

Influence of Regulatory Capital Adequacy Risk on Financial Performance of Deposit Taking Micro-Finance Banks in Kenya

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Abstract

The financial regulations are imposed on banks as a requirement on banks to have and hold a certain measure of capital to enable offer efficient operations. The capital base of most banks fell significantly due to the financial crisis which started in there year 2007. Financial regulations were maintained by their regulator (CBK) and were required to raise additional capital for their operations. The financial ratios were increased as it was the requirement by the regulator. Therefore, the study sought to determine the influence of regulatory capital on financial performance of deposit taking microfinance banks in Kenya. The independent variable in this study was regulatory as measured by capital adequacy ratio while dependent variable was financial performance measured by return on equity. The study used Panel data regression using ordinary Least Squares (OLS) methods/ design. The financial ratios were computed for each firm during the period of the study and then transformed into panels. The researcher used Panel data regression to show the influence of regulatory capital on the financial performance of deposit taking microfinance banks in Kenya. The target population for the study was all thirteen (13) deposit taking microfinance banks (MFBs) licensed by the central bank of Kenya as 31st December 2017. However due to insufficient data (information) from the 4 DTMBs, the study analyzed nine DTMBs for the period of 7 years (2011 to 2017). Secondary data was used in order to capture the relationship between regulatory capital and performance of deposit taking microfinance banks in Kenya. Secondary data for the 9 deposit taking microfinance banks was obtained from audited annual published financial statements of the central bank annual supervisory reports. The data collected was converted in excel format for easier arrangements into panels. The panels achieve better results since the researcher is able to control against unobserved heterogeneity while also giving a cross sectional and time-series dimension reducing the bias of the estimator. The data was then analyzed using Descriptive statistics, correlation analysis and panel regression analysis. Statistical software's Eview version 8 was used to estimate the relationship between the study variables. The autocorrelation among the regression model was tested using Durbin-Watson factors. The augmented Dickey Fuller (ADF) unit root test was used with the null hypothesis for acceptance (non-stationarity) or rejection (stationality). The results found out that regulatory capital adequacy risk had a positive influence on return on equity. The study concludes that there was a statistically significant relationship between capital adequacy and financial performance of the deposit taking Microfinance Banks in Kenya. The study recommends that there is need to analyze the effect of other banks risks which include, technical, strategic. Compliance and legal since they were not included in the study. Further the study recommends that the policies applied by deposit taking microfinance banks on capital adequacy may be tested and compared with for the purposes of bench making.

Keyword: *Regulation Capital Rik, deposit taking microfinance Banks. Financial Performance*

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I. Introduction

Capital in banks is of great value and utmost for efficient and effective performance (Tamimi & Obeidat, 2013) . All financial institutions need protection due to the vital role they play in an economy. Their capital stability is of utmost value to the regulatory body for the purposes of stabilizing the economy which will lead to the growth and development of a country (CBK, 2015) . For the purposes stabilizing the banking sector, the Central Bank of Kenya (CBK) which is charge of all banks in Kenya, regulates the minimum paid-up capital required to be kept by all financial institutions including deposit taking microfinance banks (CBK, 2020). Microfinance has been defined in general as the provision of financial services to the poor who are otherwise excluded from traditional or formal banking sector (Cull, Demirguc-Knut & Morduch, 2007). Deposit-taking microfinance means a microfinance business in which the person operating the business holds himself put as

accepting deposits on a day-to-day basis (ROK, 2006). The primary goal is to get enough capital to enable them offer loans to their members and maintain their financial operations. Financial performance is the key target for deposit taking microfinance banks without which the business will fail. Research on financial performance on deposit taking microfinance banks, therefore is critical because it will enable us to know and understand the mis of the regulations, supervisory standards for better performance and hence provide required guidance to policy makers on what reforms to make. One of the bank regulations is capital requirement, it set a structure or a framework on how deposit taking microfinance banks and depositors must handle the required capital. Ngo (2006) suggested that the financial regulator ensures that financial institutions (banks) have enough of the own capital at hand. Supported by Blum, (2005) who supported this idea arguing that these regulations assist in minimizing negative externalities e.g., payment system disruption and loss of confidence in the banking system in addition to boosting the slow economic growth hence the gross domestic product (GDP)

The financial regulator monitors the banks performance and whether they adhere to the guideline or policy on capital requirement/ regulatory capital/ capital adequacy as documented. The Prudential guideline on capital adequacy set out three elements that determine bank's adequacy. These includes credit risk associated with exposures, market risk arising from banking activities and the form of quality capital held to support these exposures. Regulatory capital is the amount of capital a bank or other financial institution has as required by its financial regulator. In order measure the capital strength of a bank is the capital adequacy ratio which is the amount of regulatory capital of a bank expressed as a percentage of its risk weighted asset (Aruwa, & Mohammed, 2011).

Financial institutions from commercial to microfinance banks are faced with many risks and are common which include regulatory capital risk, credit risk, liquidity risk operational risk, market or pricing risk, strategic risk, compliance and legal risk. The hypothesis of this study is that regulatory capital risk leads to the failure of financial performance of microfinance banks if not well managed. This study therefore will evaluate whether regulatory capital risk has something to do with deposit taking microfinance banks performance.

Microfinance banks performance is the importance of it successful services rendered to their customers, but is more pronounced in developing countries because financial markets are underdeveloped due to regulations limiting service delivery of their operations (Aruwa and Mohammed, 2011). Microfinance banks have a role to play as it is the major source of finance for the majority who are the poor and the main depository of their economic saving (Arun & Turner, 2004)

Microfinance banks now serve or covers a population of over 100,000,000 clients and achieve impressive repayment rates on loans granted (Cull, Demirguc-Knut & Morduch, 2007). However, the increased growth of microfinance banks has inspired calls on regulation and supervision, even though complying with these prudential regulations and supervision would cost the microfinance banks (Giesecke, 2012). The mentioned costs of such regulation of microfinance banks or other financial institutions comes not from within in developing countries, but from banks in industrialized countries (Cull, Demirguc-Knut & Morduch, 2007).

According to (Wanjiru, 2016) Microfinance banks are the agenda on the public policy. Banks have grown and achieved increasing success in improving the lifestyle of the poor of the poorest through the provision of credit services or financial services. The mentioned initiatives are widely sponsored by organizations such as United Nations, World Bank, National Governments and also includes charitable Non-Government Organizations (NGO). The target of such institutions is to help the majority who are the poor to cope with risk and to take advantage of small income generating opportunities, achieved by employing profit-making banking practices amongst the low income earners (Ahlin *et al.*, 2008)

Microfinance institution in Kenya have been operating as far as late 1990s and have been fully regulated. Legislation was passed in 2006 then followed by Micro Finance Act which became operation in 2008 (CBK, 2015)

The implementation of the Microfinance Act and regulation aimed at promoting orderly growth and development sound and stable Microfinance Industry, also to provide platform for broadening and deepening of access of financial services throughout Kenya, more especially low-income earners, small and medium enterprises both in urban and rural areas. (Afude, 2017). It was notice that up to 2010 of a total number of deposit taking microfinance to 13 which are registered, licensed and regularized by the central bank of Kenya and having approximately 1.5 Million Borrowers (CBK, 2017)

Statement of the problem

Bank capital adequacy is a percentage ratio of bank's primary capital to its loan and investment used as a measure of its financial strength and stability (Pasiouras & Kosmidou, 2007). It is seen as a quantum of fund which banks should plan to maintain in order to conduct its business activities in a prudent manner (Kishore & Pandey, 2005). The capital of banks depends on a number of factors such as the operational risk involved in its activities, lending policy, its portfolio which includes assets and cash, market forces, banks size and its management capabilities.

Kenya Microfinance Act was enacted in 2006 and became operation 2nd May 2008 aimed to improve bank performance, standard of living and the economy of the poor at large. However, Kenyan deposit taking microfinance banks financial performance has consistently been declining with cases of regulatory capital risk reported. The Central Bank of Kenya (CBK) Prudential Guideline on capital adequacy requires banks to adhere to the prescribed capital adequacy prudential ratios. The minimum regulatory capital adequacy ratio of Total Capital to Total Risk Weighted Assets is 14.5 percent respectively. Total capital to Total Risk Weighted Assets declined to 19% in December 2015 from 20% in December 2014 and to 18.8 percent in December 2017 from 19.8% in December 2016. The decline in total capital ratio is attributed to slower growth in capital compared to the growth in total risk weighted assets (CBK, 2017). This raises concern over regulatory capital adequacy management.

According to CBK (2019) states that the Microfinance Bill (2019) reveals no loan or credit facility to an end-user single borrower and his associates where the loan or credit facility, in the aggregate, exceeds such limit of its core capital as the Central Bank of Kenya may prescribe. This poses a challenge to DT microfinance banks. It is evident therefore the deposit taking Microfinance banks faced with serious challenges and it is up to the central banks of Kenya to cushion banks clients from future loss (Oluoch, 2016)

This research is intended to fill the gap of insufficient information and understanding that is in existence in relation to regulatory capital adequacy risk and financial performance of deposit taking microfinance banks in Kenya. The following empirical literature reveal that there is inconsistency in research findings on whether regulatory capital leads to the financial performance. Studies done by (Kivuvu & Olweny, 2014; Vianny, 2013; Kimando, 2015; Wanjiru, 2016; Nestor *et al.*, 2017) on regulatory capital and financial performance revealed that regulatory capital risk have a negative and significant statistical impact on financial performance. Therefore, there is no consensus as to whether proper regulatory capital risk management leads to financial performance; this contradicting finding necessitates this research study on influence of regulatory capital risk on financial performance of deposit taking microfinance banks in Kenya.

Objective of the study

I. To determine the influence of capital adequacy ratio on financial performance of deposit taking Microfinance Banks in Kenya.

Hypothesis of the study

H₀₁: Regulatory capital has no significant influence on financial performance of the deposit taking Microfinance Banks in Kenya.

II. Literature Review

Theoretical Framework

A theory is a systematic generalized explanation of phenomena that offers a guide to research (Thomas, 1997). Therefore, as Smyth, (2004) put it, one should be familiar with the theories applicable to his area of study. This study is guided by Loanable Fund theory and market power theory. These theories do support the dependent and the explanatory variables as they appear in the conceptual framework shown.

2.1 Loanable Fund Theory

Loanable fund theory of interest rate owes its origin to Wicksell (1898) a Swedish economist. Later on, economists like Ohlin, (1937), Myrdal, Lindahl, Robertson and J. Viner have considerably contributed to this theory. According to this theory, rate of interest is determined by the investment (demand for loans) and saving (supply of loanable funds). It indicates that the equilibrium of interest rate is the one which will bring equality between demand and supply of loanable funds. It is a theory which is based on the assumption that the market for loanable funds will be sustained if the market is fully integrated and characterized by perfect mobility of funds throughout the market. In Kenya the model is used to explain interest rates and interest movement. This theory views the level of interest in Kenyan financial markets. According to Saunderson (2005) says that loanable fund theory of interest views the level of interest in financial market as resulting from factors that affect the supply and demand for loanable funds. Loanable funds market describes the interaction of borrowers and savers in the economy. Borrowers demand loanable funds and savers supply loanable funds. The financial equilibrium is reached when the real interest rate has adjusted so that the amount of borrowing is equal to the amount of saving. According to classical theory the loanable fund markets act as a conduit to transfer the power of spending from household to borrowing unit. Household saving happens to be the source of loanable funds (Muniu 2013). It has been acknowledged that loanable funds theory is the funds which have been made available to be borrowed due to changes in government laws and interest rate (Saunders, & Cornett, 2007). In the Kenyan Microfinance banks, loanable funds theory refers to the money available to be borrowed as deposited by members in banks. The retained money in microfinance banks have highly assisted the ever-growing number of poor people by meeting their demand for the loans to invest and charge their standard of living.

Regulating instructions (CBK) acknowledge the owner's contributions as important, because it is the total amount of money which is available to stakeholders in the event of insolvency and liquidation (Saunders & Cornett, 2007). According to Bhattacharya and Thakor, 1993, High capital ratios are normally fixed by financial institutions; this is to cushion depositors against any loss and any panic withdrawals which may lead to destructive panic runs on other solvent but illiquid microfinance banks

Microfinance banks are faced with exposure of various credit risks among them non-performing loans and capital to risk weighted assets. In credit risk the management of the bank as a lender is uncertain if borrower will repay the loan as per the documentation in the application forms (David *et al.*, 2014). For capital to weighted risk (Mishkin & Eakins, 2012), argue that the more capital should be pumped into the investment of assets which are expected to generate more income for the DTMB.

Conceptual Review

A conceptual framework is a tool in a study that a researcher develops to bring awareness and a common understanding of the area or situation under investigation and hence communicate it. When it is well articulated, it assists a researcher to make meaning of subsequent findings of a research study. According to Smith (2004), says that a conceptual framework forms part of the agenda for negotiations to be scrutinized, tested, reviewed and reformed as a result of investigation and it explains the possible connections between the variables. As noted by Smith (2004), a well-presented conceptual framework helps to explain the possible connections between the variables.

The conceptual framework in fig 2.1 below shows the influence of regulatory capital adequacy risk as an independent variable. As defined by (Kothari, 2012), an independent variable is a variable that is manipulated by the researcher to cause an effect or change on another variable called a dependent variable. Kumar, (2014) says a dependent variable is a variable that is measured, predicted, or otherwise monitored and is expected to be affected by manipulation of an independent variable, agreeing with (Kothari, 2012).

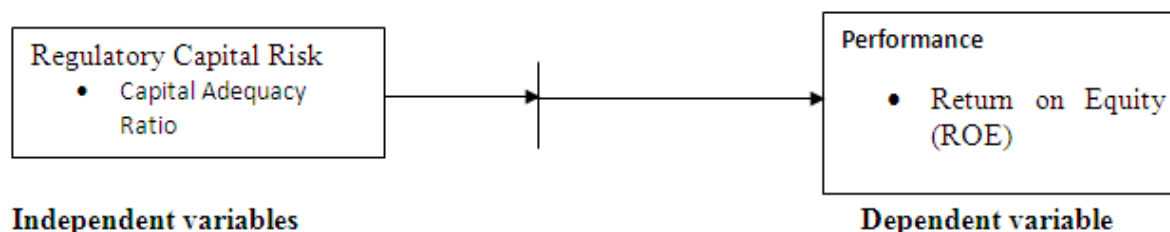


Fig 1.0 Conceptual Framework

Empirical Literature

Regulatory Capital Adequacy Risk and Financial performance

Capital adequacy requirement is the total amount of money a financial institution like deposit taking microfinance bank has to hold as required by the financial regulator, and in many cases of most countries including Kenya is the central bank. Capital adequacy is a percentage ratio of a bank's primary capital to loan and investments, used as a measure of its financial strength and stability (Pasiouras & Kosmidou, 2007)

Capital adequacy demonstrates the efficiency and capacity of a bank to be able to manage their own risks by a way of measuring and controlling it (Onyango, 2018). According to Musyoka (2017), defined adequate capital as a mount that cushions banks from economic shocks by absorbing losses in the event they occur. Banks put Sufficient capital requirement in place to ensure a bank has appropriate funds/ capital for expansion of its business operations and that its net assets are also sufficient and not to take that excess leverage and become insolvent (Udom & Eze, 2018). This capital requirement governs the ratios of equity to debt that is recorded on the liabilities and equity side of the firm's balance sheet (Fatima, 2014). In the financial sector and specific deposit taking microfinance banks (DTMB) Capital Adequacy Ratio is considered as a crucial indicator in assessing the financial solvency of banks. Usually, capital adequacy ratio of equity is expressed as a percentage of risk-weighted assets. This percentage is put in place to ensure banking institutions do not take in excess leverage and eventually become insolvent. Capital. Banking institutions require capital to help them mitigate or govern the ratios of equity to debt that are recorded on the liabilities and equity side of the balance sheet of the firm (Odanga, Nyangweso & Nkobe, 2013). Capital Adequacy Ratio is considered as a safety Valve in case of promoting financial safety and soundness and efficiency in banking and when aiding to protect the depositor's money. Capital adequacy ratio (CAR) reveals the inner strength of financial institution to combat economic shocks and to show resiliency of a financial institution the times of crisis (Nazir and Sangmi, 2010). According to Fatima (2014), it is the ratio that protects financial institution from hard economic times and insolvency. The following are the related empirical studies done on Capital Adequacy Ratio.

Ouko (2006) Did a study on regulation and supervision of Microfinance institutions in the development of financial inclusion in Kenya: Blessing or Curse? The aim of the study was to contribute to the understanding of microfinance regulatory and supervisory issues. The principle objective of the study was to inform the design of regulatory policy in Kenya. The analysis of the study involved a review of existing research work on regulation of microfinance. The findings of the study was that regulations of microfinance has an impact on effectiveness of the institutions in increasing or encouraging financial inclusion,

Vianny (2013) conducted a study in Rwanda that was intended to ascertain the relationship between regulation and financial performance of commercial banks in Rwanda. This study adopted descriptive research design to examine the relationship as mentioned. 10 Commercial Banks were sampled for the study. The findings of his study were that regulation is not a significant predictor of financial performance of commercial banks in Rwanda. In the study he stated that regulation is a key pillar of financial institutions operations, financial prosperity and stability. The study recommended that Rwanda's government need to come up with policies that would help banks to operate in an environment which is conducive hence create financial stability of financial institutions in Rwanda. The study conclude that regulations have no impact on the profitability of financial institutions.

Githinji (2013) Explore the effect of regulation on financial performance of microfinance banks in Kenya. The researcher's study was guided by the following question: what is the effect of capital adequacy regulation on financial performance of microfinance in Kenya? To what extent has liquidity management regulation affected the financial performance in Kenya? What is the effect of asset quality on financial performance of microfinance banks in Kenya? The study used descriptive research design. The target population was 13 MFBS in Kenya covering a period of five years (2011-2015). Secondary data was used and data was analyzed with the use of statistical Package for Social Sciences (SPSS). The finding of the study showed that capital adequacy had a positive effect on ROA, liquidity also had a negative effect on ROA and asset quality had a negative effect on ROE.

Kimando (2015) analyzed the effect of government regulations on factors hindering financing of small-scale water investments in Kenya. The researcher's specific objectives of the study were to determine whether cost recovery, investor's perceived risk, access to capital and return on investments affect financing of small-scale water investment in peri-urban areas in Nairobi Kenya. The research design of the study was cross-sectional survey. The researcher used a two-stage sampling technique to obtain a sample population of 150 small scale water service providers (SSWPs). The study used self-administration structured questionnaire and content analysis for collecting data. Structured equation modeling (SEM) and Moderating Multiple Regression (MMR) Analysis was used to analyze the relationship between predictor variables and financing of small-scale water investments. The findings of the study showed government regulation moderates the relationship between the predictor variable and financing of small-scale water investment.

Wanjiru, (2016) explored the effect of regulation on financial performance of microfinance banks in Kenya. The Research used the research questions: what is the effect of capital adequacy regulation on financial performance of microfinance in Kenya? To what extent has liquidity management regulation affected the financial performance of microfinance banks in Kenya? What is the effect of asset quality on financial performance of microfinance Banks in Kenya? This study used descriptive research design which enabled the researcher to unearth the effect of financial regulation on financial performance of microfinance banks in Kenya. The target population was 13 Microfinance banks in Kenya for the period of five years (2011-2015). Secondary data was collected from audited from financial statements of deposit taking microfinance banks in Kenya. The Data collected was analyzed by the use of Statistical Package for Social sciences (SPSS) program and was presented in tables to enable the users understand the findings in an efficient and simple way. The findings of the study showed that capital adequacy had a positive effect on ROA. Liquidity had a negative effect on ROA, asset quality had a negative effect on ROA and capital adequacy had a negative effect on ROE, Liquidity had a negative effect on ROE and asset quality had a positive effect on ROA. Microfinance institution's capital adequacy had a significant effect on financial performance. Microfinance banks are highly dependent on the level of banks liquidity and there was a significant influence of asset quality on microfinance banks and their financial performance.

Nestor *et.al.*, (2017) Conducted a study on the effect of capital adequacy on financial performance focused on selected quoted deposit money Banks in Nigeria for a period of five years (2010-2015). Under this study, secondary data was used as obtained from fact books, annual report and accounts of deposit money as per that period. The data collected were subjected to to statistical analysis using Pearson coefficient of correlation, multiple Regression Analysis, Variance inflation factors, Multicollinearity, Heteroskedasticity test and Hausman test. The findings revealed that there is appositve and significant between Capital Adequacy and financial performance. The study also empirically verified that capital Adequacy has a statistically significant effect on financial performance on Deposit Money Banks at 5% level of significance.

Kivuvo & Olweny, (2014) Examined the performance of SACCO.s in Kenya by the use of Altman Z Score model of corporate Bankruptcy. The study focused on predictor variables of bankruptcy and financial stability of SAACCO.S. The finding of the study was that liquidity and leverage had significant impact of SACCO, s performance. The focus of the study was that financial stability enhances economic performance. The conclusion of the study was that SASRA was right in advocating for additional capital base for SACCO, S. The study recommended that SACCO, s should improve their liquidity, Profitability, operating efficiency and total assets turnover if they must remain in business and meet the capitalization threshold of SASRA.

Mwai, (2017) evaluated the relationship between capital requirement and financial performance of commercial banks in Kenya. The specific objective of the study was to evaluate the relationship between capital requirement and financial performance of commercial banks in Kenya. The study was guided by Economic theory of regulation, the liquidity theory and agency theory. The research design adopted by the study was descriptive and was to examine the relationship between the independent variable and dependent variable. The target population was a total of 43 commercial banks regularized by the central bank of Kenya for their operations. The study used secondary data which was collected from annual bank supervision and banking sector reports as published by the central bank of Kenya. Data was analyzed by the use of descriptive statistics, correlation analysis and regression analysis. The study found that capital requirements have positive linear relationship with financial performance of commercial banks in Kenya. The results were significant for return on equity {ROE) and return on assets (ROA) but insignificant for Net Interest margin. This meant that that capital requirements increase, financial performance increase as well. The study also found that ownership percentage did not have any significant moderating effect on financial performance of banks in Kenya. The study recommended that CBK should Strengthen the capital requirement for commercial banks even more to ensure optimal performance and industry growth. The study also recommended that the objective of the regulator should not be to set minimum capital requirement in a way that eliminates the likelihood of bank failure but rather to balance the benefits and costs of the alternative policies while leveraging on other tools at regulator disposal to ensure stable banks performance. Banks to comply with capital requirements since apart from increasing on its financial performance, increased capita provides a measure of assurance to the public that an institution will continue to provide financial services even when losses have been incurred, thereby helping to maintain confidence in banking system and minimize liquidity concerns.

Barus *et al.*, (2017) Established the effect of capital adequacy on financial performance of savings and credit societies in Kenya. The independent variable of the study was capital adequacy and the dependent variable was performance measured by return on assets. The study employed an explanatory research design. The target population of the study was 83 registered deposit taking SACCO.S in Kenya that have been in operation for the last five years (2011-2015). Census methodology was used in the study. Multiple linear regression models were used to analyze the data using statistical package for social sciences (SPSS) and STATA. Descriptive and inferential analysis was conducted to analyze the data and presented using tables and graphs. The fund out that capital adequacy positive and hence influenced the financial performance of saving and credit societies in Kenya. The study recommended for the improvement of capital requirement regulation by SASRA. The study also recommended that SACCOS should improve their liquidity, profitability, operating efficiency and total assets turnover if they must remain in business and meet the capitalization threshold SAARA. Further recommendation by this study was to shift their concentration from increased capital levels to credit risk management. Credit risk management would result improvement financial performance of SACCOs.

III. Material and Methodology

A research design is the overall plan for obtaining answers to the questions being investigated and for handling some of the challenges encountered by the researcher during the research process (Polit & Beck, 2003). The study adopted panel data estimation technique because it took care of heterogeneity association with individual deposit taking microfinance banks (DTMBs) by allowing for individual specific variables for the period 2008 and 2017. Data and related information were be extracted from published audited financial statements of the annual supervisory reports of deposit taking microfinance banks registered by CBK for a period of 7 years (2011 to 2017). The data collected was converted in excel format for easier arrangements into panels. The panels achieve better results since the researcher is able to control against unobserved heterogeneity while also giving a cross sectional and time-series dimension reducing the bias of the estimator (Kothari, 2012). Descriptive statistics, correlation analysis, unit root tests and multiple regression analysis were conducted. Statistical software, sEview version 8 was used to estimate the relationship between the study variables. Study findings were presented in tables and figures. Data collected included all 13 deposit taking microfinance banks in Kenya though 4 microfinance banks were removed due to insufficient information. The study hypotheses were measured using one panel data regression equation. The equation had Performance (P) as dependent variable and capital adequacy ratio (CAR) as a independent variable, The regression analysis was run by using E-Views 8 data analysis software.

The hypothesis was tested using the following regression model;

$$ROE_{it} = \alpha + \beta_1 CAR_{it} + \mu_{it}$$

Where;

ROE_{it} = Return on Equity at a time t

RCA_{it} = Capital Adequacy ratio at time t

α = is the intercept

β_1 = Is the parameter of predictor/explanatory variables of CAR

μ_{it} = Is the disturbance term

The equation transformed is as follows;

$$\ln ROE_{it} = \alpha + \beta_1 \ln CAR_{it} + \mu_{it}$$

Where;

Ln = the natural logs of the variables

IV. Results and Discussions

4.2 Descriptive Statistics

The data was converted to their natural logs to deal with the problem of large numbers and eliminate/ reduce heteroscedasticity.

The mean for capital adequacy ratio indicated -0.986350, with a standard deviation of 0.759798 (from the mean -09.8%). The minimum and the maximum of -2.302585 and 1.131402 respectively. The finding shows that the deviations were not huge. The skewness coefficient (value) for capital adequacy ratio is 0.912280, indicating a that distribution data is moderately skewed since it is between 0.5 and 1. The Kurtosis coefficient (value) for capital adequacy ratio was 3.445855 or 34% meaning that distribution was more than 3 and hence highly peaked than the normal distributed. This is a leptokurtic type of kurtosis where tails are also fatter than those of normal distribution. In finances it is used to measure financial risk. An investment leptokurtic distribution is said to be risk investment, but can also generate hefty returns to compensate for the risk. Jarque-bera value was 4.556750, this value is more and not close or closer to zero (0). This signifies that the curve for the variable is not normally distributed. The probability value was 0.102451 which means the variable in normally distributed.

Financial Performance

Financial performance for this study was used as dependent variable and it was measured using Return on Equity. The study found that the ROE had a mean of -3.005357, a minimum of -4.889943, a maximum of -0.847299 and a standard deviation of 1.044469. On average the finding reveals that ROE among the microfinance banks in Kenya is -3.005357. This implies that the standard deviations from the mean is low for return on equity (ROE). The finding indicates that on average the deposit taking microfinance banks does not utilize owner's equity to generate net profit. The data did not exhibit normal distribution because the Skewness value of -0.045613 lied to the left during the period of study. The kurtosis value for ROE was 2.287672 (22%) meaning that the distribution of data lowery peaked. Jarque-bera value was 0.666156, this signifies a normally distributed curved variable. The probability was 0.716714 and is more than 0.1. This means that the variable (ROE) was normally distributed.

Table 4.1: Descriptive Statistics

	LN_ROE	LN_CAR
Mean	-3.005357	-0.986350
Median	-2.888871	-1.203973
Maximum	-0.847299	1.131402
Minimum	-4.889943	-2.302585
Std. Dev.	1.044469	0.759798
Skewness	-0.045613	0.912280
Kurtosis	2.287672	3.445855
Jarque-Bera	0.666156	4.556750
Probability	0.716714	0.102451
Sum	-93.16608	-30.57685
Sum Sq. Dev.	32.72748	17.31878
Observations	31	31

Source: Author, Computation

Notation:

ln_car - Natural log of capital adequacy ratio

4.3 Correlation Analysis

Table 4.2 shows that the correlation coefficient/ dimension of capital adequacy ratio (CAR) was -0.26 respectively signifying weak negative correlation with return on equity (ROE) of deposit taking microfinance banks in Kenya.

Table 4.2: Correlation between Capital regulatory capital adequacy Risk and Return on Equity

	LN_ROE	LN_CAR
LN_ROE	1.000000	
LN_CAR	-0.262302	1.000000

4.4 Unit root tests at Intercept and Level I (0)

4.4.1 Return on Equity

4.4 Unit root test at Intercept and Level (0)

4.4.1 Return on Equity

Return on equity was found to be stationary at intercept and level I (0) because the Levin, Lin & Chu t* statistic had a probability value of **0.0046** which is significant at 1% level of significance. Therefore, we reject the null hypothesis that return on equity has a unit root.

Table 4.1: Panel Root Test on Return on Equity

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.60360	0.0046	5	20
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-0.76760	0.2214	3	14
ADF - Fisher Chi-square	10.6853	0.3826	5	20
PP - Fisher Chi-square	14.4198	0.1547	5	20

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

4.4.2 Capital Adequacy Ratio

Capital Adequacy Ratio was found to be stationary at intercept and level I (0) because the Levin, Lin & Chu t* statistic had a probability value of 0.0000 which is significant at 1% level of significance. Therefore, we reject the null hypothesis that capital adequacy ratio has a unit root.

Table 4.4: Panel Unit Root Test on Capital Adequacy Ratio

Method	Statistic	Prob.**	Cross-Sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-6.85307	0.0000	9	47
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.47239	0.0705	8	44
ADF - Fisher Chi-square	26.2101	0.0951	9	47
PP - Fisher Chi-square	34.1552	0.0121	9	47

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

4.5 Panel regression equation

4.4.1 Hausman test

The Chi-square test statistic was 9.207812 with an insignificant probability value of 0.2381 which is insignificant at 5 percent level of significance. This therefore meant that the null hypothesis was rejected in favor of the Random effects model. Therefore, we accept the Random effects model as suitable for this study.

Table 4.11: Correlation Random Effect- Hausman Test

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	9.207812	7	0.2381

4.4.2 Random effect Model

4.4.2.1 Regulatory Capital adequacy Risk

The study found out that Capital adequacy ratio had a coefficient of 2.14 and a significant probability value of 0.0386 which is significant at 5 percent level of significance. This means that when capital adequacy ratio increases by 2.14 percent per year then return on equity increases by 1 percent in the same year.

Study hypothesis;

H_{01} : Regulatory capital risk has no significant influence on financial performance of the deposit taking Microfinance Banks in Kenya. We reject the null hypothesis that capital adequacy ratio had no significant influence on financial performance of the deposit taking Microfinance Banks in Kenya. Other studies on capital adequacy risk have shown mixed results. Arif Hussainm Ihsan & Hassan and Adam, (2014) indicated a significant positive impact on ROE. and Syed (2017) reveal a significant negative impact on performance.

From the findings illustrated, financial performance of deposit taking microfinance banks in Kenya is highly dependent on the level of the institutions' liquidity. To facilitate favorable financial performance of these institutions, strategies to facilitate increased liquidity of MFIs should be adopted by the institutions for their efficiency in financial operation.

V. Conclusion and Recommendations.

5.3 Conclusion

The study investigated the influence of regulatory capital risk management on financial performance of deposit taking microfinance banks considering capital adequacy. The coefficient of regulatory capital adequacy ratio of total capital to risk weighted assets indicates a positive effect on financial performance. Thus, it is possible to conclude that microfinance banks in Kenya depend on capital adequacy for better return if at all they are well managed. The study recommends that regulations enacted in 2008 for the microfinance banks by the regulator should not only seek to protect the financial systems, but also to promote poor people to network across the country to access to formal finance associated positively with their financial performance. The study recommends that there is need to analyze the effect of other banks risks which include, technical, strategic. Compliance and legal since they were not included in the study. Further the study recommends that the policies applied by deposit taking microfinance banks on capital adequacy may be tested and compared with for the purposes of bench making.

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APPENDICES

APPEBDIX I: DATA COLLECTION SHEET

Year	Financial Performance	Regulatory capital adequacy	CBK Regulations
	Return on Equity = net income / shareholder’s equity	Capital adequacy Ratio Total capital/Total risk weighted Assets	
2008			
2009			
2010			
2011			
2012			
2013			
2014			
2015			
2016			
2017			

APPEDIX II: LIST OF MICROFINCE BANKS IN KENYA

N0	Microfinance banks	Licensed year
1	Faulu Microfinance Bank Limited	2009
2	Kenya women Microfinance Bank limited	2010
3	SMEP Microfinance Bank	2010
4	Remu Microfinance Bank limited	2010
5	Uwezo Microfinance Bank limited	2010
6	Rafiki Microfinance Bank limited	2011
7	Century Microfinance Bank limited	2012
8	Sumac Microfinance Bank	2012
9	U& I Microfinance Bank Limited	2013
10	Daraja Microfinance Limited	2015
11	Choice Microfinance Limited	2015
12	Caritas Microfinance Bank Limited	2015
13	Maisha Microfinance bank limited	2016

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