central Bank of Kenya, during the entire period 2013 to 2017 and whose financial data was readily available for analysis. The researcher chose a five-year period for study and the available financial data from the regulator as at the time of analysis was until 2017, hence the data collected and analyzed began in 2013.

3.3 Target Population

Target population is those people, events or records that contain the desired information and can answer the measurement questions and can determine whether a sample or census is desired as defined by Cooper and Schindler (2014). The target population of the study were all licensed microfinance banks during the period of 2013 to 2017. A list of 13 microfinance banks licensed as at December 31, 2017 was easily accessed and retrieved from the Central Bank of Kenya website which included microfinance banks licensed after year 2013 (see Appendix IV).

3.4 Inclusion-Exclusion Criteria

As presented in Appendix IV, thirteen microfinance banks were licensed as at December 31, 2017, and 9 microfinance banks licensed in the entire study period of 2013 to 2017 were analyzed, while the 4 microfinance banks licensed from 2015 which were in operation for a lesser period than the full five-year period of this study were not analyzed.

3.5 Data Collection Instrument and Procedure

The study focused on secondary quantitative data collected from the Central Bank of Kenya Bank Supervision Department annual reports for the period 2013 to 2017 by the researcher. The researcher had sought the data from the regulator and received approval from the regulator as per Appendix I, II and III, and also obtained the information from the Central Bank of Kenya website. Relevant data for the study was drawn from the microfinance banks' balance sheets, profit and loss accounts and other disclosures within the annual report documents. Data submitted by microfinance banks to the Central Bank of Kenya was for regulatory compliance purpose hence relevance for use in the study, making data valid due to its accuracy and reliable as it is consistent in the prescribed format and periodic submission.

3.6 Measurement of Variables

Various related studies chose different measurements for the dependent and independent variables. A knowledge gap existed hence the choice and justification to use the stated measurements.

3.6.1 Independent Variables

The independent variables of this study were liquidity and capital adequacy whose measurements are described below.

3.6.1.1 Measuring Liquidity

Other studies quantitative measurement of liquidity included Ghalib (2017) ratio of liquid assets to customer funds, King'ori *et al.* (2017) ratio of loan to asset ratio, Wanjiru (2016)

ratio of total loans to total customer deposits, Nderitu (2016) and Mwangi (2016) ratio of currents assets to current liabilities, Buseretse (2015) ratio of gross loans and advances to customers' deposits, Mwangi (2014) ratio of cash and cash equivalents to total assets ratio and Afude (2017) ratio of liquid assets to current liabilities.

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

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

3.6.1.2 Measuring Capital Adequacy

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

capital to total weighted assets, Wanjiru (2016) capital adequacy ratio as core capital to total assets, Buseretse (2015) capital adequacy as ratio of total shareholders' equity to total assets, and Mwangi (2014) capital adequacy ratio as long-term debt to the sum of long-term debt and shareholders' equity.

As prescribed by the Kenya Deposit-taking Microfinance Institutions Regulations by the Central Bank of Kenya (2008), risk-based capital items used to compute the capital adequacy regulations include the core capital and/or supplementary capital in relation to total deposit liabilities and total risk weighted assets. a) Core capital, b) Core Capital/Total Deposit Liabilities, c) Core Capital/Total Risk Weighted Assets, and d) Total Capital/Total Risk Weighted Assets.

This study used total capital 'TC' which is the sum of core capital and supplementary capital as the measurement for capital adequacy. The core capital is ordinary and non-cumulative irredeemable preference share capital, share premium, retained earnings or accumulated losses, current year's 50% un-audited net profit after tax, capital grants and other reserves less investments in banking subsidiaries, goodwill, intangible assets and total deductions, while supplementary capital is 25% of revaluation reserves, cumulative irredeemable preference shares, subordinated debt, capital investments and statutory loan loss reserve. The TC value for each microfinance bank is provided in the Central Bank of Kenya Bank Supervision Department annual reports hence used in this study's analysis.

Total Capital = Core Capital + Supplementary Capital

3.6.2 Dependent Variable

The dependent variable in this study was profitability growth. Several similar studies used return on assets and/or return on equity as a measure of profitability or financial performance. These studies included Ghalib (2017) where profitability is return on assets ratio as profit before tax to total asset, David and Muendo (2018) financial performance ratios where both return on assets and return on equity, King'ori *et al.* (2017) financial performance used return on assets ratio, Wanjiru (2016) used both return on assets and return on equity for performance, Nderitu (2016) profitability measured was by return on assets ratio being net income to total assets, Mwangi (2016) profitability was measured by the return on assets ratio, Buseretse (2015) profitability was measured by the ratio return on assets being net income after taxes to the total assets, Mwangi (2014) financial performance used return on assets ratio as profit before tax to average total assets, Afude (2017) profitability was measured by net income to average total assets, Yu *et al*. (2014) profitability was measured by both the return on assets ratio being the ratio of net income to total assets and return on equity ratio being the ratio of net income to shareholders' equity, Ashenafi and Kingawa (2018) profitability was measured by the ratio of adjusted operating income net of tax to adjusted average total assets, Shibru and Menza (2017) profitability was measured by profit margin, Otieno, Nyagol and Onditi (2016) measured financial performance using both return on average assets ratio as net income after tax to average total assets and return on average equity ratio as net income after tax to average of total shareholders' equity.

Measuring profitability growth was done through the net profit after taxes before donations value 'PATBD' which is the profit or loss before tax of the microfinance bank

less current and deferred taxes (CBK, 2008). Profit being a net result of the financial performance through income and expenditure analysis, it was imperative to study the impact the studied variables have on it. The PATBD value is provided in the Central Bank of Kenya Bank Supervision Department annual reports hence was used in the analysis of this study.

Table 3.1: Operationalization of Variables

Type of Variable	Name of Variable	Operationalization	Measurement
Dependent	Profitability Growth	Profit after Tax before Donations (PATBD)	Profit after Tax before Donations
Independent	Liquidity Ratio	Liquidity Ratio (LR)	$\frac{\text{Net Liquid Assets}}{\text{Total Short-term liabilities}}$
	Capital Adequacy	Total Capital (TC)	Core Capital + Supplementary Capital

Source: Researcher (2019)

3.6.3 Model Specification

The model form was:

$Y = f(X_1, X_2)$

Y is the dependent variable; Profitability Growth

X_1, and X_2 are the independent variables; Liquidity Ratio and Capital Adequacy

The multiple linear regression model estimated in the study was as follows;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

Where;

β_0 is the coefficient of regression or constant

β_1, and β_2, are the regression coefficients

Y is Profitability Growth of Microfinance Banks

X_1 is Liquidity Ratio

X_2 is Capital Adequacy

ε is the error term

The multiple regression model was tested and modified after standardizing the data to overcome the errors of large numbers.

$$\log Y = \beta_0 + \beta_1 \log X_1 + \beta_2 \log X_2 + \varepsilon$$

Where;

β_0 is the coefficient of regression or constant

β_1, and β_2, are the regression coefficients

logY is logarithm of Profitability Growth of Microfinance Banks

$\log X_1$ is logarithm of Liquidity Ratio

$\log X_2$ is logarithm of Capital Adequacy

ε is the error term

3.6.4 Assumptions of Linear Regression

These are the assumptions of Ordinary Least Squares 'OLS' regression model.

3.6.4.1 Normality Test

All residuals 'error terms' are normally distributed. This was tested using the Shapiro-Wilk test, noting the size of the sample being 45 due to the five-year study period of the 9 MFBs.

3.6.4.2 Linearity Test

The relationship between variables is in a straight line 'linear'. This was tested graphically using the Predicted Probability 'P-P' plot. Deviations from the line were checked and any outliers observed.

3.6.4.3 Autocorrelation Test

The residuals are independent of each other. Also referred to as the test of independence. This was tested using the Durbin-Watson test to check for the correlation between values.

3.6.4.4 Homoscedasticity Test

This is also referred to as homogeneity of variance. The assumption is that there exists equal variance in all values. This was tested using the scatter plot of standardized values.

3.6.4.5 Multicollinearity Test

This is when the relationship among the independent variables is highly correlated. If this exists, the regression model will not accurately predict the behavior of the outcome variable hence giving inaccurate results. The assumption in regression model is there exists an absence of multicollinearity. This was tested using collinearity statistics which reflected results on Variation Inflation Factor 'VIF' and collinearity diagnostics to ensure that multicollinearity does not exist.

3.7 Data Analysis and Presentation

Once the data was collected, it was inputted in the computer software, arranged and analyzed. Using a) descriptive statistics to get the measures of central tendency which provided information on the closeness of the data to the center of the distribution, the

measures of spread which indicated the overall data spread from the lowest to the highest, the shape of the distribution which should be normal hence the measurement of the skewness and peakedness of the distribution, and b) inferential statistics to ascertain the relationship between the variables through correlation and regression analysis hence testing the hypothesis, with results concluding to the population. Computer software was Statistical Package for the Social Sciences SPSS. The analyzed data was presented in tables, graphs, and charts.

Hypotheses testing was carried out to test null hypotheses stated in chapter 1.

Table 3.2: Hypotheses Testing

Hypothesis	Independent Variable	Dependent Variable	Analysis Model	Interpretation
Ho_1: There is no significant effect of liquidity ratio on profitability growth of microfinance banks in Kenya	Liquidity Ratio	Profitability Growth	Multiple Regression $\log Y = \beta_0 + \beta_1 \log X_1 + \beta_2 \log X_2 + \varepsilon$ logY = logarithm of Profitability Growth β_0 = constant β_1 = Coefficient parameter $\log X_1$ = logarithm of Liquidity Ratio ε = Error term	If p value ≤ 0.05, then the relationship is significant.
Ho_2: There is no significant effect of capital adequacy on profitability growth of microfinance banks in Kenya	Capital Adequacy	Profitability Growth	Multiple Regression $\log Y = \beta_0 + \beta_1 \log X_1 + \beta_2 \log X_2 + \varepsilon$ logY = logarithm of Profitability Growth β_0 = constant β_2 = Coefficient parameter $\log X_2$ = logarithm of Capital Adequacy ε = Error term	If p value ≤ 0.05, then the relationship is significant.

Source: Researcher (2019)

3.8 Limitations of the Study

The study was limited by a lack of previous studies that used similar regulator specified measurements for the liquidity, capital adequacy and profitability growth variables as this study. Studies reviewed had diverse measurements that span from accounting, finance and aspects of regulator-specified measurements for the regulation and profitability variables. This was overcome by ensuring that the reviewed studies measurements were relevant in the context of regulated banks.

3.9 Ethical Considerations

A letter request to CBK was done by researcher and the university to access the data for use in this study, with a letter response from CBK confirming access of the data see Appendix I, II and III. Consideration was made in the use of the data ensuring that the variables studied were solely used for the academic purpose of this study.

The study recognized other authors works and referenced them including their names and year of work in-text and in the reference section of the study.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.0 Overview

This chapter presents the results of the analysis, their presentation and interpretation of the data collected in sub-sections that are in line with the research objectives in order to test the research hypotheses.

4.1 Descriptive Statistics

This section presents the minimum, maximum, mean, standard deviation, skewness and kurtosis of the analyzed data.

Table 4.1: Descriptive Statistics

	N	Min.	Max.	Mean	Std. Deviation	Skewness	Kurtosis
LogPATBD	45	-5.796	6.122	0.40802	3.540320	-0.043	-1.146
LogLR	45	2.197	5.380	3.47767	0.550985	0.959	2.731
LogTC	45	-3.497	8.577	5.71280	2.045237	-1.791	8.304

Source: Researcher (2019)

Table 4.1 results show that the data analyzed were 45 for each variable, noting that it was a five-year study period for 9 MFBs. The minimum ‘min’ LogPATBD was -5.796 while the maximum ‘max’ LogPATBD was 6.122, with the mean being 0.40802. The LogPATBD had a standard deviation of 3.540320 away from the mean while the data skewed to the left of the mean by -0.043 and had a peakedness of -1.146. The LogLR minimum was 2.197 with a maximum of 5.380 and a mean of 3.47767. The LogLR

standard deviation was 0.550985 away from the mean with the data skewed to the right of the mean by 0.959 and peaked at 2.731. The LogTC minimum was -3.497 with a maximum of 8.577 with a mean of 5.71280. The standard deviation of LogTC was 2.045237 away from the mean with the data skewed to the left of the mean by -1.791 and the data peaked at 8.304.

4.2 Correlation Analysis

This section presents the correlation analysis results.

Table 4.2: Correlation Analysis

		LogPATBD	LogLR	LogTC
LogPATBD	Pearson Correlation	1		
	Sig. (2-tailed)			
LogLR	Pearson Correlation	0.036	1	
	Sig. (2-tailed)	0.813		
LogTC	Pearson Correlation	0.601**	-0.078	1
	Sig. (2-tailed)	0.000	0.609	

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

Source: Researcher (2019)

Table 4.2 results show the Pearson's correlation coefficient results which measure the strength of association between the variables. The results reveal a strong positive association of 0.601 between Profitability Growth 'LogPATBD' and Capital Adequacy 'LogTC', and a weak positive association of 0.036 between Profitability Growth 'LogPATBD' and Liquidity Ratio 'LogLR'.

4.3 Assumptions of Linear Regression

Prior to performing regression analysis, diagnostic tests were carried out to test that the assumptions of regression were met. These included tests for normality, linearity, autocorrelation, homoscedasticity and multicollinearity.

4.3.1 Normality Test

This test checks to see if the distribution of the data is normal 'bell-shaped' with 0 mean, 1 standard deviation and a symmetric bell-shaped curve. This was carried out using Shapiro-Wilk test due to the size of data being 45.

Table 4.3: Test of Normality

	Shapiro-Wilk		
	Statistic	**df**	**Sig.**
LOGPATBD	0.951	45	0.057

*. This is a lower bound of the true significance.

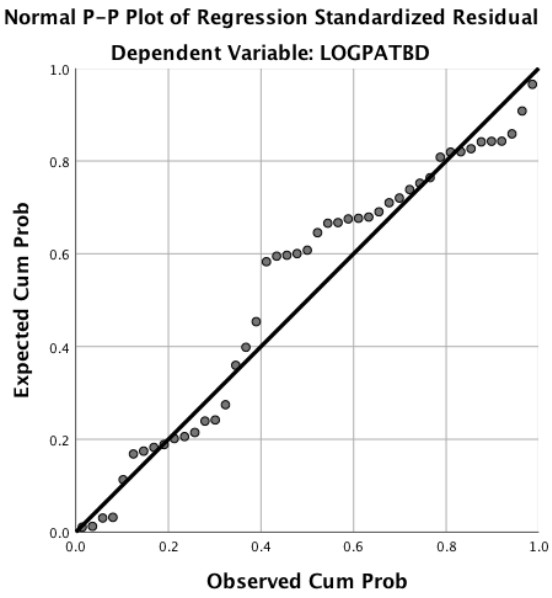
a. Lilliefors Significance Correction

Source: Researcher (2019)

Table 4.3 result on Shapiro-Wilk should not be significant to meet the assumption of normality hence the value of significance should be above 0.05. At Sig. 0.057, being greater than 0.05 hence insignificant, profitability growth data is normally distributed.

4.3.2 Linearity Test

This test checks that the variables are in a straight line and looks out for any deviations from the line of best fit. The test was carried out graphically using the normal Predicted Probability 'P-P' plot.



Source: Researcher (2019)

Figure 4.1: Test of Linearity

Figure 4.1 results show that the data is scattered within the line of best fit. Therefore, the variables' relationship is linear, satisfying the assumption of regression.

4.3.3 Autocorrelation Test

This test checks to see if the residuals 'error terms' of the variables are independent of each other, hence implying that the variables are independent of each other. The Durbin-Watson test was used whose values range between 0 and 4. A value of 2 indicates no correlation while a value from 0 to 2 indicates positive autocorrelation and a value of 2 to 4 indicates negative autocorrelation.

Table 4.4: Test of Independence

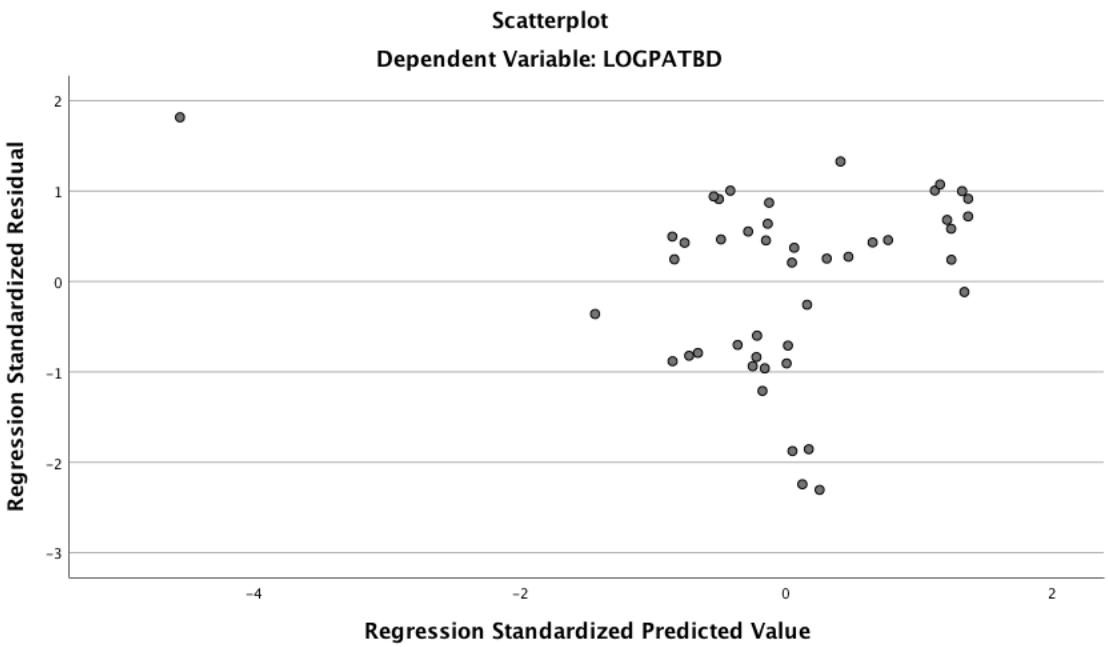
Model	Durbin-Watson
1	2.183

Source: Researcher (2019)

Table 4.4 results on the Durbin-Watson test show a value of 2.183 therefore there is no autocorrelation, implying that the data is independent of each other hence satisfying the assumption of regression.

4.3.4 Homoscedasticity Test

This test checks the equal distribution of data plotted on a scatterplot.



Source: Researcher (2019)

Figure 4.2: Test of Homogeneity of Variance

Figure 4.2 shows that the data is homoscedastic hence satisfying the assumption of linear regression.

4.3.5 Multicollinearity Test

This test checks if the predictor ‘independent’ variables are highly correlated with each other. If they are, the regression model will not accurately associate the variance in the

outcome ‘dependent’ variable, hence leading to inaccurate results and incorrect inferences. To satisfy the assumption of regression, there needs to exist the absence of multicollinearity. This is tested using collinearity statistics and diagnostics.

Table 4.5: Collinearity Statistics[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	LOGLR	0.994	1.006
	LOGTC	0.994	1.006

a. Dependent Variable: LOGPATBD

Source: Researcher (2019)

Table 4.5 results Variation Inflation Factor ‘VIF’ of 1.006 on both independent variables show that the variables are uncorrelated hence an absence of multicollinearity exists satisfying the assumption of regression.

Table 4.6: Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index
1	1	2.905	1.000
	2	0.084	5.896
	3	0.011	16.313

a. Dependent Variable: LOGPATBD

Source: Researcher (2019)

Table 4.7: Collinearity Diagnostics[a] – Z scores

Model	Dimension	Eigenvalue	Condition Index
1	1	1.078	1.000
	2	1.000	1.038
	3	0.922	1.082

a. Dependent Variable: LOGPATBD

Source: Researcher (2019)

Table 4.6 results of eigenvalues close to 0 have a high intercorrelation hence small changes in data values will lead to large changes in the estimates of the coefficients. Condition index is computed as the square root of the ratio of the largest eigenvalue to each successive eigenvalue. Values greater than 15 indicate a possible problem with collinearity while values greater than 30 indicate a serious problem. Multicollinearity problem was corrected using z-scores of the independent variables and results in table 4.7 show that the eigenvalue and condition index have improved hence there exists no correlation between the independent variables. This satisfies the assumption for regression.

4.4 Regression Analysis

This section shows the regression analysis results.

Table 4.8: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.607[a]	0.368	0.338	2.880864

a. Predictors: (Constant), ZScore(LOGTC), ZScore(LOGLR)
b. Dependent Variable: LOGPATBD

Source: Researcher (2019)

Table 4.8 shows the strength of the relationship between the model and the dependent variable, profitability growth, the reliability and validity of the data set. Results of R-value of 0.607 imply a strong relationship, R-square value of 0.368 means that 36.8% of the variation in profitability growth 'LogPATBD' is accounted for or predicted by liquidity ratio 'LogLR' and capital adequacy 'LogTC'. The difference, 63.2% is

predicted by other factors. The adjusted R^2 of 0.338 which measures the reliability of the results implies that the dataset is reliable at 33.8% which shows that the model used for the study is significant and reliable in explaining the influence of the predictor variables to the dependent variable.

Table 4.9: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	202.916	2	101.458	12.225	0.000[b]
	Residual	348.574	42	8.299		
	Total	551.490	44			

a. Dependent Variable: LOGPATBD
b. Predictors: (Constant), ZScore(LOGTC), ZScore(LOGLR)

Source: Researcher (2019)

Table 4.9 shows the Analysis of Variance 'ANOVA' results and the significance value of p = 0.000 being less than 0.05 reflects a statistically significant relationship between liquidity ratio and capital adequacy on profitability growth of MFBs. Hence the regression model is a good fit for the data.

Table 4.10: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	0.408	0.429		0.950	0.347
	LOGLR	0.297	0.436	0.084	0.681	0.499
	LOGTC	2.150	0.436	0.607	4.936	0.000

a. Dependent Variable: LOGPATBD

Source: Researcher (2019)

Table 4.10 results present the regression model as $Y = 0.408 + 0.084X_1 + 0.607X_2$ meaning that a unit increase in liquidity ratio will result in a 0.084 increase in profitability growth while a unit increase in capital adequacy will result in a 0.607 increase in profitability growth. Capital adequacy contributes statistically significantly to the model with Sig. value of p = 0.000 which is less than 0.05.

4.5 Inferential Statistics

The descriptive, correlation and regression results show that there exists a positive relationship between liquidity ratio and capital adequacy with profitability growth of microfinance banks in Kenya. The R value at 60.7% is a moderately strong relationship in the variables. The R^2 shows that liquidity ratio and capital adequacy predict 36.8% of profitability growth. The analysis of variance shows that the regression model used predicts the dependent variable significantly with a p value of 0.000 which is less than the significant level of 0.05. The model is a good fit for decision making.

4.5.1 Hypotheses Testing

Table 4.11: Summary of Hypotheses Test Results

No	Hypotheses	p-value	Decision
H_{o1}	There is no significant effect of liquidity ratio on profitability growth of microfinance banks in Kenya	**P = 0.000** which is less than 0.05	**Reject null hypothesis** Liquidity ratio has a significant effect on profitability growth of microfinance banks in Kenya
H_{o2}	There is no significant effect of capital adequacy on profitability growth of microfinance banks in Kenya	**P = 0.000** which is less than 0.05	**Reject null hypothesis** Capital adequacy has a significant effect on profitability growth of microfinance banks in Kenya

Source: Researcher (2019)

4.5.2 Effect of Liquidity Ratio on Profitability Growth of Microfinance Banks

Table 4.2 correlation results show a positive association between liquidity ratio and profitability growth of 0.036. Table 4.8 regression results on the predictor relationship with profitability growth show R square is 0.368 being 36.8% variability explained by the predictor variables, with other factors explaining 63.2%. Adjusted R square is 0.338 meaning that it is 33.8% reliable. Table 4.9 analysis of variance results show the f-statistic as 12.225 at a significance level of 0.000 which being less than 0.05 is statistically significant. Table 4.10 regression coefficient results show the predictor variables on profitability growth, as a unit increase in liquidity ratio effecting an increase in profitability growth by 0.084. The study therefore rejects the null hypothesis since liquidity ratio has a significant effect on profitability growth of MFBs in Kenya.

4.5.3 Effect of Capital Adequacy on Profitability Growth of Microfinance Banks

Table 4.2 correlation results of 0.601 indicate a strong positive relationship between capital adequacy and profitability growth. Table 4.8 regression results on the predictor relationship with profitability growth show R square is 0.368 meaning that 36.8% variability is explained by the predictor variables, with other factors explaining 63.2%. Adjusted R square is 0.338 meaning that it is 33.8% reliable. Table 4.9 analysis of variance results show the f-statistic as 12.225 at a significance level of 0.000 which being less than 0.05 is statistically significant. Table 4.10 regression coefficient results show the predictor variables on profitability growth, as a unit increase in capital adequacy effecting an increase in profitability growth by 0.607. The study therefore rejects the null hypothesis because capital adequacy has a significant effect on profitability growth of MFBs in Kenya.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Overview

This chapter presents the findings, conclusions and recommendations of the analyzed data collected in this study organized around the research objectives.

5.1 Summary of Findings

Findings were summarized and presented in the context of the research objectives.

5.1.1 Effect of Liquidity Ratio on Profitability Growth of Microfinance Banks

The study results found that liquidity ratio had a positive relationship with profitability growth of 0.036 and was statistically significant at p-value of 0.000 with a unit increase resulting in a 0.084 increase in profitability growth of microfinance banks. The null hypothesis was rejected since liquidity ratio has a significant effect on profitability growth of microfinance banks. This study results agreed with other related studies which included David and Muendo (2018) where liquidity as a measurement of statutory requirements had a positive and strong association of 0.911 with financial performance, a statistically significant relationship existed between the variables with a p-value of 0.000, while a unit increase in liquidity resulted in an increase in financial performance. Mwangi (2014) also found a strong positive association of 0.941 between liquidity and financial performance, with a statistically significant relationship at p = 0.020, where a unit increase in liquidity resulted in an increase in financial performance. Additional studies

with a statistically significant relationship between liquidity and profitability included Afude (2017) with a p-value of 0.000, and Mwangi (2014) with a p-value of 0.020. Some studies though statistically significant at p = 0.000 had different results in the nature and strength of association between liquidity and profitability and included King'ori *et al.* (2017) at -0.142 with a negative association between the variables as well as Nderitu (2016) with a -0.133 negative association, Mwangi (2016) with a negative association of -0.139 and Buseretse (2015) with -0.456 weak negative association. Ghalib (2017) of -0.0859 also had a negative association result. Other studies' results on the effect of a unit change in liquidity increasing profitability included Ashenafi and Kingawa (2018), Nderitu (2016) and Mwangi (2016), whereas some studies' results led to a decrease in profitability which included Buseretse (2015).

5.1.2 Effect of Capital Adequacy on Profitability Growth of Microfinance Banks

The study results found that capital adequacy had a strong positive relationship with profitability growth of 0.601 and was statistically significant at p = 0.000 with a unit increase in capital adequacy resulting in an increase in profitability growth by 0.607. The study results rejected the null hypothesis because capital adequacy has a significant effect on profitability growth of microfinance banks. Other studies' results that agreed with this study's results included David and Muendo (2018) with a strong positive association between capital adequacy and financial performance of 0.796, Mwangi (2014) with a strong positive association of 0.787, Ochieng (2018) with a strong positive association of 0.635, Ghalib (2017) with a positive association of 0.1855 and Otieno, Nyagol and Onditi (2016) with a positive association of 0.4519 and 0.5008 where financial performance was measured by return on average assets and return on average equity respectively. A

negative association was found in some studies in the relationship between capital adequacy regulation and profitability by King'ori *et al.* (2017) with -0.323 a weak negative association, Nderitu (2016) at -0.041 a negative association and Buseretse (2016) at -0.748 a strong negative association. A statistically significant relationship was found between capital adequacy regulation and profitability at p-value of 0.000 for the studies by David and Muendo (2018), King'ori *et al.* (2017), Nderitu (2016), Buseretse (2015), whereas Yu *et al*. (2014) had a p-value of 0.0002 and Mwangi (2014) had a p-value of 0.020. A unit increase in capital adequacy resulted in an increase in profitability for the studies by Ashenafi and Kingawa (2018), Nderitu (2016) and Mwangi (2016), whereas a unit increase in capital adequacy resulted in a decrease in profitability for the study by Buseretse (2015).

5.2 Conclusions

From the study findings, liquidity ratio and capital adequacy are statistically significant and have a positive relationship with profitability growth of microfinance banks in Kenya, with a unit increase in each having an increasing effect on the profitability growth of the Kenyan microfinance banks. Therefore, the null hypotheses were rejected.

This concludes that the relationship between liquidity regulation and profitability growth of microfinance banks is statistically significant and positive with a unit increase in liquidity resulting in an increase in profitability growth. Regulation being executed in the interest of the public as it ensures a sound industry for players who serve the people and entities while the banks remain profitable through the periods, this study has scientifically shown that liquidity and capital adequacy regulatory requirements are positive and

significant in the profitability growth of microfinance banks. This study contributes new knowledge for liquidity and profitability as measured by the Central Bank of Kenya prescribed formats, and in a new period of the five years between 2013 and 2017.

5.3 Recommendations

Recommendations were presented as those for policy purpose and research purpose.

5.3.1 Recommendations for Policy

Noting that liquidity regulation has a positive association with profitability growth of microfinance banks and is statistically significant, it is imperative that regulators and policy makers in the drafting and passing of amendments to existing laws and as new laws and policies are created, to ensure the establishment and maintenance by industry players of liquidity and capital adequacy requirements which protect the interest of the public as well as ensure stability in the financial industry that the microfinance banks operate in. This study recommends that in addition to the liquidity requirements outlined in the Central Bank of Kenya (2008) the Microfinance Deposit-taking Microfinance Institutions Regulations, an introduction of the provision for the microfinance banks to hold unencumbered high quality liquid assets in order to survive a significant liquidity stress scenario of 30 calendar days as proposed by the Basel Committee for Banking Supervision on all banks globally.

In line with an upward core capital adjustment proposal evidenced in the proposed consultative paper on the review of microfinance legislations by Central Bank of Kenya (2018), this study recommends adoption of the proposal. This capital increment which

serves to boost the capitalization of the microfinance banks as they operate in the ever-dynamic environment, seeks to protect the public who the banks primarily serve. Hence providing a buffer for the microfinance banks as they seek new avenues while maintaining their activities in their growth to achieve consistent increasing profits.

5.3.2 Recommendations for Further Research

A different study to investigate the regulatory effect of the capital adequacy ratios, which are regulator-prescribed ratios, of core capital to total deposit liabilities, core capital to total risk-weighted assets, and total capital to risk-weighted assets on profitability as a financial performance measure will fill a knowledge gap. The new study will determine the effect of capital from a different dimension which considers risk and the public's deposits as well as assets of the microfinance banks will be analyzed.

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Appendix I: BNV CBK Letter Request

Berline N Vaita
P O Box 2443-00621
Nairobi, Kenya

November 18, 2016

Director, Bank Supervision Department
Central Bank of Kenya
P O Box 60000-00200
Nairobi, Kenya

RECEIVED
22 NOV 2016
BANK SUPERVISION DEPARTMENT
BANKI KUU YA KENYA

RE: REQUEST FOR QUARTERLY PUBLISHED FINANCIAL DATA OF DTMs

Reference is made to the above subject.

I am a current student at Moi University through Kenya School of Monetary Studies (KSMS) studying the Master of Banking and Finance degree with a concentration in Microfinance. The university has approved my Proposal to write a Research Project on the 'Effect of Regulation on Profitability Growth in Deposit-taking Microfinance institutions in Kenya' for the period 2006 and 2016. I humbly request for a copy of the published quarterly financial reports (or equivalent) of the said institutions during the stated period.

Thank you and I look forward to your favorable response.

Sincerely,

Berline N Vaita
Student ID: SBE/MBF/032/09

Source: Researcher (2019)

Appendix II: MU CBK Letter Request

MOI UNIVERSITY
SCHOOL OF BUSINESS AND ECONOMICS

Tel: (020) 2211206
Fax No: (020) 220247
Telex No. 35047 MOIVARSITY

P. o. Box 63056
Nairobi
KENYA

Ref: MU/SBE/ACD//2/RES/PHD

18th November, 2016

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: BELINE N. VAITA
REG/NO:MU/MBF/032/09

This is to confirm that the above named is a bonafide student of Moi University registered for Master of Banking and Finance.

In partial fulfillment for the award of the Masters degree, students are expected to learn to apply theories using the latest tools and techniques and practice making real-world business decisions to help solve a wide range of problems. In this regard they are expected to carry out a **project** on current issues affecting business and society.

Her research topic is *on* ***"Effect of Regulation on Profitability Growth of Deposit Taking Microfinance Institutions in Kenya."***

This is to request you to assist her with information from your organization. All the information provided will be used for academic purposes only.

Any assistance given to her will be highly appreciated.

Yours faithfully,

MOI UNIVERSITY
NAIROBI SATELLITE CAMPUS
18 NOV 20

MR. JAPHETH KOGEI,
FOR: DEAN, SCHOOL OF BUSINESS AND ECONOMICS.

Source: Researcher (2019)

Appendix III: CBK Letter Response

BANKI KUU YA KENYA

CENTRAL BANK OF KENYA

Haile Selassie Avenue
P.O. Box 60000-00200 Nairobi, Kenya
Telephone: 2860000, Fax: 340192

BSD/GEN/42

16th January 2017

Ms. Berline N. Vaita
Moi University
P.O. Box 2443 – 00621
NAIROBI.

Email: berlinevaita@gmail.com
Telephone: 0731858636

Dear Madam,

REQUEST FOR ANNUAL PUBLISHED DATA OF DTMs

Your letter dated 18th November 2016 on the captioned subject matter refers.

We write to advice that most of the data in the annual financial reports of Microfinance Banks is available in the Bank Supervision Annual Reports. The Bank Supervision Annual Reports can be accessed on the Central Bank of Kenya website under the link: https://www.centralbank.go.ke/reports/bank-supervision-and-banking-sector-reports/

For any clarification you may contact Mr. Augustine Oduor on oduorao@centralbank.go.ke (or telephone: +254-020-2863030).

Yours faithfully,

MATU MUGO
ASSISTANT DIRECTOR, BANK SUPERVISION

Source: Researcher (2019)

Appendix IV: List of Licensed Microfinance Banks as at December 31, 2017

No	Name of Microfinance Bank (MFB)	CBK License Date
1	Faulu Microfinance Bank Limited	21.05.2009
2	Kenya Women Microfinance Bank Limited	31.03.2010
3	Uwezo Microfinance Bank Limited	08.11.2010
4	SMEP Microfinance Bank Limited	14.12.2010
5	Remu Microfinance Bank Limited	31.12.2010
6	Rafiki Microfinance Bank Limited	14.06.2011
7	Century Microfinance Bank Limited	17.09.2012
8	Sumac Microfinance Bank Limited	29.10.2012
9	U & I Microfinance Bank Limited	08.04.2013
10	Daraja Microfinance Bank Limited	12.01.2015*
11	Choice Microfinance Bank Limited	13.05.2015*
12	Caritas Microfinance Bank Limited	02.06.2015*
13	Maisha Microfinance Bank Limited	21.05.2016*

* Licensed after calendar year 2013

Source: CBK Website

Appendix V: MFB Data for Analysis

Variable	MFBs DATA									
Dependent	**Year**	**KE WOMEN**	**FAULU**	**RAFIKI**	**SMEP**	**REMU**	**SUMAC**	**CENTURY**	**UWEZO**	**U&I**
Profit After Tax Before Donations (Kes in Millions)	2017	19	143	-329	-32	-17	5	-63	-9	11
	2016	224	43	-298	-134	-12	14	-41	4	7
	2015	394	115	29	-1	-15	7	-53	0	7
	2014	456	299	21	-97	3	4	-34	1	2
	2013	395	165	9	6	-6	-11	-27	-2	1
Independent	**Year**	**KE WOMEN**	**FAULU**	**RAFIKI**	**SMEP**	**REMU**	**SUMAC**	**CENTURY**	**UWEZO**	**U&I**
Liquidity ratio % (Net liquid assets / Total short-term liabilities)	2017	29	26	19	23	54	60	26.9	108	21
	2016	28	30	12	30	36	29	9	49	27
	2015	28	31	53	24	40	40	33.4	217	28
	2014	24	24	35	29	81	27	26.1	15	57
	2013	27	23	42	26	67	21	24.4	25	63.4
Independent	**Year**	**KE WOMEN**	**FAULU**	**RAFIKI**	**SMEP**	**REMU**	**SUMAC**	**CENTURY**	**UWEZO**	**U&I**
Total Capital = Core Capital + Supplementary Capital (Kes in Millions)	2017	4,919	3,990	509	250	139	249	(33)	164	160
	2016	5,305	3,959	839	346	181	246	31	179	118
	2015	5,309	3,878	1,120	485	195	204	52	117	107
	2014	5,236	3,446	1,093	452	206	185	76	78	83
	2013	3,512	828	687	630	133	179	90	62	45

Source: CBK BSD Annual Reports

Variable	MFBs DATA									
Dependent	**Year**	**KE WOMEN**	**FAULU**	**RAFIKI**	**SMEP**	**REMU**	**SUMAC**	**CENTURY**	**UWEZO**	**U&I**
Logarithm (Profit After Tax Before Donations)	2017	2.944	4.963	-5.796	-3.466	-2.833	1.609	-4.143	-2.197	2.398
	2016	5.412	3.761	-5.697	-4.898	-2.485	2.639	-3.714	1.386	1.946
	2015	5.976	4.745	3.367	0.000	-2.708	1.946	-3.970	-1.609	1.946
	2014	6.122	5.700	3.045	-4.575	1.099	1.386	-3.526	0.000	0.693
	2013	5.979	5.106	2.197	1.792	-1.792	-2.398	-3.296	-0.693	0.000
Independent	**Year**	**KE WOMEN**	**FAULU**	**RAFIKI**	**SMEP**	**REMU**	**SUMAC**	**CENTURY**	**UWEZO**	**U&I**
Logarithm (Liquidity ratio)	2017	3.367	3.258	2.944	3.135	3.989	4.094	3.292	4.682	3.045
	2016	3.332	3.401	2.485	3.401	3.584	3.367	2.197	3.892	3.296
	2015	3.332	3.434	3.970	3.178	3.689	3.689	3.509	5.380	3.332
	2014	3.178	3.178	3.555	3.367	4.394	3.296	3.262	2.708	4.043
	2013	3.296	3.135	3.738	3.258	4.205	3.045	3.195	3.219	4.149
Independent	**Year**	**KE WOMEN**	**FAULU**	**RAFIKI**	**SMEP**	**REMU**	**SUMAC**	**CENTURY**	**UWEZO**	**U&I**
Logarithm (Total Capital)	2017	8.501	8.292	6.232	5.521	4.934	5.517	-3.497	5.100	5.075
	2016	8.576	8.284	6.732	5.846	5.198	5.505	3.434	5.187	4.771
	2015	8.577	8.263	7.021	6.184	5.273	5.318	3.951	4.762	4.673
	2014	8.563	8.145	6.997	6.114	5.328	5.220	4.331	4.357	4.419
	2013	8.164	6.719	6.532	6.446	4.890	5.187	4.500	4.127	3.807

Source: Researcher (2019)