EFFECT OF INTERNAL FACTORS ON FINANCIAL PERFORMANCE OF BANKS LISTED AT THE NAIROBI SECURITIES EXCHANGE

BY

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DECLARATION

This research thesis is my original work and has not been presented for a Degree in any other institution. No part of this research should be reproduced without the authors consent and that of The KCA University.

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Date…………………

This research thesis has been submitted with my approval to the KCA University Research Methods Supervisor.

Name: Dr. Michael Njogo

 Signature…...................   Date…………………………

For and on behalf of KCA University

DEDICATION

I dedicate this research thesis to my spouse, children, friends and colleagues for their help, patience, understanding and advice throughout the project.

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ABSTRACT

This study seeks to establish the effect of internal factors on financial performance of banks listed at the Nairobi securities Exchange in Kenya. The study focussed on all 11 banks that are listed at the Nairobi securities exchange over 8-year period from year 2009 to year 2016. The study used panel data regression model to analyse the panel data. The researcher carried out various diagnostic tests to rule out the problems of autocorrelation, multicollinearity and heteroscedasticity. Hausman test revealed that random effects model was to be used in this study. The study findings indicate that management efficiency is significant and is positively correlated with return on assets while earnings ability is positively related but insignificant. Capital adequacy, Asset quality and liquidity were found to be insignificant and negatively related to return on assets. Management efficiency and earnings ability which are both positively correlated to performance of commercial banks should be given adequate attention in terms of resource provision and monitoring. By doing so performance of banks listed at the Nairobi Securities Exchange shall improve and this will attract more investors in the Securities market and ultimate growth in the economy as there will be a multiplier effect. The finding of this study agrees with some of the previous researchers and differs with other researchers.

Keywords: Return on assets, CAMEL, Nairobi securities exchange, panel data

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

This study, on effect of internal factors on performance of commercial banks that are listed at the Nairobi Securities Exchange is carried out on the background that the banks are financial institutions that provide various financial services. Their key activities are intermediary in nature. They take deposits from those who have excess funds and lend out to those who need such funds. More importantly, stability of commercial banks is fundamental in development of a country as resources are continuously mobilised in various sectors of the economy to stimulate economic growth. Stability and growth of commercial banks can only be assured if income generated covers cost of operation which leads to good performance (Ongore, 2013). The effect of good performance is that shareholders are assured of dividends and this attracts more investments in the banking sector by injection of additional capital by shareholders. On the contrary, not only poor financial performance brings in suffering like the financial crisis of 2007-2008 (Olweny & Shipo,2011) & (Abera Amdemikael, 2012) but has also led to collapse of local banks like Dubai bank, Imperial bank and lastly Chase bank which is still under statutory management by the Central bank of Kenya.

Researchers have since the financial crisis come up with varied studies on factors that influence performance of commercial banks. Agu (1992) carried out a study on internal factors that affect financial performance other than CAMEL rating system and found out that market structure as measured by the number of bank offices matters for bank profitability performance in Nigeria. Dang (2011) carried out a study on CAMEL rating system and found out that it is a useful tool to

examine the safety and soundness of banks, and help mitigate the potential risks which may lead to bank failures. A study done by Wangari (2013) found out that increased management efficiency, adoption of internet banking and increased customer deposits explains commercial banks profitability. Mou Xu (2014) carried out a study on factors affecting financial performance of firms listed at Shangai Stock exchange 50 and established that asset utilization and leverage are factors that affect financial of firms listed at Shangai Stock Exchange. Many studies have come up with different approaches and conclusions on effect of internal factors on financial performance. In the last two decades studies have shown that commercial banks in Sub-Saharan Africa are more profitable than the rest of the world with an average Return on Assets (ROA) of 2 percent (Ongore, 2013). One of the major reasons behind high return in the region was investment in risky ventures. It is also apparent that there are no clear-cut measures of internal factors on financial performance. Many researchers have come up with different variables and statistical measures of internal factors and this leads to varied conclusions on findings.

One notable fact in commercial enterprises is that profitability of a business requires certain compliance measures to be put in place to control bad business practices in the organization and follow set regulatory measures by authorities. In the case of Commercial banks, they are required to comply with CAMEL rating system adopted by banks worldwide. It is an international rating system originally developed in the US to classify bank operating conditions and gauge probability of bank failure. The ratings are assigned based on a ratio analysis of the financial statements, combined with on-site examinations made by a designated supervisory regulator like Central bank or National bank of a country. CAMEL stands for capital adequacy, Asset quality,

Management efficiency, Earnings ability and Liquidity. The study shall use Return on Assets (ROA) as equated to performance.

The study focusses on banks listed at the Nairobi Securities Exchange which are seen to have sound practices in terms of asset base, corporate governance practices, better disclosure and are also closely monitored by both the Central Bank of Kenya and Nairobi Securities Exchange. The banks listed shall act as independent variables and are thus considered better representation of all banks in the country. This study is carried out over a period of 8 years from year 2009 to year 2016 making a total of 88 variables. The study therefore is more recent and cost effective given the population of eight years.

Banks are important in the economy due to their intermediary role which makes them contribute to health and stability of economy (Thair et al 2011). Most world economies including Kenya attempt to focus their effort in growing and stabilizing their banking sector. The Government of Kenya has put in place several reforms to improve growth and competition in this sector of the economy. Despite this, some banks are still under statutory management, and this requires a study on identification of internal factors that contribute to the growth and stability of the banking sector (Onuonga 2014).

This study focusses on internal factors using CAMEL approach to check on how the factors affect financial performance of banks listed at the Nairobi Securities Exchange using return on assets [ROA] over eight- year period from year 2009 to year 2016. The CAMEL rating is chosen for this study for it is a worldwide acceptable standard measure of financial performance of banks. The study of banks that are listed gives conclusive and effective elements that induce performance of banks in Kenya. Many previous studies have come up with inconsistent conclusions among the researchers and this is the reason that makes it necessary to carry out the

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study. Despite previous research in this area of study, bank failure is still witnessed in the country and across the globe. The findings of this study will add modern knowledge to the existing literature on effect of internal factors on financial performance when CAMEL approach is used in the study.

1.1.1 Overview of listed banks in Kenya

There is a total of 43 banks in Kenya which are controlled by the Central bank of Kenya.

Out of the 43 banks, the number of listed banks is only 11 which are made up of Barclays bank ltd., CFC bank Ltd., I &M bank Ltd., Diamond Trust Bank Ltd., HF Group Ltd., KCB Group ltd., National bank of Kenya Ltd., NIC Bank Ltd., Standard Chartered Bank Ltd., Cooperative Bank Ltd., and Equity Group Holdings Ltd. (Nairobi securities exchange website)

1.1.2 Nairobi Security Exchange

The study focusses on banks listed at Nairobi Securities Exchange. Dealing in shares at Nairobi security Exchange commenced in 1920s with trading taking place on a gentleman's agreement with no physical trading floor. London Stock Exchange (LSE) officials accepted to recognize the setting up of the Nairobi Stock Exchange as an overseas stock exchange. Three phases in the development process of the stock market are identified and distinguished by their unique institutional and policy environment characteristics. These phases are: the initiation stage (1920-1953) which was characterized by domination of foreign investors in share trading and spontaneous growth, the formalization stage (1954-1963) which was characterized by adoption of a self-regulatory framework with efforts to increase the participation of local citizens in share trading especially in the post-independence period. Lastly the revitalization/restructuring stage (1963-1989) when the Government adopted a controlled policy regime and implemented tax

policies that penalized share returns more than returns from other financial assets. Partially because of these developments, the stock market was characterized by a state of dormancy during this phase. This gave way to the revitalization stage (1990 onwards) where efforts were made to strengthen the institutional infrastructure and also to enhance the policy environment in order to facilitate growth of the stock market (Ngugi 2003).

The security market in Kenya in relation to spurring new financial innovations remains relatively poor despite being ranked the fourth best in Africa. Our domestic capital market has few financial instruments and does not have the capacity to incorporate new financial instruments in the context of legal, regulatory and institutional framework (Mwangi, 2013).

Nairobi Security Exchange is overseen by the board of directors and the executive committee. The Exchange is in the process of availing new products which include Exchange Traded Funds (ETFs), Financial and Commodity Derivatives and Carbon Credits. The NSE is publicly traded and is the second self-listed exchange in Africa. NSE is divided into 11 sectors where companies are grouped into Agricultural, Investment, manufacturing and allied, Telecommunication and Technology, Banking, Energy and petroleum, Insurance, Construction and Allied Investment services, Commercial and services or Automobile and Accessories. Every listed company is grouped into any of the 11 groups, NSE prospectus (2014)

1.1.3 Trend in Performance of banks

The last global financial crisis was witnessed in 2007-2009 which was considered as the worst financial crisis since the Great depression. The CAMEL system failed to provide early detection and prevention of the devastating financial crisis. The failure in banks has seen low growth in

banks globally and therefore they cope with global post financial crisis. Governments and bank regulators are becoming tougher in enforcing laws and at the same time customer demands are increasing day by day. These factors make the global banking market place change and the emerging trend is now influenced by digital business, demographic shifts, competition from non-bank institutions that offer financial services and a changing workforce. Banks will therefore have to re invent themselves by developing new products and flexible business models for the future which will be able to deliver the returns investors are looking for in the business (Eric et al 2012).

Banks are focusing their business where growth will be fulfilled. According to Ey (2015) report, such areas are targeting new customers in emerging markets, developing new products, acquiring new markets in developed world, funding infrastructure investments and partnering with non-financial institutions in doing business.

Banks are now making a digital and technological transformation which will require continuous investment in middle ware. This is critical in that it shall drive efficiency, productivity and speed to market. The investment however must be strategic to deliver a real change. The technology will not only reshape the experience of banking customers, but will revolutionize institutions' internal processes, making them more efficient and more productive (World Retail Banking Report, 2015). In 2017, there will be increased number of digital account opening, better pricing that reflects the economies from digital transformation and a greater array of offerings coming from the partnership of fintech and legacy banking organizations.

The banking sector in Kenya has undergone transformation including the introduction of KBRR in July, 2014. Kariuki (2015) on his study on the effect of KBRR on bank performance

concluded that there is very little effect of KBRR on performance of commercial banks in Kenya. KBRR has insignificant effect on the banks profits and therefore the banks will always charge a higher premium "K" no matter what the base rate (KBBR) is in order to realize the targeted profits.

The major impetus for financial innovation in Kenya has been globalization of financial systems, deregulation, and great advances in technologies. There is a strong relationship between financial innovations and financial performance. Financial innovations positively affect financial performance (Cherotich, 2015).

In a study conducted by Odhiambo (2009) took a fresh look at the direction of causality between financial development and economic growth in Kenya by examining the impact of inflation on the finance-growth nexus and concluded that the financial sector development in Kenya is largely dependent on the demand for rather than the supply of financial services.

1.1.4 Measures of bank performance

Bank performance measures are grouped into traditional, economic and market based measures. Academics and practitioners use more of traditional than economic and market based performance measures (Oliver Wyman & McKinsey, 2010). The banking sector is becoming more competitive. Banks employ different techniques to remain profitable. Performance is measured by profits, return on assets, return on investment (Nyanga 2012). None traditional players are increasingly disrupting banking frontiers. Banks continue to focus on innovation, cyber threats, security systems, use cloud services for business activities, leverage digital technologies to enhance customer experience, invest in modern core banking solutions to

transform legacy systems and lastly, they integrate risk management and compliance practices (Capgemini, 2015).

Profitability is the aim of any commercial enterprises. There are various measures that determine profitability and these are net interest margin [NIM], return on assets [ROA] and return on Equity [ROE] among others measures.

1.1.4.1 Net Interest Margin [NIM]

NIM is the difference between interest income and interest expense as a percentage of total assets. The net interest income refers to the net income accruing to the bank from non-interest activities (including fees, service charges, foreign exchange, and direct investment) divided by total assets. The bank's before-tax profit over total assets (BTP/TA), as a measure of the bank's profit margin, is calculated from the bank's income statement as the sum of non-interest income over total assets minus overhead over total assets minus loan loss provision over total assets minus other operating income (Obamuyi, 2013). One of a bank's primary intermediation functions is to issue liabilities and use the proceeds to purchase income-earning assets. If a bank manager has done a good job of asset and liability management such that the bank earns substantial income on its assets and has low costs on its liabilities, profits will be high. How well a bank manages its assets and liabilities is affected by the spread between interest income and interest expenses. If the bank is able to raise funds with liabilities that have low interest costs and is able to acquire assets with high interest income, the net interest margin will be high, and the bank is likely to be highly profitable.

1.1.4.2 Return on Assets [ROA]

Although net income gives us an idea of how well a bank is doing, it suffers from one major drawback that it does not adjust for the bank's size, thus making it hard to compare how well one bank is doing relative to another. A basic measure of bank profitability that corrects for the size of the bank is the return on assets (ROA), which divides the net income of the bank by the amount of its assets. ROA is a useful measure of how well a bank manager is doing on the job because it indicates how well a bank's assets are being used to generate profits. It is the most widely used measure of bank performance by many researchers (Nyanga, 2012).

1.1.4.3 Return on Equity [ROE]

ROE is a financial ratio that refers to how much profit a company earns compared to the total amount of shareholder equity invested or found on the balance sheet. ROE is what the shareholders look in return for their investment. A business that has a high return on equity is more likely to be one that of generating cash internally. Thus, the higher the ROE the better the company is in terms of profit generation (Simiyu and Ngile, 2015). Although ROA provides useful information about bank profitability, it is not what the bank's owners (equity holders) care about most. They are more concerned about how much the bank is earning on their equity investment, an amount that is measured by the return on equity (ROE), the net income per dollar/ Kenya shillings of equity capital.

1.2 Statement of the Problem

Banks drive economic activities in the country by providing financial resources to those who are in need and receive funds from those who have excess. Due to this important intermediary role, it is important to know factors that influence their performance with a view of managing such factors to improve profitability (Simiyu and Ngile, 2015). A study conducted by Mou (2014) on factors affecting financial performance of listed firms at Shangai stock exchange (SSE 50) concluded that for both types of firm performance measurement (ROA and ROE), the results show a positive and significant relationship between assets utilization and firm performance and a negative and significant relationship between leverage and firm performance. A study by Nsambu (2014) sort to establish the underlying factors responsible for performance of both domestic and foreign commercial banks in Uganda. He concluded that management efficiency, asset quality, interest income, capital adequacy and inflation are factors affecting performance of domestic commercial banks in Uganda over the period 2000-2011. The problem in these studies is that there is no consistent outcome on the findings and conclusions. The internal factors used in the studies are not recognised worldwide as standard measure of bank performance. This makes their study to be incommensurate and thus a better approach is to use CAMEL elements as internal factors for the studies.

Ongore (2013) who studied determinants of financial performance of commercial banks in Kenya concluded that board and management decisions [internal factors] influence bank performance rather than GDP and ownership identity. This agreed with the conclusion made by Tobias (2011) who identified bank-specific factors that affect their performance as Capital adequacy, Asset quality, liquidity, operational cost efficiency, income diversification and GDP. Another study conducted by Simiyu (2015) on effects of macro-economic variables on

profitability of commercial banks listed at Nairobi Securities exchange concluded that GDP has insignificant positive effect on profitability, real interest rate has negative and significant effect on profitability and exchange rate has significant positive effect on bank profitability. Omondi (2013) studied factors affecting financial performance of listed companies at the Nairobi Securities in Kenya concluded that leverage, company size and liquidity affect profitability of companies. The overall profitability of the banking sector in Kenya has improved tremendously over the last 5 years. However, despite the overall good picture, a critical analysis indicates that not all banks are profitable (Tobias 2011). At the same time, some banks have been seen to be put under statutory management by the Central Bank of Kenya in the last two years. The studies in here incorporated external factors like GDP and macroeconomic variables in their studies. These are factors that affect all the banks in equal measure. These factors do not improve specific individual bank performance. The problem therefore is that the literature does not adequately address effect of internal factors on performance of banks. The studies need to be reviewed and redone.

The studies reviewed looked at macroeconomic factors, internal factors and ownership identity in their research on bank performance. The studies have based their findings on macroeconomic factors like GDP, inflation and interest rates which are systematic factors that affect the entire industry. The other studies focus on microeconomic factors and internal factors yet there seems to be no consensus and consistency in their findings. On this note, there seems to be clear knowledge gap on what specific internal factors that influence performance of commercial banks listed at the Nairobi Securities exchange. The problem in the study is that despite previous researches done, many banks in Kenya and across the globe are still put under statutory

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management which ultimately ends up being wound up. There is also no clear consensus on the findings of the previous researchers. This study seeks to determine effect of internal factors on performance so that it comes up with findings that are applicable in banks for their improved performance. Managers and stakeholders shall use the study to make better decisions for the good of the banks and the entire banking industry. This study is based on internal factors that are under the control of management and the board of directors. It uses CAMEL framework recommended by Basel Committee used on banking supervision of the Bank for International Settlement [BIS] 1985, an international rating system. This study is therefore more recent and is conducted for the 8- year period from years 2009 to year2016.

1.3 Objectives of study

1.31 General objectives

The main objective of this study is to establish the effect of internal factors on performance of banks listed at the Nairobi Securities Exchange in Kenya.

1.32 Specific objectives

i.   To establish the effect of Capital adequacy on financial performance of banks listed at NSE in Kenya.

ii.   To determine the effect of asset quality on financial performance of banks listed at NSE in Kenya.

iii. To find out how Management efficiency affect financial performance of banks listed at NSE in Kenya.

iv.   To verify the effect of Earnings ability on financial performance of banks listed at the NSE in Kenya.

v.   To assess effect of Liquidity on financial performance of banks listed at the NSE in Kenya.

1.4 Research Questions

i.   What is the effect of Capital adequacy on financial performance of banks listed at the NSE in Kenya?

ii.   What is the effect of asset quality on financial performance of banks listed at the NSE in Kenya?

iii.   How does Management efficiency affect financial performance of banks listed at the NSE in Kenya?

iv.   How does Earnings ability affect financial performance of banks listed at the NSE in Kenya?

v.   Does Liquidity have an effect on financial performance of banks listed at the NSE in Kenya?

1.5 Significance of study

The study is significant to the bank management in that it identifies internal factors that influence bank performance. This makes banks develop strategies that are likely to improve their performance, sustain them and ultimately the economy of the country. Note able bank failures witnessed in the recent past shall be minimized.

Financial performance of banks has been of great interest to researchers, especially after the great depression. The knowledge gap identified shall be fulfilled and subsequently act as a reference by scholars for further research in the banking sector and also used by the public.

This study would help management, investors, and Government to plan in advance for the unpleasant events. Management would have to hedge against the adverse factors and capitalize on those that would improve the bank's performance. Investors would be able to measure the performance of their portfolios and reconstruct their portfolios accordingly. Government would be able to measure the impact of the bank performance on the economy and its implications on the economic policy.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers theoretical review of the various studies previously done by other researchers on performance of banks in various countries. It then carries out empirical review on determinants of financial performance using the CAMEL approach and lastly draws down a conceptual framework.

2.2 Theoretical Review

There are many theories around financial performance of companies according to Mihaela, (2015). The theories relate to capital and profitability of commercial banks which are identified as efficiency structure theory, market power theory and balanced portfolio theory.

2.2.1 Efficiency Structure Theory

The efficiency structure hypothesis was developed by Demesetz (1973). It is the proposition that more efficient companies will better compete, develop and grow in scale, thus resulting in an increase in the degree of market concentration. The hypothesis also assumes that such companies will achieve high profitability while maintaining high market shares. Hence, under this hypothesis, it is expected that the greater the degree of market concentration, the more efficient the market.

The efficiency hypothesis, argues that banks earn high profits because they are more efficient than others. There are two distinct approaches within the efficiency structure theory: The X-

efficiency and Scale–efficiency hypothesis. According to the X-efficiency approach, more efficient firms are more profitable because of their lower cost of operation. Such firms tend to gain larger market shares, which may manifest in higher levels on market concentration, but without any causal relationship from concentration to profitability (Athanasoglou et al. 2006). The scale approach emphasizes economies of scale rather than differences in management or production technology. Larger firms can obtain lower unit cost and higher profits through economies of scale. This enables large firms to acquire market shares, which may manifest in higher concentration and then profitability.

A study conducted by Yoshiro (2013) to test efficiency structure hypothesis in Japanese banks found out that in a concentrated market firms do not minimize costs. Consistent with the efficiency hypothesis, banks become larger but reduce efficiency which supports the quiet-life hypothesis. These findings imply that there is an intriguing growth–efficiency dynamic throughout banks' life cycle which suggest that the efficiency hypothesis dominates the quiet-life hypothesis in terms of economic impact.

In Argentina, not only are banks which are more X-efficient are less profitable but also that banks which operate in more concentrated (less competitive markets) have higher profit ability. The evidence here on the other hand lends more weight to Conduct Structure performance hypothesis in the sense that profitability is driven by market power but not by efficiency. If foreign banks are more X- efficient than local banks and banking reforms leads to lower opportunity cost of entering for large banks, entry into the banking sector results in higher concentration, lower profits and a more efficient banking sector (Catena, 2000).

A study conducted by Seenalatha (2010) on market structure, efficiency and performance of banking industry in Sri Lanka found out that traditional Structure Conduct Performance argument is not held in the banking industry in Sri Lanka and the banks performance does not depend on either market concentration or market power of individual firms but on the level of efficiency of the banking units.

Changes in the banking sector regulation to attract more foreign and local banks cause competition in the banking sector. Banks have to remain profitable by lowering their operations cost and be efficient (Catena, 2000). The efficiency structure theory therefore is more relevant in a competitive environment characterized by concentration of local and foreign banks.

The importance of the theory is that it aligns bank performance to how effective they manage their cost and also scale of operation thus reducing cost per unit of input. Banks shall have monopoly in the market which subsequently reduces competition (Athanasoglou et al. 2006). The theory requires banks to be efficient and thus compete effectively. This results to growth in scale and increase in market competition.

The conditions precedent to efficiency structure theory is having adequate capital to be used in procurement of goods and services. In line with the scale approach, capital adequacy enables banks to acquire services in bulk due to availability of funds and this minimizes unit cost which ultimately influences performance of the bank. On the other hand, the X efficient approach is applicable through the role played by management of organisation in lowering the cost of operation which ultimately affect bank performance.

The relevance of the theory to the study is that banks need to be more efficient for them to effectively compete in the market place which results to growth and market concentration. In line with efficiency structure theory, this is achievable through reduced cost of operation and bulk purchasing which reduces unit cost. The growth can only be attained if the company complies fully to internal factors [CAMEL] that affects performance of banks in terms of profitability.

2.2.2 Market Power Theory

Market power refers to the ability of a firm (or group of firms) to raise and maintain price above the level that would prevail under competition which may be referred to as monopoly power (Khemani, 1993). The exercise of market power leads to reduced output and loss of economic welfare. A company with substantial market power has ability to manipulate market price and thereby control its profit margin, and possibly the ability to increase obstacles to potential new entrants into the market. Firms that have market power are often described as price makers because they have ability to establish or adjust the marketplace price of an item without relinquishing market share. Market power is a measure of the economic strength of a firm. It is the ability of a firm to influence the quantity or price of goods and services in a market. Market power is measured by Lerner index which is the difference between price and marginal cost expressed as a percentage of price. For a monopoly, this ratio is equal to the reciprocal of the price elasticity of market demand (Learner, 1934).

As noted in Gitonga (2009), the market power hypothesis posits that the performance of bank is influenced by the market structure of the industry. There are two distinct approaches within the market power theory; the Structure-Conduct-Performance (SCP) and the Relative Market Power (RMP) hypotheses. Market structure in this study refers to the number and size of distribution of

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banks in the industry, market conduct refers to the way in which banks interact and performance refers to profitability. According to the SCP approach, the level of concentration in the banking market gives rise to potential market power by banks, which may raise their profitability. Banks in more concentrated markets are most likely to make abnormal profits by their ability to lower deposits rates and to charge higher loan rates because of collusive (explicit or tacit) or monopolistic reasons, than firms operating in less concentrated markets, irrespective of their efficiency. Unlike the SCP, the RMP [the relative market power] hypothesis posits that bank profitability is influenced by market share. It assumes that only large banks with differentiated products can influence prices and increase profits. They exercise market power and earn non-competitive profits (Tregenna 2009).

Ayadi and Ellouze (2013) studied market structure and performance of 10 Tunisian banks with an objective to examine the relationship between market structure and the performance of the Tunisian banking system over the period 1990-2009. They assessed the scores of x - efficiency and scale efficiency. The hypotheses of the market power theory and those of the efficient structure theory were tested. In the case of the theory of efficient structure, the scores of x-efficiency and those of scale efficiency were obtained using the non - parametric method for estimating the efficiency DEA [Data Envelopment Analysis]. The results showed that the banks in the sample showed an average level of efficiency – x (41.3%) and a relatively high level of scale efficiency (77.7%) over the studied period. The result further showed that x - efficiency has a positive and significant effect on the performance of the Tunisian commercial banks as well as the hypothesis of x - efficiency.

Since the mid-1990s the banking sector in the Latin American emerging markets has experienced profound changes due to financial liberalisation, a significant increase in foreign investments and greater merger activities often occurring following financial crises. The wave of consolidation and the rapid increase in market concentration that took place in most countries has generated concerns about the rise in banks' market power and its potential effects on consumers. Chortareas and Garza-Garcia (2006) advances the existing literature by testing the market power (Structure-Conduct-Performance and Relative Market Power) and efficient structure (X- and scale efficiency) hypotheses for a sample of over 2,500 bank observations in nine Latin American countries over 1997- 2005. They used Data Envelopment Analysis technique to obtain reliable efficiency measures. They produced evidence supporting the efficient structure hypotheses. The findings are particularly robust for the largest banking markets in the region, namely Brazil, Argentina and Chile. Finally, capital ratios and bank size seem to be among the most important factors in explaining higher than normal profits for Latin American banks. In addition, capital ratios and bank size seem to be among the most important factors in explaining higher than normal profits for Latin American banks. Findings have important policy implications because they broadly suggest that despite the significant rise in takeovers from foreign banks and the increase in market concentration, banks' profits do not seem to be explained by greater market power. In contrast, efficiency (particularly scale efficiency) seems to be the main driving force of increased profitability for most Latin American countries.

Market power gives firms the ability to engage in unilateral anti-competitive behavior. Some of the behaviours that firms with market power are accused of engaging in include predatory pricing, product tying, and creation of overcapacity or other barriers to entry. If no individual

participant in the market has significant market power, then anti-competitive behavior can take place only through collusion, or the exercise of a group of participants' collective market power.

This theory is important in that it encourages banks to be large and be monopolistic to have market power which ultimately increases their profits by increasing interest on loans, increase obstacles to market entry and reducing interest on deposits.

This theory is relevant for banks and this study in that it encourages banks to raise and maintain profits. This is done through market price manipulation, increasing branch network and increasing obstacles for other new entrants in the market. According to the Structure-Conduct-Performance approach, the level of concentration in the banking market gives rise to potential market power by banks, which may raise their profitability.

2.2.3 Modern Portfolio Theory

Modern portfolio theory (MPT) is a theory on how risk averse investors can construct portfolios to optimize or maximize expected return based on a given level of market risk, emphasizing that risk is an inherent part of higher reward. According to the theory, it is possible to construct an efficient frontier of optimal portfolios offering the maximum possible expected return for a given level of risk. This theory was pioneered by Harry Markowitz (1952) in his paper Portfolio Selection. MPT shows that an investor can construct a portfolio of multiple assets that will maximize returns for a given level of risk. Likewise, given a desired level of expected return, an investor can construct a portfolio with the lowest possible risk. Based on statistical measures such as variance and correlation, an individual investment's return is less important than how the investment behaves in the context of the entire portfolio. Markowitz & Adesota (1995) identify

factors that determine the efficiency of portfolio selection as expected future return of each candidate security, expected risk of each candidate's security and lastly the extent to which each security's risk correlated with every other security.

A study conducted by Fabozzi, Gupta & Markowitz (2002) on the legacy of modern portfolio theory noted that today's investment professionals and investors are very different from those 50 years ago. Not only are they more financially sophisticated, but they are armed with many more tools and concepts. This allows both investment professionals to better serve the needs of their clients, and investors to monitor and evaluate the performance of their investments. MPT has had the most influence in the practice of portfolio management by providing a framework to construct and select portfolios based on the expected performance of the investments and the risk appetite of the investor. They presented a table below as a summary of the MPT investment process (mean-variance optimization or the theory of portfolio selection).

Diagram 2: The MPT investor process
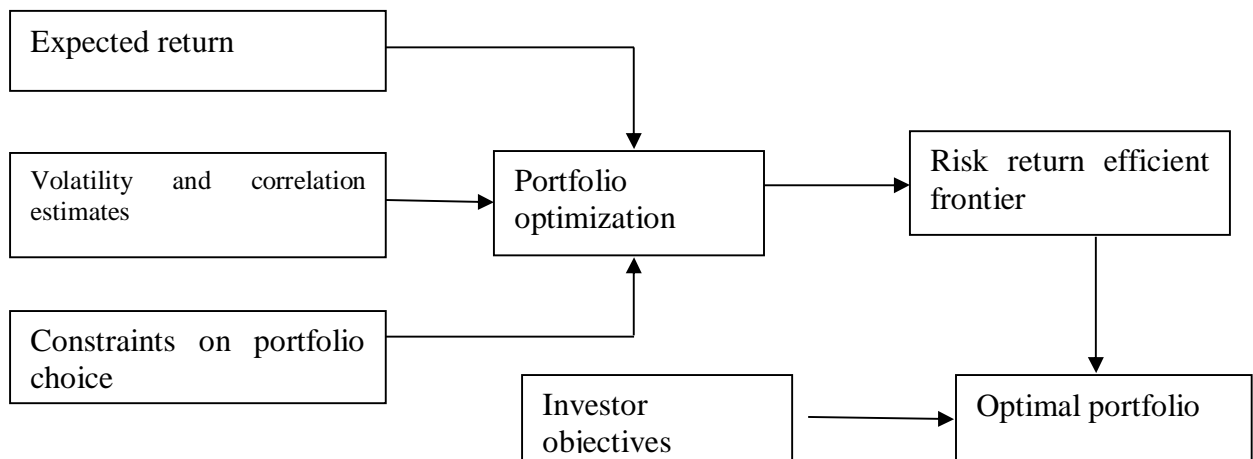
Source: Fabozzi, Gupta & Markowitz (2002)

Implementation can get quite complicated and the theory dictates that given estimates of the returns, volatilities, and correlations of a set of investments and constraints on investment choices (for example, maximum exposures and turnover constraints), it is possible to perform an optimization that results in the risk/return or mean-variance efficient frontier.

The portfolio theory approach is the most relevant and plays an important role in bank performance studies (Nzongang and Atemnkeng, 2006). According to the Portfolio balance model of asset diversification, the optimum holding of each asset in a wealth holder's portfolio is a function of policy decisions determined by factors such as the vector of rates of return on all assets held in the portfolio, a vector of risks associated with the ownership of each financial assets and the size of the portfolio. It implies portfolio diversification and the desired portfolio composition of commercial banks are a result of decisions taken by the bank management. Further, the ability to obtain maximum profits depends on the feasible set of assets and liabilities determined by the management and the unit cost incurred by the bank for producing each component of assets (Nzongang and Atemnkeng, 2006).

Many models of the banking firm have been developed to deal with specific aspects of bank behaviour but none is acceptable as descriptive of all bank behaviour although the portfolio theory approach plays an important role (Clark, 1986). According to the Portfolio balance model of asset diversification, the optimum holding of each asset in a wealth holder's portfolio is a function of policy decisions determined by a number of factors such as the vector of rates of return on all assets held in the portfolio, a vector of risks associated with the ownership of each financial assets and the size of the portfolio (Agu, 1992). It implies portfolio diversification and

the desired portfolio composition of commercial banks are results of decisions taken by the bank management. Further, the ability to obtain maximum profits depends on the feasible set of assets and liabilities determined by the management and per unit cost incurred by the bank for producing each component of asset.

Omisore (2012) sought to review the relevance of the modern portfolio theory as an investment portfolio tool in portfolio decision making. In the course of the research, the relevance and applicability of the MPT was reviewed. However, it was established that many inherent flaws of the theory have marred the efficacy of the theory. Among other things, its simplistic assumptions and direct correlation of risks and returns were identified as significant flaws. Despite the limitations of the theory, it is still widely accepted and further research is being carried out on its principles. The post-modern portfolio theory is a significant advancement of the theory. Post-modern portfolio theory encourages far greater diversification in an investment portfolio than does the MPT. By utilizing the alpha coefficient and the beta coefficient, each of which gauge an investment's performance, investors can engineer a portfolio's risk and returns to coincide with investment objectives. The post-modern portfolio theory (PMPT) separates alpha- and beta-generated revenue, and then considers each individually to maximize their performance. The PMPT is more adaptable to the individual investor and can gauge risk relative to the investor's minimum acceptable return (MAR) for an asset.

This study is therefore more relevant to the balanced portfolio theory and uses performance measure as return on assets [ROA], which is a measure for return on all assets. Investors construct their portfolio based on performance of banks and thus it is necessary to study effect of

internal factors on performance of banks. The findings of this study will enable bank directors to make relevant decisions towards improvement of profitability. The consequence of improved performance is that investors will diversify their portfolio by increasing their investment through purchase of more shares in the bank.

2.3 Empirical Review

The review covers capital adequacy, assets quality, management efficiency, earnings ability and liquidity of banks.

2.3.1 Capital adequacy and financial performance

Capital adequacy standards for banks that operate internationally are of major concern for bank regulators worldwide. In consequence, the Bank for International Settlements, (BIS) established a framework for measuring capital adequacy for banks in the group of ten (G10), industrialized nations of the world. The adoption of the standards in the city of Basle came to be referred to as the Basle Capital Accord on Capital Adequacy Standard. The Capital adequacy Standard under the Basle accord has been widely accepted worldwide by bank regulators (Ezike 2013). Capital constitutes a fall-back situation for any institution in times of unforeseen developments. It would be important to know how much times are being contributed by equity owners in relation to each Kenya shillings of total capital. Two types of capital are measured: tier one capital, which can absorb losses without a bank being required to cease trading, and tier two capital, which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors. CAR is measured as total capital to risk weighted assets.

Tier one capital is the capital that is permanently and easily available to cushion losses suffered by a bank without it being required to stop operating for example ordinary share capital. While tier two capital is the one that cushions losses in case the bank is winding up so it provides a lesser degree of protection to depositors and creditors. It is used to absorb losses if a bank loses all its tier one capital. When measuring credit exposure, adjustments are made to the value of assets listed on a lender's balance sheets. All the loans the bank has issued are weighted based on their degree of risk. For example, loans issued to the government are weighted at 0 percent, while those given to individuals are assigned a weighted score of 100 percent. Basel II requires that the total capital ratio must be no lower than 8% (Ezike, 2013)

A study conducted by Ezike (2013) with the objective to investigate the impact of the adoption of the Capital Adequacy Standards on the performance of Nigerian banks used ordinary least squares (OLS) estimation technique to examine and determine the effect of the independent variable loans and advances, shareholders' funds, total assets and customer deposits on the dependent variables Earnings per share (EPS) and profit after tax. The results of the analysis showed that capital adequacy standards exert a major influence on bank performance implying a positive correlation. In addition, the impact of the Nigerian monetary authority on the new capital requirements was found to be complemented with the adoption of the Basle accord framework. The study concludes with the recommendation that the CBN (Central Bank of Nigeria) should not rely solely on the capitalization of banks as a determinant of bank performance but also should concentrate on efficient and effective bank supervision and risk management.

Capital adequacy is one of the specific internal factors that affect bank profitability from the CAMEL perspective. Capital is the amount of own funds available to support the bank's business and act as a buffer in case of adverse situation (Athanasoglou et al. 2005). Banks capital creates liquidity for the bank because deposits are most fragile and prone to bank runs. In this view, capital is positively related to financial performance of banks as chances of constrained liquidity are minimized. Moreover, greater bank capital reduces the chance of distress. However, it is not without drawbacks that it induces weak demand for liability, the cheapest sources of funds. Capital adequacy is the level of capital required by the banks to enable them to withstand the risks such as credit, market and operational risks they are exposed to in order to absorb the potential loses and protect the bank's debtors (Ongore 2013).

Tier 1 core capital in Basel I consists of the most liquid and reliable capital on a bank's balance sheet, namely equity capital and disclosed reserves (BCBS, 1988). Tier 1 capital includes permanent shareholder's equity in the form of common stock, perpetual non-cumulative preferred stock and minority interests in equity accounts of consolidated subsidiaries; disclosed reserves such as retained earnings, share premiums or other surplus; qualifying innovative capital instruments up to a maximum of 15 percent of Tier 1 capital. Goodwill is deducted. Subordinate (Tier 2) capital in Basel I consist of less reliable capital than that of Tier 1. Tier 2 capital includes undisclosed reserves that have been accepted by the bank's supervisory authority; general loan-loss reserves limited to 1.25 percent of risk weighted assets; hybrid (debt, equity) capital instruments; subordinated debt limited to 50 percent of Tier 1 capital and; asset revaluation reserves (BCBS, 2010). Susan and Nasieku (2016) studied the effect of capital on financial performance of commercial banks in Kenya.The study findings showed that core capital to total risk weighted assets for the Tier I and Tier II banks decreased from year 2010 to year 2014. The

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findings also showed that the total capital to total risk weighted assets for the Tier I banks decreased from year 2010 to year 2014 while that of the Tier II banks decreased from year 2010 to year 2014. The findings further showed that both Tier I and Tier II banks maintained their core capital to total risk weighted assets ratios and their total capital to total risk weighted assets ratios at a significantly higher level than the set minimum requirement of 8% and 12%, respectively. This influences performance which makes tier I and tier II positively related to performance. According to Dang (2011), the adequacy of capital is judged by capital adequacy ratio (CAR). Capital adequacy ratio shows the internal strength of the bank to withstand losses during crisis. Capital adequacy ratio is directly proportional to the resilience of the bank to crisis situations and therefore it is positively related to performance. It has also a direct effect on the profitability of banks by determining its expansion to risky but profitable ventures.

2.3.2 Asset Quality and Financial Performance

The Asset quality also referred to as loan quality has been defined as the overall risk attached to the various assets held by an individual or institution. It measures how well a financial institution predicts the credit risk of their assets and how well they manage them (Nzoka 2015). It is measured by comparing non-performing loans to total loans. The bank's asset is a specific variable that affects the profitability of a bank. The bank asset includes among others current asset, credit portfolio, fixed asset, and other investments. Often a growing asset (size) related to the age of the bank (Athanasoglou et al., 2005). In most cases, the loan of a bank is the major asset that generates the major share of the banks income and this is a positive relationship. The quality of loan portfolio determines the profitability of banks. The loan portfolio quality has a direct bearing on bank profitability. The highest risk facing a bank is the losses derived from

delinquent loans (Dang, 2011). Thus, nonperforming loan ratios are the best proxies for asset quality. Different types of financial ratios used to study the performances of banks by different scholars. It is the major concern of all commercial banks to keep the amount of nonperforming loans to low level. This is so because high nonperforming loan affects the profitability of the bank. Therefore, low non- performing loans to total loans shows the good health of the portfolio of the bank.

The determinants of default risk of banks in emerging economies have so far received inadequate attention in the literature. Swamy (2015) seeks to study the determinants of bank asset quality and profitability using panel data techniques and robust data sets for the period between 1997 and 2009. The study findings reveal some interesting results that run contrary to established perceptions. Priority sector credit has been found to be not significant in affecting NPAs [Non-Performing Assets] which is contrary to the general perception. Similarly, with regard to rural bank branches, the results reveal that aversion to rural credit is a falsely founded perception. Bad debts are dependent more on the performance of industry than on other sectors of the economy. Public sector banks have shown significant performance in containing bad debts. Private banks have continued to be stable in containing bad debts as they have better risk management procedures and technology which allows them to finish with lower levels of NPAs. Further, the study investigates the effect of determinants on profitability, and establishes that while capital adequacy and investment activity significantly affect the profitability of commercial banks, apart from other accepted determinants of profitability, asset size has no significant impact on profitability.

Asset quality management has recently received much attention in the banking industry. Chisti (2013) conducted a study to examine the effect of loan quality on bank performance. The

relationship between the asset quality management proxies and profitability nexus were precisely examined. Using the return on assets and profitability ratios as proxies for bank profitability for the period 2006 to 2010, operating performance of the sample banks was estimated with the help of financial ratios. Also, multiple regression model was employed to examine if bank asset quality and operating performance are positively correlated. The results of the study showed that a bad asset ratio is negatively associated with banking operating performance, after controlling for the effects of operating scale, traditional banking business concentration and the idle fund ratio. The results further support the hypothesis that the higher the quality of loan processing activities before loan approval, the lower the non-value-added activities that is required to process problematic loans, and thus the higher the banking operating performance will be. Asset quality on bank performance is therefore important in that it measures how well a financial institution predicts the credit risk of their assets and how well they manage them. Good management of assets determines how well a bank can improve business and generate revenues.

2.3.3 Management efficiency and Financial Performance

Drucker (1963) refers to doing things right as efficiency. In his definition, a measure of efficiency appraises an organization's ability to achieve the intended output considering the minimum input level. Efficient and effective utilization of resources are key objectives of every banker. Recent events are helping to bring even greater emphasis to banking efficiency. Management efficiency is measured by comparing total operating revenue to total profit. Increasing competition for financial services, technological innovation, and banking consolidation, for example, are all focusing more attention on controlling costs in banking and providing services and products efficiently (Spong, 1993). Technological innovation, in the form

of improvements in communications and data processing, is also bringing added emphasis to efficiency. Such improvements are giving banks and other financial institutions opportunities to dramatically raise productivity and begin delivering many services through electronic means. Even the smallest banks are automating more and more of their operations, and banks and nonbank firms of all sizes are finding cost-effective ways to introduce new products and compete more directly with each other.

It is observed that there is still no model that bank managers may use to determine their operational efficiency levels. The patterns and effect of bank specific performance indicators on their operational efficiency is well explained by bank specific performance indicators as $R2 = 64\%$ Odunga (2016). Never the less, market share is a matter in determination of bank's operational efficiency. Close attention to variables that affect operational efficiency is required for banks to remain competitive in the market.

According to Ongore (2013), Management Efficiency is one of the key internal factors that determine bank profitability. It is represented by different financial ratios like total assets growth, loan growth rate and earnings growth rate. Yet, it is one of the complexes subject to capture with financial ratios. Moreover, operational efficiency in managing the operating expenses is another dimension for management quality. The performance of management is often expressed qualitatively through subjective evaluation of management systems, organizational discipline, control systems, quality of staff, and other measures. Yet, some financial ratios of the financial statements act as a proxy for management efficiency. The capability of the management to deploy its resources efficiently, income maximization, reducing operating costs can be measured by financial ratios. The higher the operating profits to total income (revenue) the more the efficient management is in terms of operational efficiency and income generation. The other

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important ratio is that proxy management quality is expense to asset ratio. The ratio of operating expenses to total asset is expected to be negatively associated with profitability. Management quality in this regard, determines the level of operating expenses and in turn affects profitability (Athanasoglou et al. 2005).

Management efficiency is therefore an important element in bank performance as it is a key element in improving profitability. As defined by Chan (2003) that efficiency in organization is the utilization of resources [Labor, Machine, Capacity, and Energy] at best and by doing so it brings the savings in money and time and consequently leads to improved performance. On this note, better utilization of resources is an efficient management practices which is positive.

2.3.4 Liquidity Management and Financial Performance

Liquidity is another factor that determines the level of bank performance. Liquidity refers to the ability of the bank to fulfil its obligations, mainly of depositors and is measured by comparing total loans to total customer deposits. Banks create liquidity by providing illiquid loans to borrowers while giving depositors ability to withdraw cash at par value at a moment's notice (Bouwman, 2013).

According to Dang (2011) adequate level of liquidity is positively related with bank profitability. The most common financial ratios that reflect the liquidity position of a bank according to the above author are customer deposit to total asset and total loan to customer deposits. Other scholars use different financial ratio to measure liquidity. For instance, Ilhomovich (2009) used cash to deposit ratio to measure the liquidity level of banks in Malaysia. However, the study

conducted in China and Malaysia found that liquidity level of banks has no relationship with the performances of banks.

Economic activity in any country across the world is facilitated by the strength of financial sector. Many economies have recognized that listed firms play a key role in the economy and this is measured by how they perform. Financial performance of listed firms is of major importance to the shareholders, creditors, the Government and other stakeholders of the company (Xu, 2014).

Liquidity is an important element in bank performance. Ferrouh (2014) noted that there was a financial crisis in morocco which was caused by not putting in place sufficient liquidity level to cope with adverse conditions and adequate methods of management of liquidity risk of banks. He analyzed the relationship between liquidity risk and financial performance and concluded that Moroccan bank's performance is mainly determined by 7 determinants which are liquidity ratio, size of banks, logarithm of the total assets squared, external funding to total liabilities, share of own bank's capital of the bank's total assets, foreign direct investments, unemployment rate and the realization of the financial crisis variable. The results of this study was also confirmed by Tesfaye (2012) who stated performance of the banks is affected by capital adequacy, bank size, short term interest rate and general inflation rate whereas.

Nigerian banks experienced a tremendous growth in the early 2000s, but these recorded growths were eroded by the global financial crisis in 2008. This issue raised the understanding of the role of liquidity on the performance of commercial banks in Nigeria. A study done in Nigeria by Ajibike (2015) on the Impact of Liquidity on Nigerian Bank Performance: A dynamic panel

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approach concluded that banks liquidity is positive and driver of bank performance in Nigeria. Liquidity, past performance, board size and debt structure are major determinants of bank profitability as well but not only liquidity.

Nyabate (2015) studied the effect of liquidity on financial performance of financial institutions listed at the Nairobi securities exchange. The study findings indicate that liquidity is one of the factors that influence financial performance of firms listed at the Nairobi Securities exchange. In the study the relationship between ROA [Return on Assets] and liquidity is negative implying that a decrease in liquidity will lead to a decrease in financial performance of financial companies listed in the NSE. For the success of financial institutions, commercial banks should not compromise on liquidity management. They are expected to maintain optimal liquidity levels to meet their financial obligations.

The Basel Committee on banking supervision has come up with Basel iii, the liquidity coverage ratio and liquidity risk monitoring tools that ensures that banks are resilient and able to stand market shocks for a period of 30 days (Bank for International Settlement, 2013). This is done by ensuring that banks have adequate stock of unencumbered high- quality liquid assets (HQLA) that can be converted easily and immediately into private markets into cash to meet their liquidity needs for a 30- calendar day liquidity stress scenario. The difficulties experienced by some banks in year 2007-2008 financial crisis were due to lapses in basic principles of liquidity risk management. In response, as the foundation of its liquidity framework, the Committee in 2008 published Principles for Sound Liquidity Risk Management and Supervision (Sound Principles). The Sound Principles provide detailed guidance on risk management and supervision of funding liquidity risk and should help promote better risk management in this critical area, but

only if there is full implementation by banks and supervisors. As such, the Committee will continue to monitor the implementation by supervisors to ensure that banks adhere to these fundamental principles. Liquidity management is therefore a paramount element in financial performance of banks in any country and positively related to bank performance.

2.3.5 Earnings Ability and Financial Performance

This study uses the ratio of post-tax profit to total share capital as earnings ability. Total share capital includes issued and fully paid common and preferred shares. In assessing the earning ability of banks, the sources and quality of earnings along with the ability to provide for an adequate capital through retained earnings are assessed. In the normal course of economic activity, banks generally have three main sources of funding available which are in the form of retained earnings, debt instruments and equity. In contrast, in periods of economic downturn, after retained earnings vanish and debt financing becomes unavailable due to a dramatic deterioration of the risk profiles of banks, the only source of funding in adverse circumstances is the issuance of common and preferred shares. A bank's capacity to generate a higher level of post-tax profits on equity provides profound insight into its performance which may turn out to be positively or negatively correlated to its performance (Uzhegova, 2010).

Financial institution's earnings is rated upon different factors inter alia the level of earnings, including trends and stability, the ability to provide for adequate capital through retained earnings, the quality and sources of earnings, the level of expenses in relation to operations, the adequacy of the budgeting systems, forecasting processes, and management information systems in general (Ferrouhi, 2013)

Although net income gives us an idea of how well a bank is doing, it suffers from one major drawback that it does not adjust for the bank size, thus making it hard to compare how well one bank is doing relative to another. A basic measure of bank profitability that corrects for the size of the bank is the return on assets (ROA) which divides the net income of the bank by the amount of its assets. ROA is a useful measure of how well a bank manager is doing on the job because it indicates how well a bank's assets are being used to generate (Federal Deposit Insurance Cooperation report, 2015) profits. Earnings ability is measured as net income to total assets.

A study to examine the impact of bank size on earnings volatility of commercial banks in a mixed panel of more than 65 developed and developing countries for 1998-2007 at bank level revealed that bank size is an important determinant of earning volatility in emerging market economies but for developed countries bank size does not matter. Moreover, the study also examined effect of income structure on banks' earnings volatility and found no evidence that banks with more reliance on interest income experience less earning volatility. However, some evidence is found that banks with higher dependence on commission income in emerging market economies experience higher earnings volatility (Shehzad, 2008).

Ongore (2013) conducted a study on the factors that determine financial performance of commercial banks in Kenya during 2001 to 2010. The researcher used linear multiple regression model and Generalized Least Square on panel data with independent variables such as capital adequacy, asset quality, management efficiency, earnings ability, liquidity management, GDP growth rate and inflation. The dependent variables used to measure the performance included the return on investments (ROA), return on equity (ROE), and Net Interest Margin NIM. The findings indicate that bank-specific factors have significant impact on performance of

commercial banks in the country. Further, the study showed significant effect of earnings ability on bank performance thus concluding that there is a positive correlation between earnings ability and bank performance.

2.4 Conceptual framework

Diagram 2.3: Relationship between variables

Independent variables   **Dependent variables**

Capital adequacy
- Debt to equity ratio

Asset quality
- Loan loss provisions to total loans ratio

Financial Performance:

- Return on assets given as net earnings to total assets.

Management efficiency
- Operating expenses to operating income

Earnings ability
- Net income to total assets ratio

Liquidity
- Deposits to total assets ratio

Table 2.1- Operationalization of conceptual framework

VARIABLE	DEFINITION	MEASUREMENT
Return on assets	This is a measure of how a bank is profitable relative to assets. It also gives an idea of how management is efficient in using its assets.	Net earnings to total assets
Capital adequacy	The statutory minimum reserves of capital which a bank or other financial institution must have available	Debt to equity ratio must be at least 10.5 [tier 1 and tier 2 to risk weighted assets] [CBK website]
Asset quality	The quality of loans since that provides earnings for the bank and form majority of assets.	A rating of 2 indicates satisfactory asset quality and credit administration practices (Desta, 2016)
Management efficiency	It covers the management's ability to ensure the safe operation of the institution as they comply with the necessary and applicable internal and external regulations. The efficiency ratio measures how well a company uses its assets and liabilities.	Overheads are considered as a percentage of revenue and usually 50% is the bench mark. Increased improvement shows that the bank is efficient (Desta,2016)
Earnings ability	This is an institution's ability to create appropriate returns to be able to expand, retain competitiveness, and add capital is a key factor in rating its continued viability. This is determined by assessing the company's growth, stability, valuation allowances, net interest margin, net worth level and the quality of the company's existing assets.	Cost to Net profit 100% is considered adequate (Desta,2016)
Liquidity	This is the availability of assets which can easily be converted to cash.	Total customer deposits to total asset. Should be >75% (Desta, 2016)

2.5 Summary of Literature

The various studies reviewed on effects of internal factors on performance of banks listed at the Securities Exchanges in various countries are based on efficiency structure theory, market power theory and balanced portfolio theory. The theories are more relevant to current bank business practices in certain aspects. Efficiency structure theory assumes that banks that are efficient grow in size and subsequently increase their profitability. Market power theory assumes that banks who are market leaders can maintain high price levels and control such prices to maintain high profit levels. Such banks also tend to create obstacles for other entrants in the market and maintain monopoly status. Modern portfolio theory argues that investors can have an optimal portfolio to better their returns. Investors can construct a portfolio of multiple assets that maximizes returns for a given level of risk. One of the researchers, Markowitz et al (1995) identified factors that determine efficiency of a portfolio selection as expected return of each security, expected risk of each security and the extent to which each security's risk correlates with every other security.

Researchers have used various factors that affect bank performance. The common factors used are macro-economic variables like GDP, interest rates and exchange rates. Other researchers use bank specific factors [Internal factors] which include CAMEL approach, technological advancement and other internal financial variables. The empirical review was carried out on capital adequacy, asset quality, management efficiency and liquidity management on financial performance of commercial banks. Many researchers have come up with varied conclusions on this research area which lucks consensus. This therefore leaves a knowledge gap on factors that

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influence bank performance which requires further research and this the basis on which this research is carried out.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the methodology used to come up with findings for study objectives. It covers research design, population and sample under study, data collection method used, and lastly how the data will be analysed and presented.

3.2 Research Design

This study adopts longitudinal research design. Panel study shall be employed as the information is required over time and the method has advantage of using cross sectional data. The unit of analysis in this study will be the number of commercial banks listed at the Nairobi Securities Exchange and licensed under the banking act. The banks must have been in business over the last five years as at 31st December 2016. Any bank that is listed which has not been in business over the last five years is excluded.

3.3 Target Population and Sample size

The population shall be all 11 listed banks at the Nairobi Security exchange and are registered by the Central Bank of Kenya under the banking Act chapter 488 of the laws of Kenya (NSE, 2016). A census of all the 11 banks will be used in the study.

3.4 Data collection

The study uses secondary data from annual banking survey, IMF and World Bank data base, financial statements of listed banks, information obtained from Central bank of Kenya, Nairobi

Securities exchange and Kenya National Bureau of statistics. The data was collected for a period of 8 years from 2009 to 2016 forming a panel data with 88 observations.

3.5 Diagnostic Tests

The diagnostic tests carried out in this study are to check for existence of autocorrelation, multicollinearity and heteroscedasticity. Hausman, unit root and Breusch Pagan LM test were also carried out.

3.5.1 Auto correlation test

The term autocorrelation may be defined as correlation between members of a series of observations ordered in time [as in time series data] or space [as in cross-sectional data]. In the regression context, the classical linear regression model assumes that such autocorrelation does not exist in the disturbances ui. Symbolically, $E(uiuj) = 0$ $i \_= j$. (Gujarati, 2004)

Put simply, the classical model assumes that the disturbance term relating to any observation is not influenced by the disturbance term relating to any other observation. For example, if we are dealing with quarterly time series data involving the regression of output on labor and capital inputs and if, say, there is a labor strike affecting output in one quarter, there is no reason to believe that this disruption will be carried over to the next quarter. That is, if output is lower this quarter, there is no reason to expect it to be lower next quarter.

The Researcher shall use STATA to check for autocorrelation by doing the following: The command to be applied on CAMEL elements using Wooldridge test in stata is: xtserial ROA CA AQ ME EA L, output. If the out shows Prob>F value lower than the critical value of 5%, then we fail to reject null hypothesis and conclude that there is no first order auto correlation in the panel data.

3.5.2 Multicollinearity test

Multicollinearity is a phenomenon in which two or more predictor variables in a multiple regression model are highly correlated, meaning that one can be linearly predicted from the others with a substantial degree of accuracy.

The basic problem is multicollinearity results in unstable parameter estimates which makes it very difficult to assess the effect of independent variables on dependent variables. Fixing multicollinearity is by removing highly correlated predictors from the model. If you have two or more factors with a high VIF, remove one from the model and by use of Partial Least Squares Regression (PLS) or Principal Components Analysis, regression methods that cut the number of predictors to a smaller set of uncorrelated components.

The primary concern is that as the degree of multicollinearity increases, the regression model estimates of the coefficients become unstable and the standard errors for the coefficients can get wildly inflated. The researcher shall use vif [variance inflation factor] (Ongore, 2013) stata command to detect multicollinearity in the regression model. The procedure is to use VIF then estat vif to produce a mean vif. As a rule of thumb, a variable whose VIF values are greater than 10 may merit further investigation (Gujarati, 2007, pg.362).

3.5.3 Heteroscedasticity test

Heteroscedasticity refers to the circumstance in which the variability of a variable is unequal across the range of values of a second variable that predicts it.

If the errors have constant variance, the errors are called homoscedastic. Typically, residuals are plotted to assess this assumption. Standard estimation methods are inefficient when the errors are

heteroscedastic or have non-constant variance. If the model is well-fitted, there should be no pattern to the residuals plotted against the fitted values.

The researcher used graphical method to detect heteroscedasticity by plotting residuals versus fitted (predicted) values. This is done by issuing the rvfplot command in the stata. Other option available is to use the Breusch – Pagan test which is designed to detect any linear form of heteroscedasticity. The test is done by running a regression model. Thereafter the command "estat hottest" is used. The null hypothesis for Breusch- Pagan test is that the error variances are all equal while the alternative hypothesis is that the error variances are multiplicative function of one or more variables. The rule in establishing heteroscedasticity is when the requirement of a constant variance is violated.

3.5.4 Hausman test

The Hausman test evaluates the consistency of an estimator when compared to an alternative, less efficient, estimator which is already known to be consistent. It helps one evaluate if a statistical model corresponds to the data. Hausman basically tests whether the unique errors are correlated with the regressors while the null hypothesis is that they are not correlated.

In this study. Hausman test is used to differentiate between fixed effects model [FE] and random effects [RE] model in the panel data. Fixed effects (FE) is used whenever one is interested in analyzing the impact of variables that vary over time, and it explores the relationship between predictor and outcome variables within an entity. Random effects (RE) model unlike the fixed effects model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model (Green, 2010)

Random effects model is preferred under the null hypothesis due to higher efficiency while under the alternative fixed effects is at least consistent and thus preferred.

To establish whether to use a fixed effect or random effect model, run fixed effects and save the estimates and again run the random model and save the estimates then perform the test. If the p-value is significant at >0.05 then use fixed effects, if not use random effects.

The researcher used STATA to handle panel data by using the command Xtset to set the data and xtreg to run fixed/random effect.

3.5.5 Unit root test

The unit root test is a test for whether a time series variable is non-stationary and possesses a unit root. The null hypothesis is generally defined as the presence of a unit root and the alternative hypothesis is that there is no unit root for the series and that the series is stationary. The null hypothesis will be tested using Levin-Lin-chu test to find out if a unit root is present in auto regression. The test assumes a common autoregressive parameter for all panels, so this test does not allow for the possibility that some banks return on assets [ROA] contain unit roots while other banks' return on assets [ROA] do not. Each test performed by xtunitroot also makes explicit the assumed behavior of the number of panels and time periods. Due to this characteristic, unit root processes are also called difference stationary. If the computed p value is lower than the significant level alpha, then the null hypothesis should be rejected and accept the alternative hypothesis. In this study, the researcher used Levin -Lin-Chu unit root test in stata measured at 5% significant level. The rule of thumb is that null hypothesis states that the data has unit root while the alternative hypothesis is that the data is stationery.

3.5.6 Breusch Pagan LM test

This test is used in panel data stata to determine whether to use random effects [RE] or Pooled ordinary least square [POLS] model. The command is inbuild in stata. The determining factor is that when output is equal to zero then random effects model is used in the study.

3.6 Data Analysis

The data collected shall be analyzed using descriptive statistics. The data analysis shall be carried out with the help of STATA. The panel data regression model is specified as follows:

$$Yit = \beta O + \beta 1 CAit + \beta 2 ASit + \beta 3 MEit + \beta 4 EAit + \beta 5 LBit + \varepsilon t$$

Where:

$Yit =$ ROA $= \dfrac{\text{Net Income}}{\text{Total assets}}$ $= $ ROA for bank i at time t.

$CA_{it} = \dfrac{\text{Debt}}{\text{Equity}}$ $= $ Capital adequacy of bank i at time t

$AS_{it} = \dfrac{\text{loan loss provisions}}{\text{Total loans}}$ $= $ Asset quality of bank i at time t

$ME_{it} = \dfrac{\text{Operating expenses}}{\text{Operating income}}$ $= $ Management efficiency of bank i at time t

$EA_{it} = \dfrac{\text{Net income}}{\text{Total assets}}$ $= $ Earnings ability of bank i at time t

$LB_{it} = \dfrac{\text{Deposits}}{\text{Total assets}}$ $= $ Liquidity of bank i at time t

$\beta_0 = $ Constant,

ß1, ß2, ß3, ß4, *and* $\beta5$= Co-efficient of the associated independent variable to measure the proportionate change in the dependent variables.

€= Error Term,

i = Banks

t = 2009 –2016.

The study shall also use significant levels to determine the relative importance of each independent variable on performance of banks listed at Nairobi Securities exchange.

The data analysed will be presented in form of tables.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

The study in this chapter involves data analysis using STATA for all banks listed at the Nairobi Securities Exchange. The data analysed using multiple linear regression shall be presented in tables for ease of reference. Correlation and regression results are also shown in this chapter and finally a discussion on interpretation of findings.

4.2 Data Analysis and Presentation

The data was extracted from annual audited financial reports and publications of commercial banks listed at Nairobi Securities Exchange, reports from Central Banks of Kenya and IMF.List of commercial banks listed at Nairobi Securities Exchange:

1. Barclays Bank Ltd Ord 0.50
2. CFC Stanbic Holdings Ltd ord.5.00
3. I&M Holdings Ltd Ord 1.00
4. Diamond Trust Bank Kenya Ltd Ord 4.00
5. HF Group Ltd Ord 5.00
6. KCB Group Ltd Ord 1.00
7. National Bank of Kenya Ltd Ord 5.00
8. NIC Bank Ltd Ord 5.00
9. Standard Chartered Bank Ltd Ord 5.00
10. Equity Group Holdings Ord 0.50
11. The Co-operative Bank of Kenya Ltd Ord 1.00

Nairobi Securities exchange (2017)

4.2.1 Trend analysis of financial performance of commercial banks listed at Nairobi Securities exchange

This section presents the trend of how banks listed at the Nairobi Securities exchange performed over a period of 8 years from year 2009 to 2016.

Figure 4.1: Trend of financial performance of banks
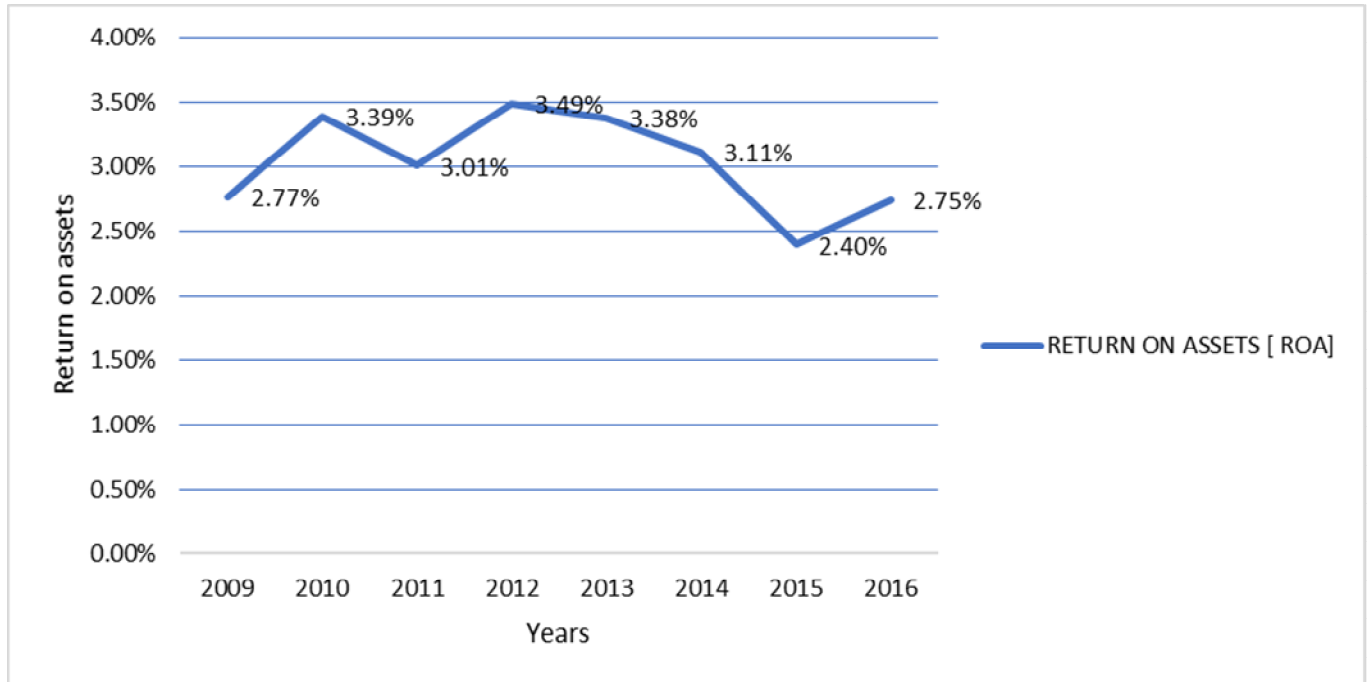
Researcher, (2017)

Financial performance on average of commercial banks in year 2009 was 2.77 %. This increased to 3.39% in year 2010 and again dropped to 3.01% in year 2011.The performance increased to 3.49% in year 2012. The lowest performance was in year 2015 with a return on assets of 2.40%. During the period under study, the best return was witnessed in year 2013 at a return of 3.49%. Thereafter, there was a declining performance of commercial banks from year 2012 at 3.49% to year 2015 at 2.40%. However, year 2016 seems to have taken an upwards trend with a return of 2.75%. The reduction in bank performance for year 2015 could be as a result of enforcement of bank supervision where banks were required to review loan loss provision and make additional provision for non- performing loans.

The researcher further analysed performance of individual banks as shown in the diagram below:

Figure 4.2: Performance [ROA] of Individual banks
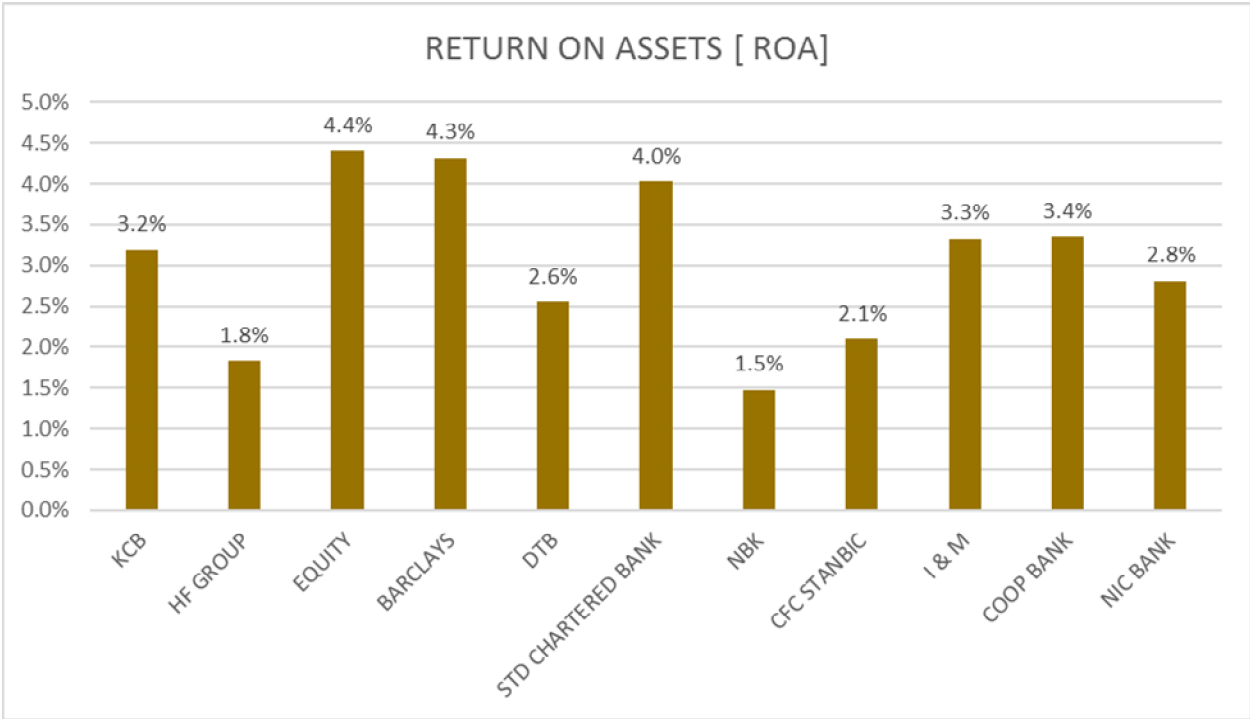
Researcher, (2017)

It is apparent from the diagram that the top three good performing banks over the 8- year period are Equity bank at 4.4%, Barclays bank at 4.3% and Standard chartered bank at 4.0% while least performing banks are National bank of Kenya at 1.5%, HF Group at 1.8% and CFC Stanbic bank at 2.1%.

4.2.2 Data Analysis and Results of Return on Assets [ROA]

The researcher used visual plots for dependent variable [ROA] with a view to establish performance of all the 11 banks listed at Nairobi Securities Exchange. Figure 4.4 helps us to establish whether to use fixed effect or random effect. The figures 4.3 and 4.4 are as shown below:

Figure 4.3: Growth plots for return on assets [ROA] for individual banks
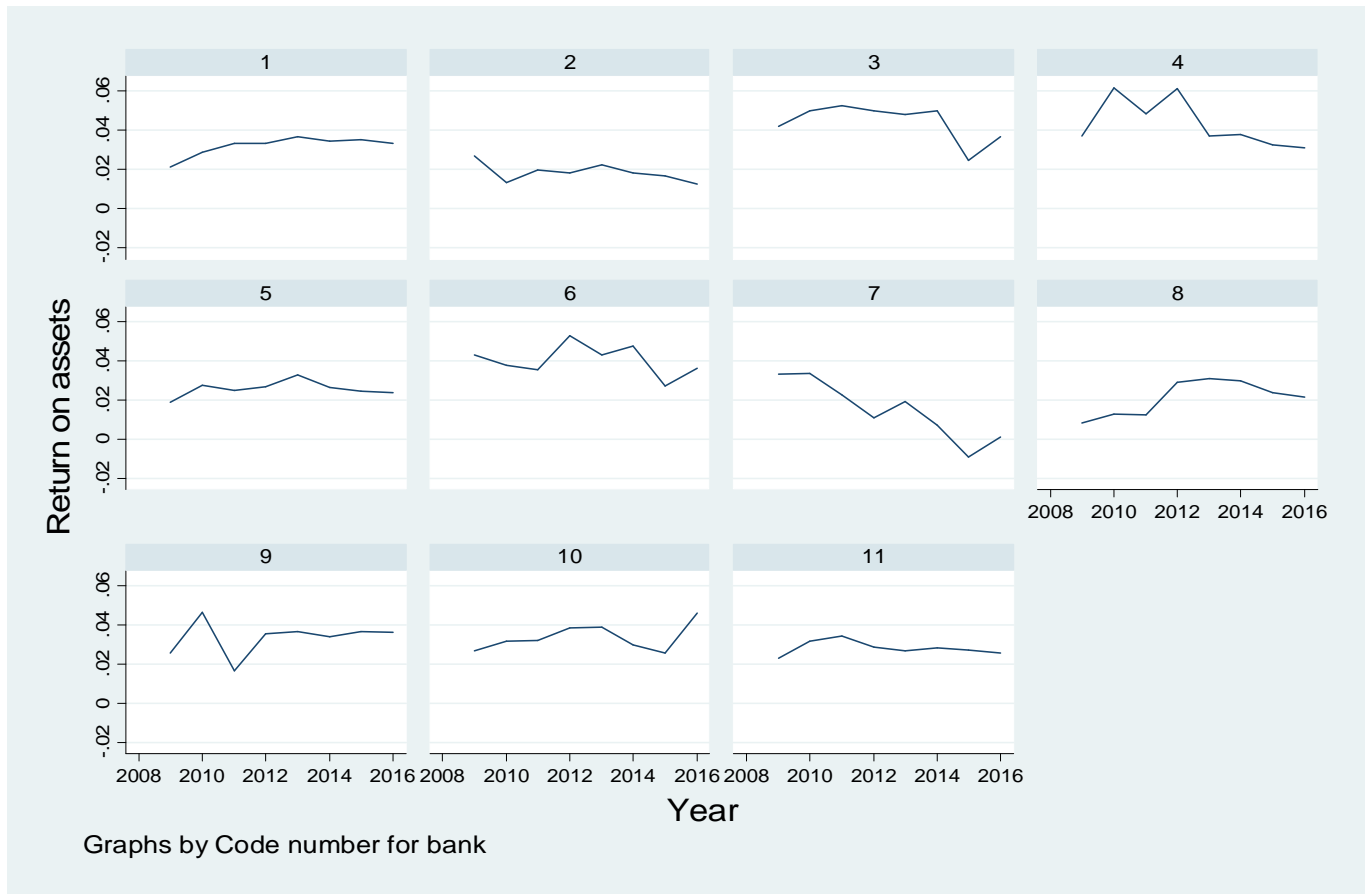
Graphs by Code number for bank

BANK	KCB	HF GROUP	EQUITY	BARCLAYS	DTB	STD CHARTERED BANK	NBK	CFC STANBIC	I & M	COOP BANK	NIC
CODE NO.	1	2	3	4	5	6	7	8	9	10	11

Researcher, (2017)

The above diagram shows return on assets [ROA] for all banks that are listed at the Nairobi Securities Exchange for the period year 2009 to year 2016. The banks that show an upwards trend between year 2014 and 2016 are Equity bank [3], Standard Chartered bank [6], National bank of Kenya [7] and Cooperative bank [10]. The remaining seven banks show a declining trend over the same period.

Figure 4.4: Overlain plots for return on assets [ROA]
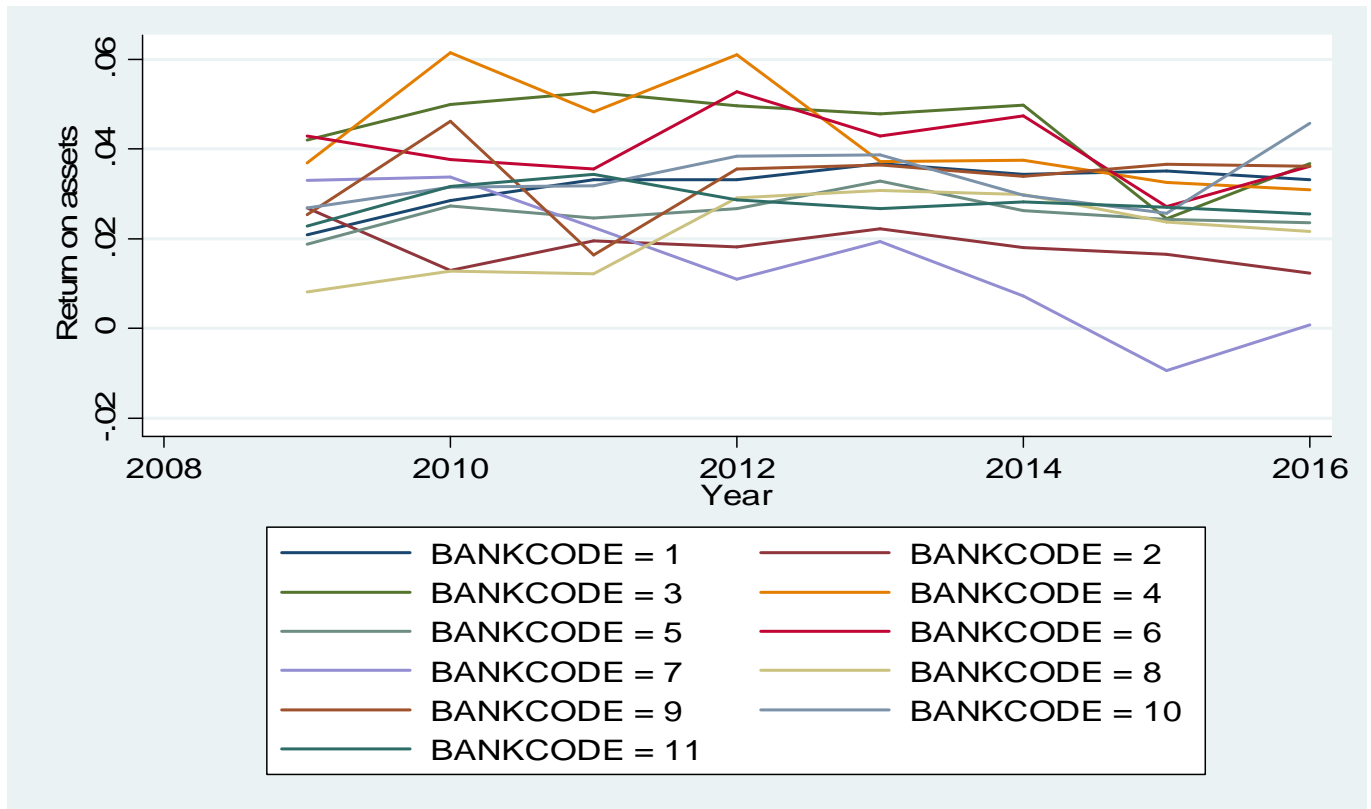
BANK	KCB	HF GROUP	EQUITY	BARCLAYS	DTB	STD CHARTERED BANK	NBK	CFC STANBIC	I & M	COOP BANK	NIC
CODE NO.	1	2	3	4	5	6	7	8	9	10	11

Researcher, (2017)

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The diagram shows that the banks have different y – intercept and therefore fixed effects [FE] model is appropriate.

4.2.3 Exploration of panel data for independent variables

The researcher used visual plots for independent variable, namely capital adequacy [CA], asset quality [AQ], management efficiency[ME], liquidity [L] with a view to establish trend in all the 11 banks listed at Nairobi Securities Exchange through figures 4.5 to 4.9 as shown below:

Figure 4.5: **Capital adequacy**
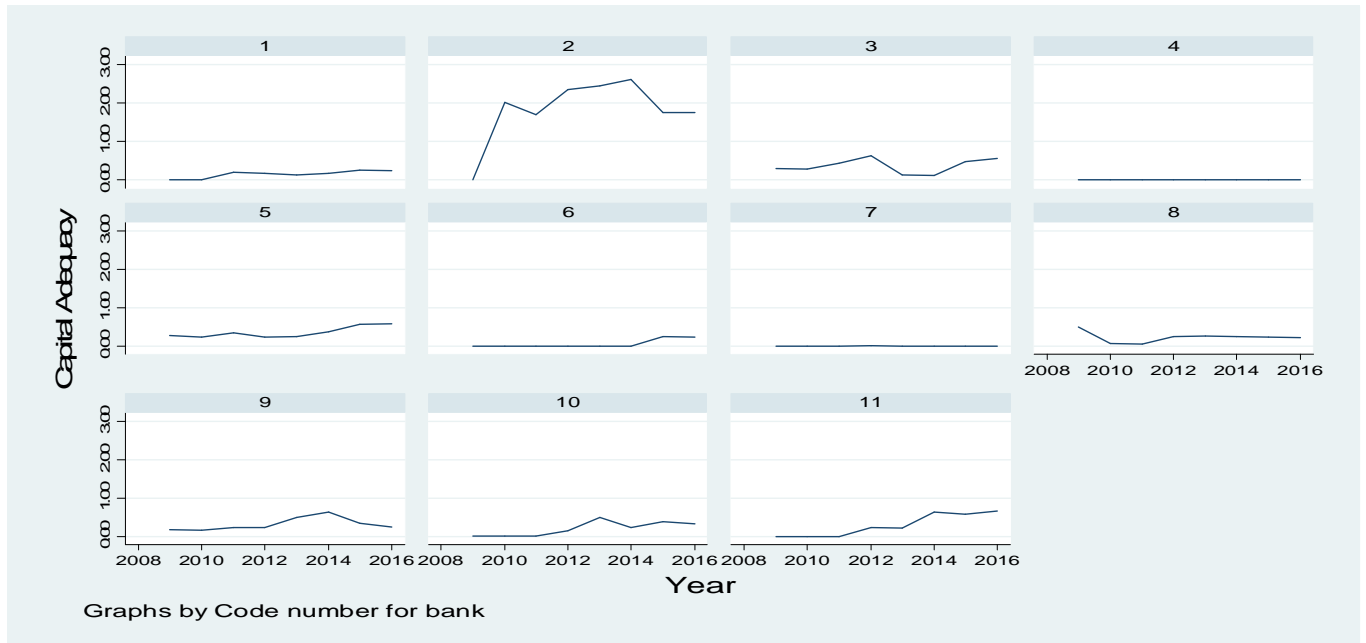
Graphs by Code number for bank

BANK	KCB	HF GROUP	EQUITY	BARCLAYS	DTB	STD CHARTERED BANK	NBK	CFC STANBIC	I & M	COOP BANK	NIC
CODE NO.	1	2	3	4	5	6	7	8	9	10	11

Researcher, (2017)

Capital adequacy generally seems to be on upwards trend over the study period except for HF group which shows a sharp increase. This implies an increased borrowing by the banks over the period. Barclays bank, Standard chartered bank and National banks seem to have very little borrowing.

Figure 4.6: **Asset quality**
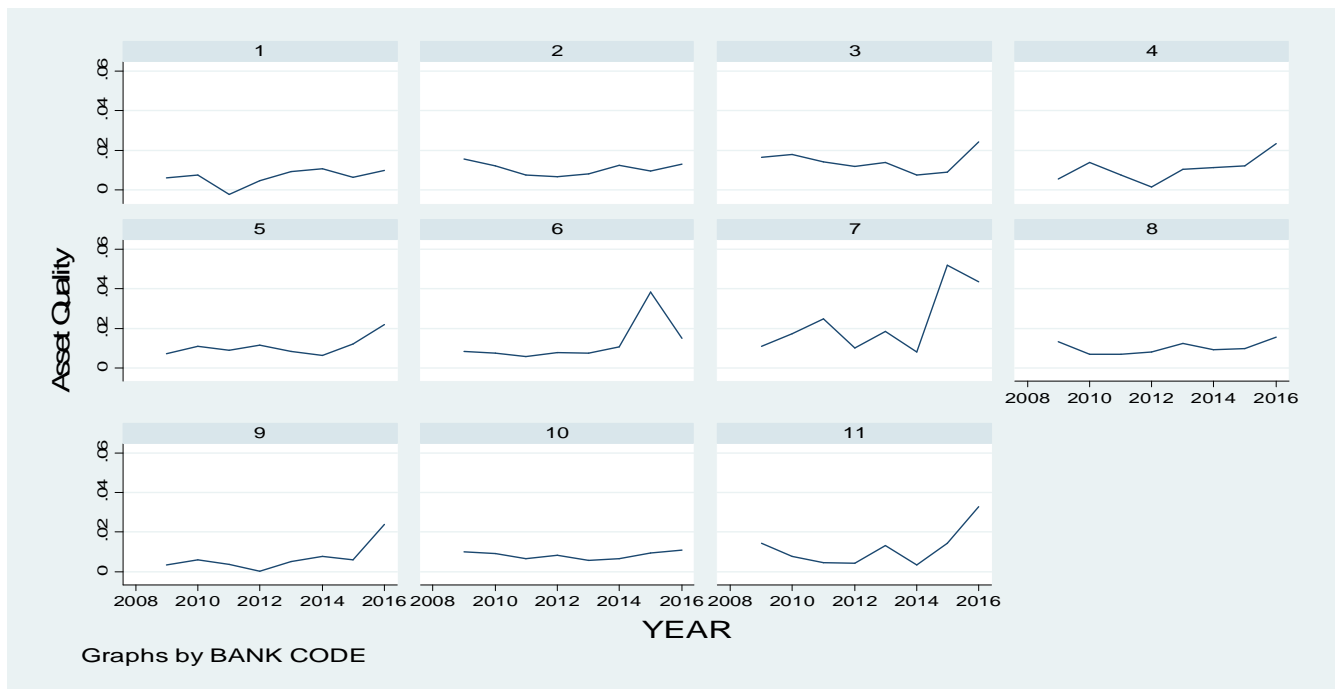
BANK	KCB	HF GROUP	EQUITY	BARCLAYS	DTB	STD CHARTERED BANK	NBK	CFC STANBIC	I & M	COOP BANK	NIC
CODE NO.	1	2	3	4	5	6	7	8	9	10	11

Researcher, (2017)

Asset quality of all the banks shows an upwards trend apart from Standard Chartered bank and NBK which are showing a downwards trend in year 2016. This could be due to increase in loan loss provision and marginal increase in total loans.

Figure 4.7: **Management efficiency**
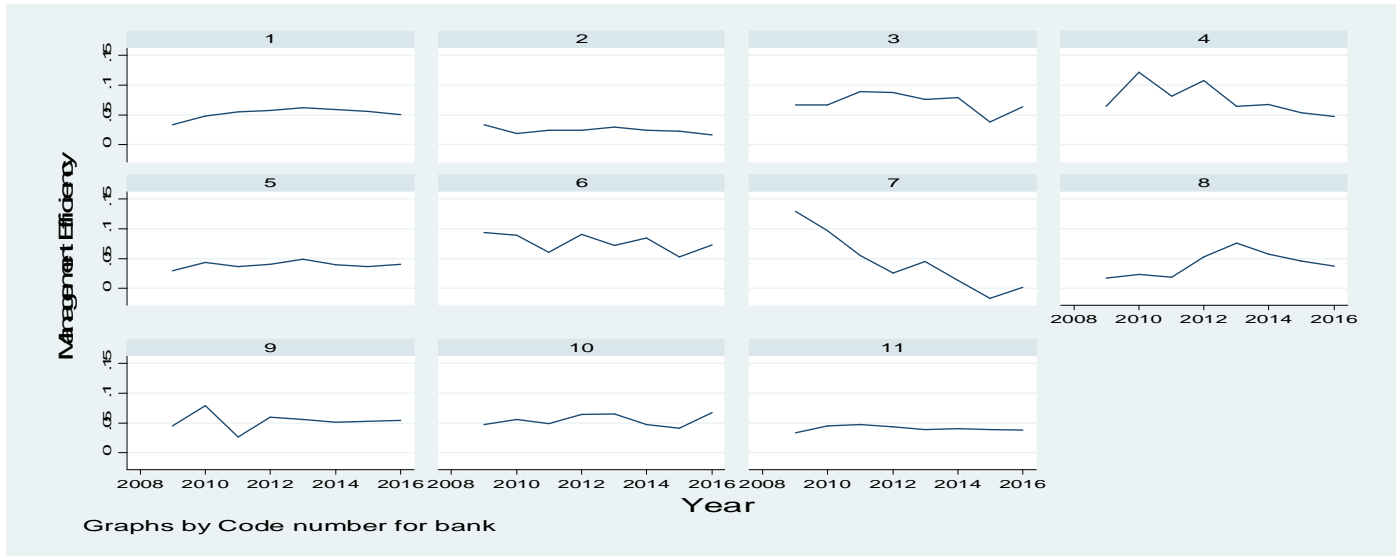
BANK	KCB	HF GROUP	EQUITY	BARCLAYS	DTB	STD CHARTERED BANK	NBK	CFC STANBIC	I & M	COOP BANK	NIC
CODE NO.	1	2	3	4	5	6	7	8	9	10	11

Researcher, (2017)

Management efficiency seems constant for KCB, HF group, DTB, I and M, and NIC. The remaining banks, NBK, Barclays and CFC Stanbic bank shows a downwards trend. Possible explanation for this is that reported profit is declining in a bigger proportion to loans disbursed.

Figure 4.8: **Earnings ability**
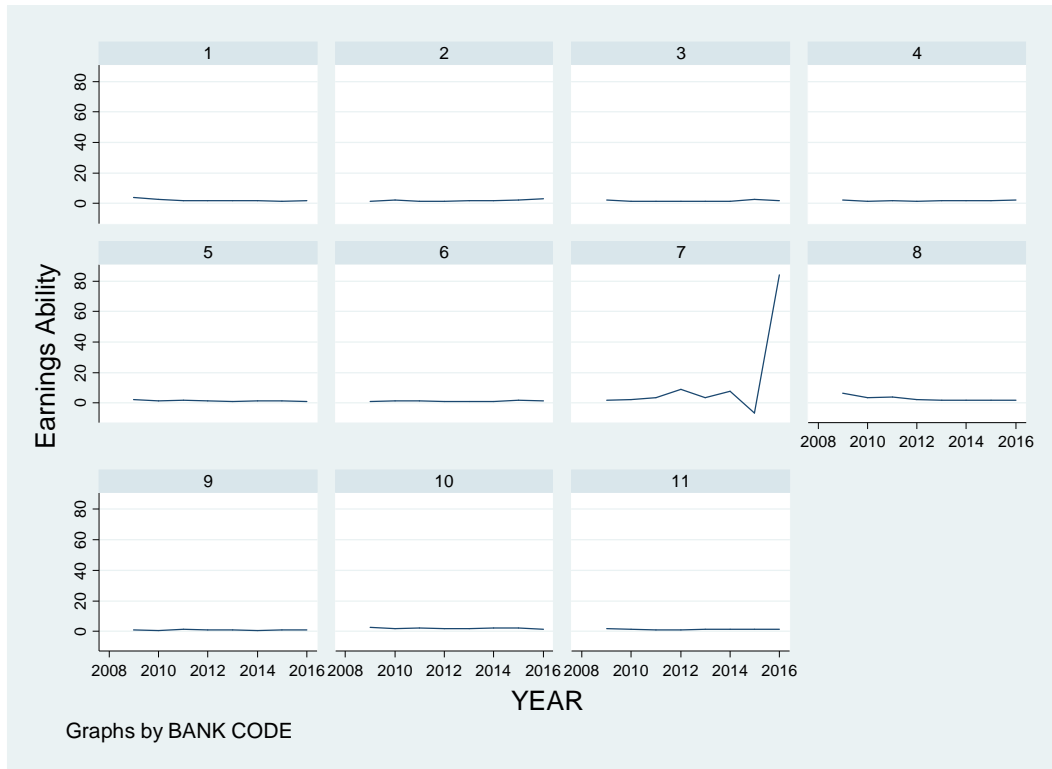
Graphs by BANK CODE

BANK	KCB	HF GROUP	EQUITY	BARCLAYS	DTB	STD CHARTERED BANK	NBK	CFC STANBIC	I & M	COOP BANK	NIC
CODE NO.	1	2	3	4	5	6	7	8	9	10	11

Researcher, (2017)

The table shows constant earnings ability for all the banks over the period except for NBK which had a sharp increase in year 2016. This shows that NBK had the worst earning ability in year 2016. The bank made a loss in year 2015 and marginal profit in year 2016.

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Figure 4.9: Liquidity
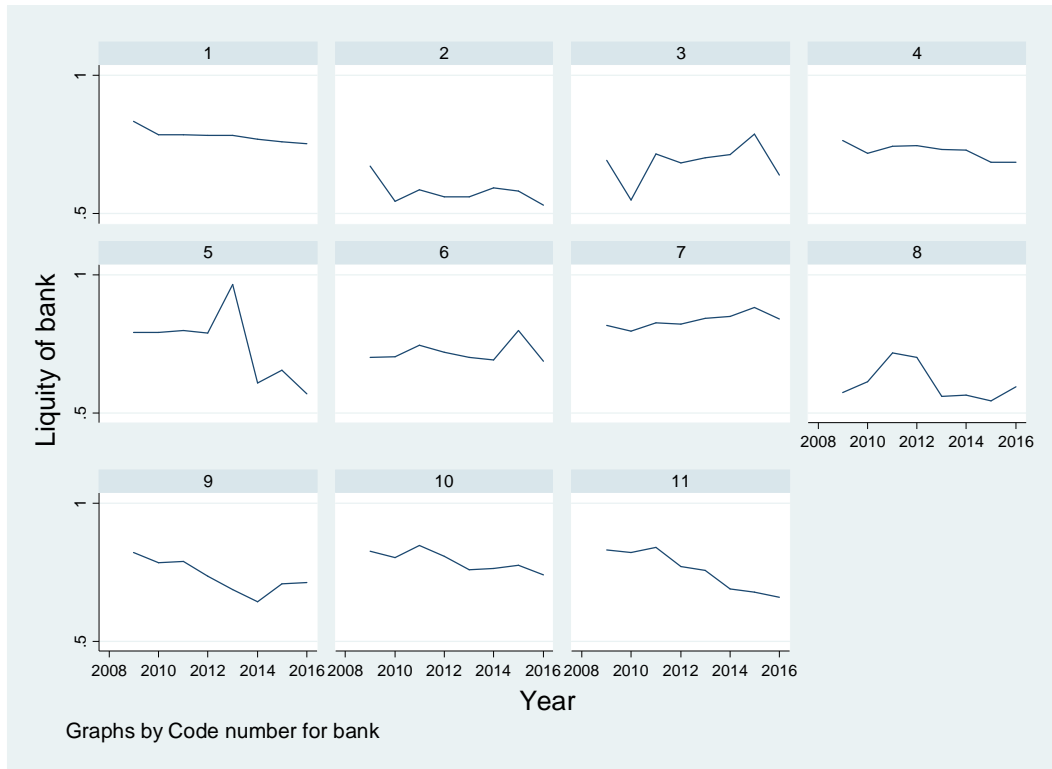
Graphs by Code number for bank

BANK	KCB	HF GROUP	EQUITY	BARCLAYS	DTB	STD CHARTERED BANK	NBK	CFC STANBIC	I & M	COOP BANK	NIC
CODE NO.	1	2	3	4	5	6	7	8	9	10	11

Researcher, (2017)

Liquidity for the 11 banks show a downwards trend except for I & M bank, NBK and CFC Stanbic bank. Possible explanation is that deposit from customers are declining compared to proportionate growth in total assets.

4.2.4 Descriptive statistics for the variables

The results of descriptive statistics in the table below produced the mean, standard deviation, minimum and maximum for each independent variable of the firms listed at the Nairobi Securities Exchange from year 2009 to year 2016

Table 4.1: Descriptive statistics for the variables

. xtsum ROA CA AQ ME EA L

Variable		Mean	Std. Dev.	Min	Max	Observations	
ROA	overall	.0303837	.0124654	-.0093309	.0613754	N =	88
	between		.0098872	.0147858	.0441103	n =	11
	within		.0080929	.006267	.0492816	T =	8
CA	overall	.343602	.5595469	0	2.613725	N =	88
	between		.5100838	0	1.829227	n =	11
	within		.2717384	-1.485625	1.1281	T =	8
AQ	overall	.0114404	.0084888	-.0022845	.051999	N =	88
	between		.0045102	.0064771	.0231111	n =	11
	within		.0073044	-.0037316	.0403283	T =	8
ME	overall	.052281	.0248903	-.016365	.1292025	N =	88
	between		.0167594	.0244578	.0771452	n =	11
	within		.0190066	-.007972	.1375954	T =	8
EA	overall	2.806114	8.882644	-6.385405	83.8978	N =	88
	between		3.487362	.9256622	13.19519	n =	11
	within		8.229107	-16.77448	73.50872	T =	8
L	overall	.7234374	.0928485	.5294349	.9665822	N =	88
	between		.0759734	.5779643	.8346894	n =	11
	within		.0575612	.5452572	.943919	T =	8

Researcher, (2017)

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In table 4.1, the mean value for return on assets [ROA] is 3.03%. This means that the average return on assets over the 8-year period for all the banks is 0.0303837 while the minimum and maximum return on assets [ROA] for all banks for the same period was -0.0093309 and 0.0613754 respectively. The standard deviation for return on assets for all banks over 8 years is 0.0124654. The average return on assets for each bank out of the 11 banks varied between 0.0147858 and 0.0441103. Return on assets within varied between 0.006267 and 00.0492816 which means the variation from each bank's average return on assets. The within number refers to the deviation from each bank's average return on assets and there are some cases where the deviations must be negative. The standard deviation between tells us the variation in individual banks over time while the standard variation within gives the variation of return on assets for all banks over the 8-year period. In this case, standard deviation for return on assets for individual bank is 0.0098872 while standard deviation for return on assets among the banks is 0.0080929.

The mean value for capital adequacy [CA] is 34.36023%. This means that the average capital adequacy over the 8-year period for all the banks is 0.343602 while the minimum and maximum capital adequacy [CA] for all banks for the same period was 0 and 2.0613725 respectively. The standard deviation for capital adequacy for all banks over 8 years is 0.5595469. The average capital adequacy for each bank out of the 11 banks varied between 0 and 1.829227. Capital adequacy within varied between -1.485625 and 1.1281 which means the variation from each bank's average capital adequacy. The within number refers to the deviation from each bank's average capital adequacy and naturally some of the deviations must be negative. The standard deviation between tells us the variation in individual banks over time while the standard variation within gives the variation of capital adequacy for all banks over the 8-year period. In this case,

standard deviation for capital adequacy for individual bank is 0.5100838 while standard deviation for capital adequacy among the banks is 0.2717384.

The mean value for asset quality [AQ] is 1.14404%. This means that the average asset quality over the 8-year period for all the banks is 0.0114404 while the minimum and maximum asset quality [AQ] for all banks for the same period was -0.0022845 and 0.051999 respectively. The standard deviation for asset quality for all banks over 8 years is 0.0084888. The average asset quality for each bank out of the 11 banks varied between 0.0064771 and 0.0231111. Asset quality within varied between -0.0037316 and 0.0403283 which means the variation from each bank's average asset quality. The within number refers to the deviation from each bank's asset quality and naturally some of the deviations must be negative. The standard deviation between tells us the variation in individual banks over time while the standard variation within gives the variation of asset quality for all banks over the 8-year period. In this case, standard deviation for asset quality for individual bank is 0.0045102 while standard deviation for asset quality among the banks is 0.0073044.

The mean value for management efficiency [ME] is 5.2281%. This means that the average management efficiency over the 8-year period for all the banks is 0.052281 while the minimum and maximum management efficiency [ME] for all banks for the same period was -0.016365 and 0.1292025 respectively. The standard deviation for management efficiency for all banks over 8 years is 0.0248903. The average management efficiency for each bank out of the 11 banks varied between 0.0244578 and 0.0771452. Management efficiency within varied between -0.007972 and 0.1375954 which means the variation from each bank's average management efficiency. The

within number refers to the deviation from each bank's management efficiency and naturally some of the deviations must be negative. The standard deviation between tells us the variation in individual banks over time while the standard variation within gives the variation of management efficiency for all banks over the 8-year period. In this case, standard deviation for management efficiency for individual bank is 0.0167594 while standard deviation for management efficiency among the banks is 0.0190066.

The mean value for earnings ability [EA] is 280.6114%. This means that the average earnings ability over the 8-year period for all the banks is 2.806114 while the minimum and maximum earnings ability [EA] for all banks for the same period was -6.385405 and 83.8978 respectively. The standard deviation for earnings ability for all banks over 8 years is 8.882644. The average earnings ability for each bank out of the 11 banks varied between 0.9256622 and 13.19519. Earnings ability within varied between -16.77448 and 73.50872 which means the variation from each bank's average earnings ability. The within number refers to the deviation from each bank's earnings ability and naturally some of the deviations must be negative. The standard deviation between tells us the variation in individual banks over time while the standard variation within gives the variation of earnings ability for all banks over the 8-year period. In this case, standard deviation for earnings ability for individual bank is 3.487362 while standard deviation for earnings ability among the banks is 8.229107.

The mean value for Liquidity [L] is 72.34374%. This means that the average liquidity over the 8-year period for all the banks is 0.7234374 while the minimum and maximum liquidity [L] for all

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banks for the same period was 0.5294349 and 0.9665822 respectively. The standard deviation for liquidity for all banks over 8 years is 0.0928485. The average liquidity for each bank out of the 11 banks varied between 0.5779643 and 0.8346894. Liquidity within varied between 0.5452572 and 0.943919 which means the variation from each bank's average liquidity. The within number refers to the deviation from each bank's liquidity and naturally some of the deviations must be negative. The standard deviation between tells us the variation in individual banks over time while the standard variation within gives the variation of liquidity for all banks over the 8-year period. In this case, standard deviation for liquidity for individual bank is 0.0759734 while standard deviation for liquidity among the banks is 0.0575612.

4.2.5 Diagnostic tests

The tests to be conducted here are auto correlation, multicollinearity, heteroscedasticity, Hausman, Breusch – Pagan LM and unit root.

4.2.5.1 Auto correlation test

The researcher sought to establish if there exists correlation in the panel data. This was done in stata using Wooldridge test to establish if there exists auto correlation and the output is as below:

Table 4.2: **Auto correlation using Wooldridge test**

```
. xtserial  ROA CA AQ ME EA L, output

Linear regression                              Number of obs =        77
                                               F(  5,    10) = 1601.30
                                               Prob > F      =  0.0000
                                               R-squared     =  0.8605
                                               Root MSE      =  .00381

                             (Std. Err. adjusted for 11 clusters in BANKCODE)

                           Robust
      D.ROA     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]

         CA
         D1.  -.0039477   .0014357   -2.75   0.020   -.0071466   -.0007487

         AQ
         D1.  -.0648209   .0315693   -2.05   0.067   -.1351618    .0055199

         ME
         D1.   .4438092   .0412631   10.76   0.000    .3518692    .5357492

         EA
         D1.   .0000138   .0000139    1.00   0.343   -.0000171    .0000448

          L
         D1.  -.0018795   .0121039   -0.16   0.880   -.0288486    .0250896

Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
    F(  1,     10) =      5.771
         Prob > F =       0.0372
```

Researcher, (2017)

The test statistic results show Prob>F=0.0372, which is lower than the critical value of 5%. We

therefore fail to reject the null hypothesis and conclude that there is no first order auto correlation

in the panel data set.

4.2.5.2 Multicollinearity test

To establish existence of the degree of multicollinearity among variables or multicollinearity between variables, the researcher carried tests in stata using Collin test which produced the following   results:

Table 4.3: **Collin test output**

```
. collin  ROA CA AQ ME EA L
(obs=88)

  Collinearity Diagnostics

                            SQRT                    R-
    Variable       VIF       VIF    Tolerance    Squared
-------------------------------------------------------
         ROA       5.13      2.26     0.1949      0.8051
          CA       1.87      1.37     0.5342      0.4658
          AQ       1.25      1.12     0.7974      0.2026
          ME       5.04      2.25     0.1983      0.8017
          EA       1.22      1.10     0.8230      0.1770
           L       1.62      1.27     0.6164      0.3836
-------------------------------------------------------
  Mean VIF       2.69

                            Cond
        Eigenval            Index
------------------------------------
     1      4.7908          1.0000
     2      1.0008          2.1879
     3      0.7832          2.4732
     4      0.3094          3.9351
     5      0.0946          7.1152
     6      0.0170         16.8057
     7      0.0042         33.7417
------------------------------------
  Condition Number        33.7417
  Eigenvalues & Cond Index computed from scaled raw sscp (w/ intercept)
  Det(correlation matrix)    0.0809
```

Researcher, (2017)

The mean vif is 2.69 This is lower than the 10 which is taken as standard bench mark for multicollinearity to exist if it is higher than the number. In this case, there is no presence of multicollinearity in the panel data because mean vif of 2.69 is lower than 10 as a thumb rule.

4.2.5.3 Heteroscedasticity test

Standard estimation methods are inefficient when the errors are heteroscedastic or have non-constant variance. If the model is well-fitted, there should be no pattern to the residuals plotted against the fitted values. The researcher used graphical method to detect heteroscedasticity by plotting residuals versus fitted (predicted) values using the rvfplot command in the stata.

Figure 4.10: **Residuals versus fitted values**
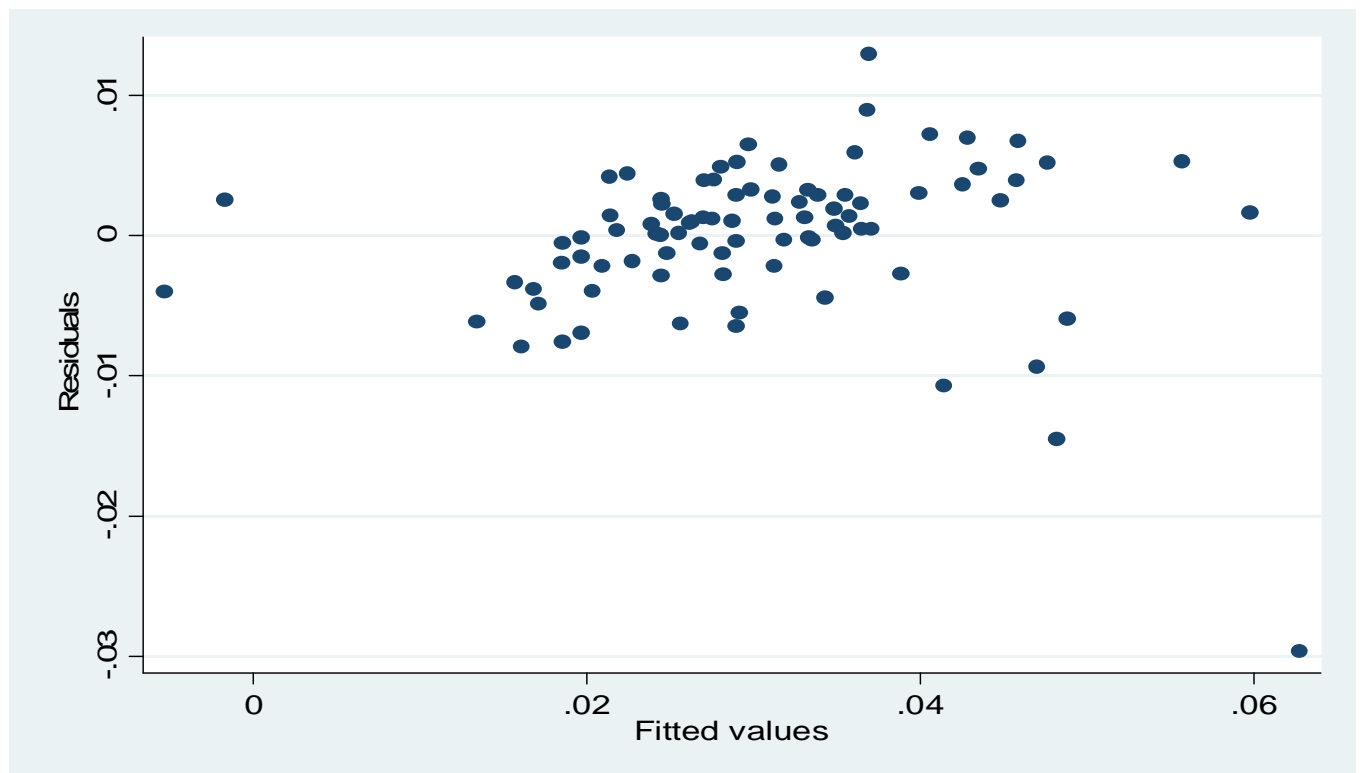
Researcher, (2017)

In the sample, residuals are somewhat larger near the mean of the distribution than at the extremes. It appears that residuals are roughly the same size for all values of X and therefore it is generally safe to assume that heteroskedasticity is not severe enough to warrant concern. There is also no clear pattern noted in the graph and this further confirms lack of heteroscedasticity.

4.2.5.4 Hausman test

The researcher carried out diagnostic test on panel data after having dropped management efficiency (ME) from the data set. This is to establish whether to use fixed effects [FE] model or random effects model [RE]. The results are as below:

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Table 4.4: **Hausman test output**

```
            ──── Coefficients ────
              (b)          (B)          (b-B)      sqrt(diag(V_b-V_B))
            fixed        random      Difference         S.E.

    CA   -.0052698    -.0071463      .0018765          .0016767
    AQ   -.3894854    -.3891408     -.0003446          .0117469
    EA   -.0001226    -.0001451      .0000225              .
     L   -.0333476    -.0322693     -.0010783          .0051649
```

```
                    b = consistent under Ho and Ha; obtained from xtreg
         B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

           chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                   =        5.22
         Prob>chi2 =      0.2658
         (V_b-V_B is not positive definite)
```

Researcher, (2017)

The probability value Prob>chi2 is 0.2658 which is greater than 0.05. therefore random effects (RE) model is used.

4.2.5.5 Unit root test

The researcher used Levin-Lin-Chu unit root test to establish existence of unit root in the panel data. The thumb rule is that null hypothesis states that the data has unit root while the alternative hypothesis is that the data is stationary, measured at 5% significant level. The result of the test is as below:

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Table 4.5: Levin-Lin-Chu output

```
Levin-Lin-Chu unit-root test for ROA
───────────────────────────────────

Ho: Panels contain unit roots              Number of panels  =     11
Ha: Panels are stationary                  Number of periods =      8


AR parameter: Common                       Asymptotics: N/T -> 0
Panel means:  Included
Time trend:   Not included


ADF regressions: 1 lag
LR variance:    Bartlett kernel, 6.00 lags average (chosen by LLC)
─────────────────────────────────────────────────────────────────────
                   Statistic      p-value
─────────────────────────────────────────────────────────────────────

 Unadjusted t        -7.0496
 Adjusted t*         -3.0150        0.0013
─────────────────────────────────────────────────────────────────────
```

Researcher, (2017)

The statistics results show Adjusted t* as -3.0150 while the p-values is 0.0013. We therefore reject the null hypothesis that the data set contains unit root and accept the alternative hypothesis that the panel is stationary.

4.2.5.6 Breusch – Pagan LM test for random effects

The researcher further carried out Breusch – Pagan LM test to decide on whether to use random effects (RE) or Pooled ordinary least square (POLS) model. The result of the test is as below:

Table 4.6: Breusch – Pagan LM test output

```
Breusch and Pagan Lagrangian multiplier test for random effects

        ROA[BANKCODE,t] = Xb + u[BANKCODE] + e[BANKCODE,t]

    Estimated results:
                          Var      sd = sqrt(Var)
               _____

               ROA     .0001554        .0124654
                 e     .0000625        .0079058
                 u     .0000471        .0068602

    Test:   Var(u) = 0
                         chibar2(01) =    58.79
                      Prob > chibar2 =   0.0000
```

Researcher, (2017)

Given that the probability Prob>chibar2 is equal to zero, then random effects model is appropriate for the study.

4.3 Summary of data

This was done by fitting multiple regression model using stata for all the variables in the study and the out explained under each variable.

4.3.1 Fitting Random Effects model

The researcher used STATA to fit random effects model through xtreg command. The stat output is as below:

Table 4.7: **Random effects model output**

```
. xtreg  ROA CA AQ ME EA L, re

Random-effects GLS regression                Number of obs      =        88
Group variable: BANKCODE                     Number of groups   =        11

R-sq:  within  = 0.8252                       Obs per group: min =         8
       between = 0.8122                                      avg =       8.0
       overall = 0.7979                                      max =         8

                                              Wald chi2(5)       =    343.60
corr(u_i, X)   = 0 (assumed)                  Prob > chi2        =    0.0000
```

ROA	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
CA	-.0014368	.0014859	-0.97	0.334	-.0043491	.0014755
AQ	-.0888295	.0662891	-1.34	0.180	-.2187538	.0410947
ME	.394119	.0249882	15.77	0.000	.3451429	.443095
EA	2.18e-06	.0000588	0.04	0.970	-.000113	.0001174
L	-.0079564	.0079297	-1.00	0.316	-.0234984	.0075855
_cons	.0170386	.0066595	2.56	0.011	.0039863	.0300909
sigma_u	.0019938					
sigma_e	.00367664					
rho	.22724817	(fraction of variance due to u_i)				

Researcher, (2017)

The output shows that the model is okay given that F-test probability, Prob > chi2 =0.0000 which is lower than the p value, p<0.05. Correlation between the errors and the regressors is

22.7%. The within model r-squared is 0.8252 which implies that 82.52% of the variations within the variables were explained by the model. The overall r-squared is 0.7979 which means that variations on return on assets were explained by independent variables to the extent of 79.79%. Between r-squared is 0.8122 implying that 81.22% of the variables were explained by the model.

In the model, the p value for capital adequacy [CA] is 0.334 which is greater than 0.05, therefore capital adequacy is insignificant. The p value for asset quality [AQ] is 0.180 which is greater than 0.05, asset quality is insignificant. The p value for management efficiency [ME] is 0.000 which is lower than 0.05, meaning that management efficiency is significant in the model. The p value for earnings ability [EA] is 0.970 which is greater than 0.05 and therefore earnings ability is insignificant. The p value for liquidity is 0.316 which greater than the standard 0.05. This means that liquidity is insignificant in the model.

Table 4.8 further shows the relationship between coefficients with dependent variables [ROA]. Capital adequacy [CA], Asset quality [AQ] and Liquidity [L] are negatively related to return on assets. Management efficiency [ME] and earnings ability [EA] are negatively related to return on assets. The model therefore is **ROA=0.170386-0.0014368CA-0.0888295AQ+0.394119ME+0.000000218EA-0.0079564L.** The result of the model shows that the dependent variable, return on assets is equal to 0.170386 if there are no other independent variables in the model and all factors remain constant. In the model, Capital adequacy [CA], asset quality [AQ] and Liquidity [L] are negatively related with dependent variable, return on assets [ROA]. This means that there is a negative relationship between independent variable and dependent variable. A positive change in one variable causes a negative change in the other variable. When capital adequacy [CA] is increased by one unit, return on assets [ROA] reduces

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by 0.0014368. When asset quality [AQ] is increased by one unit, return on assets [ROA] reduces by 0.0888295 and when liquidity [L] is increased by one unit, return on assets [ROA] reduces by 0.0079564. On the other hand, management efficiency [ME] and earnings ability [EA] are positively related to return on assets [ROA]. This means that an increase in management efficiency [ME] or earnings ability [EA] causes an increase in return on assets [ROA]. When management efficiency increases by one unit, return on assets increases by 0.394119 while when earnings ability [EA] increases by one units, return on assets [ROA] increases by 0.000000218.

CHAPTER FIVE

DISCUSSION, SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The study was conducted on effect of internal factors that influence performance of banks listed at the Nairobi securities exchange over 8-year period from year 2009 to year 2016. The data was collected for all the 11 banks and analysed used various methodologies with return on assets [ROA] taken as dependent variable against the CAMEL variables.

5.2 Discussion and summary of findings

The main objective of the study was to establish effect of internal factors on performance of the banks. To achieve the objectives, data for 8 years for 11 commercial banks was analysed using panel data regression model to understand the effect of internal factors on performance of commercial banks.

5.2.1 Effect of capital adequacy on Financial performance of listed banks

The measurement used to establish capital adequacy against performance was debt against equity of banks over the study period. Exploration of panel data in figure 4.5 establishes that capital adequacy for banks are either constant or variable. Banks that had constant capital adequacy over the period were KCB, Barclays, DTB, STD chartered, NBK, CFC Stanbic, I & M, and NIC bank. The possible explanation for this is that the rate of borrowing could have remained constant over the change in equity for the period under study. Banks with varying capital adequacy were HF group, Equity and Coop Bank. This could be explained by major changes in borrowing and equity.

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The regression result on capital adequacy against bank performance in table 4.8 is negative with -0.0014368 at 95% confidence level. This implies that when capital adequacy increases by 1, return on assets decreases by 0.143%. This implies that when provision for bad debts increases, performance of banks decreases. Capital adequacy is statistically not significant as the p value is 0.334. The result of the study is practically true as debt has an interest portion that is charged as a cost and reduces performance of commercial banks. This can only happen if the borrowed funds are put to investments with lower returns otherwise the profits should go up while maintaining factors constant. The results of this study differ with Ongore (2013) and Olalekun (2013) who had a positive correlation between capital adequacy and return on assets. Ochei (2013) had a similar finding of the researcher that capital adequacy is negatively correlated to return on assets.

Capital adequacy is a basic requirement for any bank to operate a business as it is needed to procure basic necessities in terms of working capital and assets of banks. According to this study, it is negatively correlated with performance but at an insignificant level as it is not directly related to profit generation. This makes it more relevant to efficiency structure theory in that it justifies its requirement in promoting business activities. Adequate capital in a bank makes it possible to acquire goods and services in volume as per scale efficiency hypothesis under efficiency structure theory.

According to Modern portfolio theory, Capital is provided by investors who construct their portfolio to optimize expected return at a given level of risk. This implies that performance of bank is good for investors to provide capital which is contrary to the findings of this study.

Market power theory refers to ability of a firm to raise and maintain prices above the level that would prevail under normal competition which is referred to as monopoly power. This theory

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relates well to results in this study on capital adequacy that makes it negatively related to performance. By creating barriers to entry by other banks, it means costs are being incurred which reduces profits from the business.

5.2.2 Effect of asset quality on financial performance of listed banks

Asset quality was measured by loan loss provision against total loans. This gives us the percentage of loans that are doubtful against book loans. A low percentage is better. In the study, exploration of panel data on asset quality as shown in figure 4.6 indicates an upwards trend in all the 11 banks. It is also evident that banks increased provision for loans in year 2016 when the Central bank of Kenya enforced banks to implement prudential guidelines on provision of loans which witnessed reduction on performance of commercial banks in the country in the period to December 2016. The loan issued by banks increased by 20% between 2015 and 2016 and most of the loans issued were personal/ household, Central Bank of Kenya report (2016). This could explain the increase in high loan loss provision.

The multiple regression results, table 4.8 indicates that asset quality is statistically insignificant with p-value of 0.180 and is negatively correlated with return on assets with a coefficient of -0.0888295. A unit increase in asset quality reduces performance of banks by 8.89%. A component of measurement in asset quality is loan loss provision which reduces performance as measured by return on assets. This is evident by increased loan loss provisions which reduced profitability of commercial banks in the country in year 2016. The finding agrees to that of Ongore (2013) and Amdemikael (2012) who established that asset quality is negatively correlated with return on assets.

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Efficiency structure hypothesis is the proposition that more efficient companies will better compete and grow in scale. This growth can only be witnessed by better performance of banks. In this study, asset quality was found to be negatively correlated to performance due to high loan loss provision of banks. Therefore, for banks to be in line with efficiency structure hypothesis, they must reduce their loan loss provision through effective management of book debts by selective lending to certain sectors of the economy and having adequate collateral.

Market power theory and modern portfolio theory are only applicable when performance of banks is good. For modern portfolio theory to apply, the banks must have performed well to have resources to maintain monopolistic practices. Similarly, modern portfolio theory will apply when investors opt for profitable ventures.

5.2.3 Effect of Management efficiency on Financial performance of listed banks

The study measured management efficiency as net income against total loans [advances to customers]. A higher percentage is considered better and management is considered more efficient. They tend to generate better return on loans advanced to customers. Exploration of panel data in figure 4.7 indicates variable outcome. Banks that had constant management efficiency over the period were KCB, HF group, DTB, STD chartered, I and M, Coop bank and NIC. The possible explanation for this is that the rate of net income could have remained constant over the change in total loans [advances to customers] for the period under study. Equity bank and Standard Chartered bank had a constant return which declined in year 2015 and seems to improve in year 2016. Barclays bank and CFC Stanbic had a variable management

efficiency which improves in year 2016. The only bank with declining management efficiency is National bank. The trend is on a decline path with major decline in year 2015.

Management efficiency is positively related to performance as extracted from the regression results in table 4.8. At the 95% confidence level, the coefficient of management efficiency is 0.394119. This implies that a unit increase in management efficiency increases performance of commercial banks by 39.4119%. The increase in management efficiency requires that net income is increased or alternatively reduction in loans. The finding agrees to the results of Ongore (2013), Onjala (2012) and Amdemikael (2012) who established that management efficiency is negatively correlated with return on assets.

According to efficiency structure theory, more efficient companies will compete, develop and grow in scale. This is in line with the result on management efficiency which finds management efficiency to be significant and positive to performance of banks. This makes the banks to be able to compete in the market place given that they have resources to do so through improved performance.

Banks that have efficient management improves performance and as consequence have ability to maintain monopolistic tendencies as per market power theory. Banks that have good performance which is attributed to management efficiency will always be chosen by investors to form part of their portfolio for investment. This is in line with Modern portfolio theory.

5.2.4 Effect of Earning ability on Financial performance of listed banks

Figure 4.8 shows earnings ability of commercial banks. Earnings ability is measured by net income over operating expenses. Higher earnings ability shows poor performance for the banks according to this study. The table shows constant earnings ability for all the banks over the period except for NBK which had a sharp increase in year 2016. This shows that NBK had the worst earning ability in year 2016. Barclays bank and I and M bank has maintained constant earnings ability of the period of study.

The regression output in table 4.8 indicates an insignificant p = 0.970 and a positive relationship with return on assets with variable of -0.000000218, meaning that when earning ability increases by 1, return on assets also increase by 0.0000218%. This is very low and may not have much impact on performance of commercial banks that are listed at the Nairobi Securities exchange. The possible explanation for this is that expenses affect performance directly. The result of the study agrees to that Onjala (2012 who concluded that earnings ability has a positive relationship with return on assets.

Earnings ability of a bank is directly related to performance according to this study given that it is positively correlated to the dependent variable [ROA]. Banks that portray ability to earn tend

to follow efficiency structure theory which requires such companies to effectively compete in the market place and grow. Such banks will achieve high profitability because they are more efficient than others. Banks that have earning ability are efficient because their lower cost of operation and at the same time they procure goods and services in volume that lowers unit cost.

Banks that have earning ability attracts investors who put in additional funds as investment given their risk appetite for the firm and expected returns, which conforms to the norm in modern portfolio theory. Ability to earn is also linked to ability to have market power as per the theory. Banks that have market power dominate the market and control their margins.

5.2.5 Effect of Liquidity on Financial performance of listed banks

Liquidity under this study is measured by deposit from customers against total assets. A higher percentage is considered better than lower percentage. Exploration of panel data for liquidity in Figure 4.9 indicates non-constant pattern for all the banks except that all the banks have a downwards sloping trend. This can be explained by declining customer deposits while assets remain constant or a more than proportionate increase in total assets of the banks than proportionate increase in customer deposits.

There is insignificant and negative relationship between liquidity and bank performance based on multiple regression results obtained in table 4.8. The p- value is 0.316 which is statistically insignificant. An increase in liquidity variable by 1 cause a reduction on bank performance by -0.79564%. The study findings differ with that of Lukorito (2014) and Ongore (2013) who concluded that liquidity has statistically significant and positive relationship with profitability of banks.

Liquidity is a major factor in operation of banks as it protects them against major external shocks in case of urgent need for cash. This could be the reason that makes it negatively correlated to performance of banks. It could be linked to modern portfolio theory where investors can put their money as capital after portfolio assessment that they cannot lose their money in case of a bank run as a risk element. Even though liquidity is not directly related to performance, it forms a basis in which banks operate. Banks must remain efficient to compete, develop and grow in scale otherwise they will not be able to survive irrespective of the liquidity level held by them.

5.3 Conclusion

The study aims to establish effect of internal factors on the financial performance of Listed banks at the Nairobi Securities exchange in Kenya. Internal factors employed were capital adequacy, asset quality, Management efficiency, Earnings ability and Liquidity while bank performance measure was referred to as return on Assets. The internal factors affect bank performance at varied levels.

Capital adequacy is a factor that determines performance of banks. In this study, it was established that it is insignificant and negatively correlated to return on assets. This implies that an increase in capital reduces performance of banks but at an insignificant level. Capital therefore forms part of a fall-back position in cases of unfortunate events but it is not keenly on bank performance in terms of profitability.

Asset quality was found to be insignificant and negatively related to return on assets. This implies any positive change in quality of assets reduces return on assets insignificantly. The implication of this is that Loan loss provision does not affect performance of banks greatly.

Assets quality is mainly used to determine the overall risk attached to the loans of the bank and this could be the reason why it is insignificant on bank performance.

Management efficiency was found to be significant and positively correlated to return on assets. This implies that any change in efficiency will affect performance of banks significantly. Management efficiency as measured by profitability directly affects performance of banks. Efficiency implies effective utilization of resources at best and by doing so it brings savings in money and time which leads to improved performance.

Earnings ability was found to be insignificant and positively correlated to bank performance. By managing overheads, banks increase their performance. Banks generally have three sources of funds available which are in the form of retained earnings, debt instruments and equity. The quality of funding from the sources mentioned need be thoroughly assessed and it has a direct impact on return on assets.

Liquidity was found to be insignificant and negatively correlated to return on assets. This implies that holding liquid assets has cost effect on performance of banks though insignificant. Liquidity basically is used by banks to have adequate funds to fulfil their obligations and this could be the reason why it is negatively correlated with bank performance in terms of return on assets.

The performance of banks is affected by all internal factors but at varying degrees. All the factors therefore need to be controlled to improve performance of banks.

This study and previous studies have shown conflicting results on effect of internal factors on bank performance. The variation in findings is caused by formula applied to determine dependent and independent variables.

5.4 Recommendation of the study

The following recommendations are made.

Capital adequacy is insignificant and has negative effect on financial performance of banks. The negative relationship is on the fact that capital has a cost element which reduces profitability. The management of banks must take note that increase in capital reduces profitability though at insignificant level. This does not however mean that it is not important on financial performance but it provides a basis on which other factors thrive to improve performance. Banks must however provide enough capital so that they can manage their resources by provision of working capital and assets acquisition.

Asset quality was found to be insignificant and negatively correlated to financial performance. This implies that banks that do not manage their loans are bound to have bad debts which results to a reduction in performance due to increase in loan loss provision. It is therefore recommended that banks must take cognisance of the quality of loans they issue by putting in place measures to deter would be defaulters to access loans. Similarly, banks must ensure that loans are adequately secured such that in the event of default they have a fall-back position in terms of security that is available.

The study findings indicate that management efficiency is significant and positively correlated to financial performance of banks. The importance of management efficiency is that it aligns business processes with an aim of improving financial performance of banks and subsequently they give adequate returns to shareholders. A recommendation here is that all banks must focus on recruitment of high quality staff and board of directors that would make right decisions to improve efficiency.

The study found that earnings ability is statistically insignificant and positively correlated to performance. The ability of banks to earn profits has a direct effect on performance. Banks are therefore recommended to generate enough revenue that would cover their overheads in any year, alternatively to minimize their overheads by improving efficiency or through bulk procurement so that they can generate good performance in the business.

Liquidity was found to be insignificant and negatively correlated to financial performance of banks. This implies that holding more liquid assets impacts financial performance negatively. This could be explained by stating that liquidity has inherent cost arising from interest cost of borrowed funds or expected return from the shareholders. It is therefore recommended that banks should hold liquid assets but bear in mind that they have an insignificant negative effect on performance of banks. Despite negative effect, liquidity is required for banks to meet urgent cash requirement when need arises.

5.5 Suggestion for future study

The findings of the study show mixed results with the previous studies done by other researchers in the same area. There seems to be no conclusive and consensus among the researchers. I would therefore recommend further research on effect of internal factors on performance of commercial banks listed at the Nairobi securities exchange in Kenya to be done for a longer period of 20 years from current year moving backwards. This is likely to have a large data and is likely to give a consistent result for the study period. The same study can also be conducted using return on equity [ROE] as dependent variable rather than return on assets [ROA].

5.6 Limitations of the study

The limitation for this study which may have affected the study findings are both time related and methodology. The study was conducted for a period of 8 years only. A longer period may be necessary. The methodology used in calculation of both independent and dependent variables differs from various researchers given that different formulas for calculation are used by different researchers. Data collection and analysis was tedious when conducting diagnostic tests. Obtaining financial statements for the banks was not easy as more time was spent on searching the internet for annual reports of banks and other relevant information.

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