EFFECT OF REGULATION ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

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DECLARATION

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

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This research project has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

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LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
BASEL III:	A global regulatory framework for more resilient banking systems
CBK	Central Bank of Kenya
DTMs	Deposit Taking Microfinance Institutions
GDP	Gross Domestic Product
LPT	Liquidity Preference Theory
NIM	Net Interest Margin
NSE	Nairobi Securities Exchange
ROA	Return on Assets
VIF	Variance Inflation Factors

ABSTRACT

The Kenyan government, through the Central Bank of Kenya (CBK) which is its governing body, has come up with financial regulations to guide banks while in operation while inculcating a fair competition culture industry wide. The practical guidelines introduction depict the continued efforts employed by Kenya with an aim of underpinning its environment of banking so as to achieve its Vision 2030 goal of being a financially stable country internationally. The study's aim was determining how financial regulations impact performance of Kenyan banks. All the 42 banks in operation were the study's population. The independent variable for the study was financial regulation with three measures; capital adequacy given by the ratio of core capital to risk weighted assets, asset quality given by non-performing loans to total loans and liquidity given by liquid assets to total assets on an annual basis. The control variables were management efficiency given by total revenue to total assets and bank size given by natural log of total assets per year. Financial performance was the dependent variable given by ROA and efficiency. Secondary data for 5 years (January 2015 to December 2019) was obtained annually. A descriptive cross-sectional design together with a multiple linear regression model was employed in analyzing how the variables relate. A profitability-efficiency matrix was developed which revealed that majority of the banks (38.5%) were 'dogs' having high efficiency and low profitability followed by 'stars' with (35.9%) having high profitability and high efficiency and thirdly the 'sleepers' with (17.9%) having a high profitability and low efficiency and finally the 'question marks' were the least with only 7.7% banks having low profitability and low efficiency. Data analysis was performed using SPSS version 23. Findings revealed an R-square value of 0.312 when financial performance was measured by ROA which meant that 31.2 percent variations in performance resulted from variations in the five selected independent variables. The study further revealed that the independent variables explain 36.7% of variations in performance of banks given by efficiency. ANOVA revealed an F statistic which was significant for both models at 5% level since $p<0.05$. hence the models were sufficient in explaining the relation between the variables. Additionally, capital adequacy, liquidity and bank size had a positive substantial influence on ROA while asset quality had a negative and significant impact on ROA. Management efficiency was not statistically significant. When financial performance was measured using efficiency, liquidity was found not to be statistically significant but the effect of the other variables remained unchanged. The investigation recommends the implementation of measures to enhance capital adequacy and liquidity and to minimize credit risk as these financial regulations have a significant influence on performance. The study also recommends that future studies should focus on other determinants of financial performance of Kenyan banks.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The banking sector has been suffering due to financial crisis and collapse of major banks and financial institutions has been witnessed both in developed and developing economies (Nagarkar, 2015). As such, financial regulations were created to spot and mitigate risks and to fill the in between conventional monetary policy and the traditional micro prudential rules whose emphasis was safety and soundness of individual banks (Elliott, Feldberg & Lehnert, 2013). However, the regulations have been cited as a threat to universal banking by preventing competition and ensuring artificially elevated productivity for the banks (Harnay & Scialom, 2015). In addition, regulations are associated with a variety of constraints, and the parameters used increase the operating costs and lower credit supply which in effect influence financial performance (Chortareas, Girardone & Ventouri, 2012).

Three theories guided this study, namely; the capture theory of regulation, the normative theory of regulation and the agency theory that seek to elucidate the interrelation between financial regulations and performance of organizations. The capture theory of regulation was developed by Stigler (1971) and posits that at times the institution that is mandated to regulate gets captured in the industry and starts pursuing economic benefits that are specific to it. This theory is important because it provides an understanding of regulations and why they may fail to achieve the expected objectives. The normative theory of regulation on the other hand investigates the various categories of regulation to determine the optimal and the most effective and advocates that for desirable and efficient regulation (Hertog, 2010). The agency theory as developed by Meckling and Jensen (1976) note that regulations in the

baning system can be utilized in lowering costs of agency while mitigating the agency's problems between management of an organization and its shareholders.

The Kenyan government, via its governing and regulating body the Central Bank of Kenya (CBK), has come up with prudential regulations to direct banking operations while inculcating a fair competition culture in the sector. This move depicts the continued efforts employed by Kenya with an aim of improving its banking environment so as to achieve Vision 2030 goal of being a financially stable country (Richard, Devinney, Yip & Johnson, 2009). Nevertheless, notwithstanding the CBK's introduction of the 2006 prudential regulations to govern Kenya's commercial banks, very few studies exist that analytically assess how commercial banks' financial performance has been affected by regulations.

1.1.1 Financial Regulations

Financial regulation as expounded by Agborndakaw (2010) is state formulated laws meant for financial institutions' governing. Christopher, Mike, Visit and Amy (2005) likewise define regulations as governing laws for all financial institutions activities. Fisher (1998) says that the aim of these regulations is to maintain well-ordered markets, financial service providers' licensing, applicable laws enforcement alongside prosecuting market misconduct cases, protecting investors and clients as well as promoting the financial system's stability. Government regulators promulgate these regulations along with international groups.

A significant milestone in regulation of commercial banks was the adoption of Basel III whose development was meant to facilitate the supervision of commercial banks. The committee came up with strategies complementing the implementation of the Basel II and Basel I provisions. Basel III emphasizes on the need to improve

commercial banks solvency levels that could only be achieved through the regulations of capital levels of the commercial banks. Based on the Basel III resolutions, commercial banks are obliged to grow their capital ratio so as to help strengthen the financial institutions' structures and improve flexibility of the operations of the commercial banks (Berg, 2010).

Financial regulations have been operationalized as provisions for liquidity requirement, minimum loan requirement and loan-loss provisions (Yu, Damji, Vora & Anand, 2014). Camel rating has been embraced by banks to measure compliance with regulations and it incorporates liquidity, capital adequacy, management earnings, asset quality and sensitivity. Capital adequacy requirements as calculated by the ratio of risk-weighted assets to equity establishes a bank's maximum leverage level reachable on its businesses and thus restricts the risk amount a bank's portfolio has (Lotto, 2018). Liquidity as measured using the liquidity ratio is the capability of a banks in meeting its obligations as they become due (Tanda, 2015). Loan-loss provisioning as measured using the loan loss provision ratio refers to the deductions from banks' net interest income to provide for anticipated bad or non-performing loans (Tarullo, 2014). The current study will operationalize financial regulations in terms of capital adequacy, liquidity and credit risk.

1.1.2 Financial Performance

Almajali, Alamro and Al-Soub (2012) refers this as the capability of a firm to achieve the range of set financial goals such as profitability. Financial performance is a degree of the extent to which a firm's financial benchmarks have been achieved or surpassed. It shows the extent at which financial objectives are being accomplished. As outlined by Baba and Nasieku (2016) financial performance shows how a company utilizes

assets in the generation of revenues and thus gives direction to stakeholders in their decision making. Nzuve (2016) asserts that the health of the banking sector largely depends on their financial performance that is applied in indicating the pros and cons of individual banks. Moreover, the government and regulatory agencies are interested on how banks perform for the regulation purposes.

The focus of financial performance is majorly on items that directly alter the statements of finance or the firm's reports (Omondi & Muturi, 2013). The firm's performance is the main external parties' tool of appraisal (Bonn, 2000). Hence this explains why firm's performance is used as the gauge. The attainment level of the objectives of the firm describes its performance. The results obtained from achieving objectives of a firm both internal and external, is the financial performance (Lin, 2008).

Various ways of measuring financial performance are applied. Ngatia (2012) identified Return on Assets (ROA), firm size, Return on Equity (ROE) and Return on Sales (ROS) as performance measurements. Rao and Lakew (2012) posit that efficiency can also be applied as a financial performance measure. They define efficiency as the ability to maximum ratio of weighted outputs to weighted inputs. This study will compute the performance of banks using both ROA and efficiency. ROA exhibit the profitability of a firm is in relation to its total assets while efficiency shows how a bank is able to minimize waste while at the same time maximizing resource capabilities (Mwangi & Murigu, 2015).

1.1.3 Financial Regulations and Financial Performance

A correlation exists between financial performance and regulations in financial institutions according to the macro and the micro prudential theories. Regulations

must be enacted and enforced even though this may cause the shrinking of the assets of a bank prompting a search from the stock market of fresh capital as stated in these theories. The aim of the theories is to achieve protection of tax payers' interests and economic stability. This may result in commercial banks' financial performance that is sluggish (Hanson et al., 2011).

According to Caprio and Levine (2006), a well-built regulatory system and regulations, characterized by its governance and practices of supervision, ensures better stability of the economy and fiscal performance. Promoting good practices, has however proven to be far-fetched as there has been rising levels of corruption, unclear legal origin and democracy among others, create environments of regulatory that are unrelated that hinder the operationalization of comprehensive policies that are effective. The need of this study was to practically gauge how regulation and financial performance relate.

According to Njoka (2010), the three similar and often overlapping regulation goals are: cushioning stakeholders, minimizing systemic risk and ensuring markets fairness, efficiency and transparency. The importance to reconcile the tension in a manner conducive to investor protection and promotion of business cannot be underestimated. Admitably, an effective and sound regulatory framework perform a major part in the enhancement of financial institutions (Muriithi, 2011). Effective regulation is the basis of confidence in the market that pulls investors. Undoubtedly, the allocation of regulatory power and its exercise is crucially important to the development of financial markets.

1.1.4 Commercial Banks in Kenya

Commercial banking business involves accepting deposits, giving credit, money remittances and any other financial services. The industry performs one of the major roles in the sector of finance with a lot of emphasis on mobilizing of savings and credit provision in the economy. According to the CBK (2019), the banking sector encompasses of the CBK as the regulatory authority, 1 mortgage finance institution and 42 commercial banks. Among the 42 commercial banks in the country, 30 are locally owned, 9 are microfinance banks and 14 owned by foreigners. Among the 42 commercial banks already established in the Kenyan banking sector only 10 of the 42 are listed at the NSE.

In order to promote solvency, proper operation of financial systems and liquidity, the CBK mandates financial institution to comply with the regulation enlisted in the CBK circular. The main objective of the CBK guidelines and regulations is minimizing the creditors risk levels, reducing systematic risk, protecting the confidentiality in banking and safeguarding the banks from negative activities like money laundry and terrorism financing among others. There exists four primary guidelines and regulations among others overseeing banking parts as per CBK: Risk Management Guidelines, Prudential Guidelines, guidelines on Business Activities, and Non-Operating Holding Companies Guideline (CBK, 2019).

1.2 Research Problem

The relevance of regulation on the economic growth has had opposing views amongst the economists (Sinha, Kumar & Dhal 2011). The buffer theory of capital adequacy supports that to lower the possibility of going below the legal capital requirements banks may opt to have in their control a buffer of more than enough capital (Ikpefan,

2013). The agency theory also supports that decisions on risk by an agent may be as a result of the oversight and regulations levels (Donnellan & Rutledge, 2016). Normally, regulations are anticipated to reduce the possibility of experiencing financial crisis and improve efficiency. Numerous critics have contended that regulations have interfered with market efficiency whereas the promoters of regulation for example Sinha et al., (2011) have held that proper managing and structuring of regulations can lead to market being more efficient and equitable as far as their results is concerned.

Following the 2013 CBK regulations review on commercial banks, Kenya saw three major commercial banks placed under liquidation and receivership by the CBK durinf the period 2015-2016 as a result of deficiencies in capital, fraud as well as financial crisis. These banks included Imperial Bank, Chase Bank and Dubai Bank. This depicted clearly that, some of Kenya's banks continue to experience problems in financial performance notwithstanding the review of the regulations of CBK in the year 2013 which was meant to address the performance improvement issue and commercial banks' financial stability in Kenya (CBK, 2013). On the contrary, some commercial banks for example Co-operative Bank of Kenya, Equity Bank and KCB continue to record an improved performance from the time when the CBK reviewed the regulations (CBK annual report, 2015).

Globally, numerous scholars have undertaken studies pertaining the banking regulations and the impact on financial performance. Some of those studies comprise of; Zhang, Cai, Dickson and Kutan (2016) who notes that bank regulations ensure that the rate of non-performing loans is reduced among the banks and this improves their financial standings in China. This result was supported by Amel-Zadeh, Barth and

Landsman (2017) in the United States where regulations of banks were found to lead to stability of the financial system. However, Chiarella et al. (2011) in an investigation undertaken by Mckinsey and Company it was discovered that new regulations on the corporate banking industry in Europe lead to notable drecreses in credit costs and profits had declined staying admirably underneath the 2007 peaks.

Regionally, Vianney (2013) assessed how regulations influence Rwandan commercial banks financial performance and discovered that, the ratio of capital adequacy, management efficiency and liquidity ratio do not explain Rwandan commercial banks financial performance. The study did not take into account credit risk regulation. Lotto (2018) in Tanzania examined the effect of regulations of capital needs on bank operating efficiency and revealed that capital adequacy strengthens financial stability through provision of a bigger capital cushion. This study however focused on only one type of regulation.

Locally, Makokha (2016) dedicated on how selected financial regulations impact financial performance and noted that all measures of capital requirement and corporate governance are significant predictors of Kenya's listed banks performance, while management of liquidity was not significant. Mwongeli (2016) focused on the financial regulations effect on performance of banks and the conclusion was that no relationship exist amongst regulations and commercial banks' performance. Musabi and Mutua (2018) investigated the influence of prudential regulations on Kenyan banks financial performance and found that prudential regulations positively influence financial performance. From the foregoing, it is clear that global, regional and local studies arrive at contradicting results on the influence of financial regulations on banks' performance. This difference can be explained by different methods used

especially on the operationalization of financial regulations and financial performance. The current study intended to bridge this research gap by answering; what is the effect of financial regulations on financial performance of commercial banks in Kenya?

1.3 Research Objective

The study objective was determining how financial regulations impact financial performance of commercial banks in Kenya.

The specific objectives were;

i. To establish how capital adequacy impacts financial performance of commercial banks in Kenya
ii. To how credit risk impacts financial performance of commercial banks in Kenya
iii. To assess how liquidity impacts financial performance of commercial banks in Kenya

1.4 Value of the Study

The findings of the investigation are critical to future research efforts since it may be a reference point. Results will also benefit scholars and researchers when identifying study gaps on related subjects and in the review of empirical literature to find additional research areas.

The timeliness of this study will enable banks to produce information that will be valuable to stakeholder groups in the industry of banking, including regulatory authorities, bank managements and the banking sector researchers. Commercial

banks' management will be guided by the report in the process of identifying how financial regulations can be used in their banks to improve performance.

To the government and policy formulators, it will be beneficial in aiding the formulation of policies and procedures that would enable banks and other institutions to adopt financial regulations that would improve their efficiency that will improve the sector's performance.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section presents a review of the theories onto which this study is based. Prior empirical work on this subject and other related areas will be reviewed in this chapter. Additionally, the determinants of performance will be reviewed and a framework illustrating the relationship the variables have will be contained in the study.

2.2 Theoretical Framework

A review of applicable theories is presented in this section that explains how financial regulations relate to financial performance. The theoretical reviews covered are capture theory of regulation, normative theory of regulation and the agency theory.

2.2.1 Capture Theory of Regulation

This theory was first explained by Stigler (1971) and posits that at times the state department that is mandated to regulate gets captured in the industry and starts pursuing economic benefits that are specific to it. This means that regulatory agencies can get entangled in the web of regulations and miss the objectives of regulations as proposed by the public interest theory. In other words, the regulatory agency may be inclined to formulating policies and stipulations that are beneficial to a specific group of parties as opposed to the general public. For instance, where regulations are made by a commission, large firms may compromise the objective of the commissioners in order to make policies that favour them. In so doing, regulations leads to unfavourable results to some sectors or portion of the general public.

The theory notes that regulations are meant to protect the public good and the agency are predisposed to undue influence by the very entities they are meant to regulate

(Levine & Forrence, 1990). It is for this reason that Becker (1983) advocates for control of entities by few powerful individuals in order to enhance efficiency of regulations. According to Adams, Hayes, Weierter and Boyd (2007) the state department that does regulatory duties interacts with those entities they are meant to regulate and this exposes themselves to being the victims of regulations.

This theory suits this study in that it explains why regulations may fail to achieve the desired targets. In connection to this study, the CBK issues prudential guidelines to protect consumers of financial services in the country. However, commercial banks may lobby for removal of restrictions and in turn compromise the original intention of the regulations. For instance, commercial banks in Kenya are in pursuit of removal of the interest capping law imposed by the CBK. Further, this theory depicts that regulations are meant to achieve some desired outcomes. Understandably, therefore, this theory connects perfectly with all the variables of the study.

2.2.2 Normative Theory of Regulation

The normative theory of regulation is associated with Joskow and Noll (1981). The normative approach of regulations suggests that authorities should promote healthy competition where applicable and minimize the costs of obtaining information from various parties to reduce information asymmetry since information provides important incentives to operators who use the information to mitigate adverse selection (Igbinosa, Ogbeide & Babatunde, 2017). The normative approach of regulation rationalizes the need to regulation in the banking sector by both the government and the country's monetary authority by identifying the key areas which may lead to bank failure. According to the theory, government intervention should only occur if the

government predicts the possibility of failure in the banking sector (Koumbarakis, 2017).

The theory also presupposes that effective bank regulation is justified in meeting the objectives of the banking sector, consumers and the government and prevents any harmful consequences (Sheehy & Feaver, 2015). In the banking sector, the normative theory proposes that monetary authorities should ensure that there is a feasible price structure that the efficiency of the economy and come up with effective regulatory structure that enhance transparency, predictability, accountability and credibility of the established regulatory process (Igbinosa, Ogbeide & Babatunde, 2017). The normative theory in the context of this study supports that effective bank regulation is desirable and regulation should not have negative effects on the stability and soundness of the financial sector.

2.2.3 Agency Theory

This theory alternatively known as the principal agent theory was advanced by Meckling and Jensen (1976) so as to tackle limitations facing relations between agents and principals (Laiho, 2011). The agency relationship denotes to a contract whereby one party (principal) associates to another party (agent) so that they can undertake some service on their behalf. The principal employs a decision-making authority for the agents use. These agency problems come due to the impracticality of completely toning for all probable actions of an agent whose decisions impact his personal welfare and also the principals (Donnellan & Rutledge, 2016). The problems are also as a result of conflicts of interest among two parties to a contract, and hence, have a nature to be just about limitless creating agency costs that can be taken as

shareholders value loss, resulting from corporate managers and shareholders interest divergences (Palia & Porter, 2007).

The agency theory posits that agents at times do not make decisions in the principal's best interest, as they may succumb to self-interest, opportunistic behavior. With such setbacks, agency theory reinforces the need for a separation of ownership and control in order to ensure management goals and the owners are in alignment (Palia & Porter, 2007). Therefore, bank regulations exist to manage asymmetric information which may be exposing the shareholders to certain risk not aware of but managers have all the information. Banks work with money, which is very tempting to fraud and other illegal practices such as financing terrorism groups so, separation of ownership and control results to different behaviors in the management team such as agency problem where management leaves the interest of shareholders and start working towards achieving their own interest (Namazi, 2013). Thus, in this study the agency theory supports that bank regulations can be used to tame the behavior of manager and reduce agency problems associated with the separation of ownership.

2.3 Determinants of Financial Performance

The determination of an organization's performance can be ascertained by a number of factors; these factors are either internal or external. Internal factors differ from one bank to the next and are within a bank's scope of manipulation. These consist of labor productivity, capital size, quality of management, efficiency of management, deposit liabilities, credit portfolio, policy of interest rate, ownership and bank size. External factors affecting the a bank's performance are mainly gross domestic product,

inflation, stability of macroeconomic policy, political instability and the rate of interest (Athanasoglou, Brissimis & Delis, 2005).

2.3.1 Capital Adequacy

Athanasoglou et al., (2005) stated that investment is a key variable that determines performance. Capital refers to contribution by owners that supports the bank's activities of the bank whilst acting as a protection from unfavorable events. In capital markets that are less than perfect, sufficiently capitalized banks need to lower their borrowings to support certain types of assets, and resulting from lower anticipated bankruptcy costs, they incur lower costs of financing.

A sufficiently capitalized bank is an indicator that a superior performance is expected. Athanasoglou et al. (2005) noted that capital has a positive impact on bank profitability, which is a reflection of good financial condition of Greek banks. Additionally, Baba and Nasieku (2016) discovered that capital contributions and firm profitability have a positive causality.

2.3.2 Bank Liquidity

Bank liquidity is the capacity of banks to accomplish their monetary obligations when they fall due. Dang (2011) hold a view that adequate of liquidity in banks is positively linked with their success. Liquidity risk control is an obligatory factor of the general risk mitigation charter for all financial institutions. An efficient bank ought to adhere to a well-documented framework for alleviation of liquidity risk and shun losses (Adam & Buckle, 2003). Liargovas and Skandalis (2008) suggest that customer deposits offer an innate cushion against liquidity risk in commercial banks. The banking sector is interconnected meaning cash flows in one bank harmonize other

banks whereby the inflows hedge other banks from outflows emanating from customer withdrawals and loan advancements.

There are contradictory views on whether liquidity influences performance of banks. Almajali et al. (2012) note that liquidity risk has a positive correlation to net interest margin which implies that banks with substantial liquidity levels earn higher interest revenue. On the flipside, Jovanovic (1982) documented that an inverse relation exists amid bank success and liquidity.

2.3.3 Credit Risk

This is a major and costly risk for any financial institution. In comparison to other risk which are encountered by banks, rise in credit risk is a significant risk as it is a direct threat to their solvency (Sufi & Qaisar, 2015). In spite of loan issued by lenders being subject to default risk, the lenders go on and gladly advances the loans to the borrowers anticipating that they will continue making repayments of their installments without defaulting and resulting to Non-performing loans (Bhattarai, 2016). To a large extent, Non-performing loans can bring down the profits of banks. This may suggest that banks have failed in setting up appropriate measure of effectively dealing with the credit risk control (Afriyie & Akotey, 2012).

The credit risk arises due to the existence of information asymmetry in the banking section which lead to adverse selection and moral hazards. The bank's profitability is highly impacted by credit risk because a banks' significant portion of revenue is generated from interest charged on the loans issued. Nonetheless, credit risk is a major problem that impacts bank performance. This being so, credit risk should be properly managed (Bhattarai, 2016). From prior studies, quality of bank asset is a

bank`s performance determinant as far as its finance is concerned (Afriyie & Akotey, 2012).

2.3.4 Bank Size

This variable determines the degree to which an entity is impacted by legal and financial factors. It is also closely related to capital adequacy since large banks have the ability to raise more cheap funds thereby making massive profits. It has a positive relation to ROA which indicates that bigger banks can acquire economies of scales which lowers operating costs thereby improving bank performance (Amato & Burson, 2007). Magweva & Marime (2016) relates bank size to capital ratios stating that they have a positive relation and suggesting that profitability grows with the bank size.

The size of an organization is determined by its assets owned amount (Amato & Burson, 2007). Large firms as argued have resources that are adequate for the undertaking of numerous large projects with higher returns compared to firms with total assets that are limited. Additionally, organizations with total assets that are unlimited have collateral that is sufficient which could be used to access debt facilities and credit compared to small organizations (Njoroge, 2014). The total assets that a firm controls as determined by the total assets as affirmed by (Lee, 2009), impact the recorded profitability level from year to year.

2.3.5 Management Efficiency

This is a crucial internal variable that is a qualitative measure that determines firm's operational efficiency. The main of assessing this quality in an organization is by efficiently utilizing firm resources, maximizing funding and properly allocating firm resources (Kusa & Ongore, 2013).

As a qualitative measure, managerial efficiency is a crucial factor in operational efficiency and can be determined by staff quality, internal controls effectiveness and efficiency, organizational discipline together with the effectiveness of the management systems (Athanasoglou, et al., 2009). The management quality is influential to operating expenses level that impacts the bottom line of an entity hence this quality substantially impacts firm value (Kusa & Ongore, 2013).

2.4 Empirical Review

Research has been presumed locally, regionally and internationally on the association between financial regulations and performance, nonetheless these investigations have yielded contradicting results.

2.4.1 Global Studies

Deng, Ferrari and Casu (2014) studied how re-regulation and deregulation impacts the efficiency of Asian banks from eight crucial economies in the continent from 2001 to 2010. The investigation followed a stochastic frontier approach then estimated a deterministic meta-frontier to indicate 'true' cost efficiency estimate of banks. From findings, they established a positive and crucial impact on cost efficiency technological development owing to bank interest rates liberalization more presence of foreign banks have positively impacted technological progress and efficiency of cost. The findings also showed that prudential regulations might have a negative impact on bank performance.

Adina (2015) did a paper on the performance, banking risks and their regulations in Romania. The study covered a period of three years and it adopted descriptive survey study. The study notes that credit institutions need to position themselves regularly with regards to risk and profitability. From the research, prudential supervision

prevents manifestation of internal and external risks to the level of a banking institution and prevents their spread thus improving performance.

2.4.2 Regional Studies

Vianney (2013) studied the association amongst regulation and the Rwandan commercial banks financial performance. The study embraced a descriptive research design and used ten commercial banks as the sample size. The study found out that regulation indeed was an insignificant predictor of Rwanda banks financial performance. The findings stated that regulation is a major foundation of operations of banks and at large to financial stability.

Baugatef and Mgadmi (2016) endeavored on investigating the impact of prudential regulations on banks' share capital ownership and risk appetite, the case of Middle East and North Africa countries. The study adopted a panel data analysis using descriptive statistics where 24 banks were considered for data collection. Data was acquired for an eight years span that is, from year 2004to 2012. It was concluded that prudential guidelines significantly affected banks performance. In particular, it was established that large capitalization improved performance of banks since it had a positive effect of risk taking incentives.

2.4.3 Local Studies

Mwongeli (2016) explored how financial regulation impacted the bank performance in Kenya. The time frame of the study spanned through 2010 and 2015 and the 43 Kenyan banks formed the population of the study. This was three years prior and after the 2013 prudential guidelines review coming into effect. To analyze how the two variables relate, the study applied Chi square test of independence. On each of the

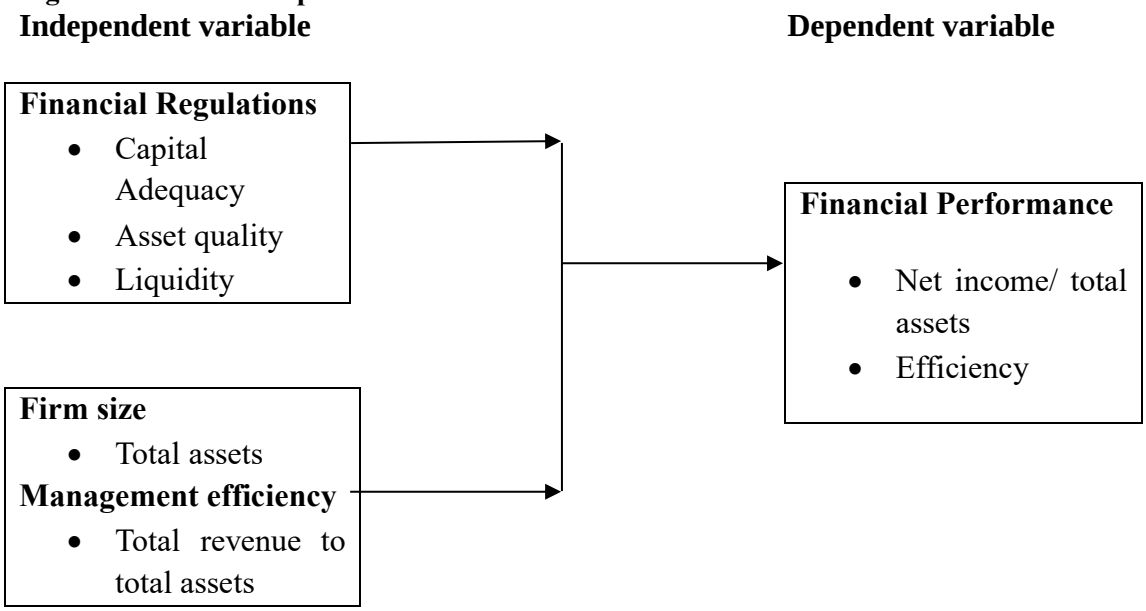
ratios, the test was done which showed that no relationship exist between financial regulation and performance of commercial banks.

Mwenda (2018) aimed to determine the impact of prudential regulations on performance of MFI's in Kenya. The study embraced a descriptive design and the study population was made of the thirteen microfinance banks in Kenya as 2017-year end. Data obtained was secondary in nature and covered covering 5 years from 2013 to 2017. Analysis was conducted using inferential and descriptive statistics. The results established presence positive and statistically substantial association amongst capital adequacy and performance and that the association amongst liquidity and financial performance was positive but statistically insignificant while the association amongst financial performance and loan loss provisions of microfinance banks was negative and statistically significant impact on the banks financial performance.

2.5 Conceptual Framework

The following model exhibit the anticipated association amongst variables. The independent variable for the study was financial regulations as characterized by capital adequacy, liquidity and quality of assets. The control variables were firm size and management efficiency. The dependent variable was performance given by ROA and firm efficiency.

Figure 2.1: The Conceptual Model



Control Variables

Source: Researcher (2020)

2.6 Summary of the Literature Review and Knowledge Gaps

Table 2.1: Summary of Gaps

Author	Focus of Study	Methodology	Findings	Research/Knowledge Gaps
Mwenda (2018)	Impact of prudential regulations on performance of MFI's in Kenya	Embraced a descriptive design with a populace of thirteen microfinance banks and relied of secondary data.	The results established presence positive substantial association amongst capital adequacy and financial performance and that the association amongst liquidity and financial performance was positive but statistically insignificant while the association amongst financial performance and loan loss provisions of microfinance banks was negative and statistically substantial impact on banks performance.	The investigation will fill the context gap whereby the previous study dealt with microfinance banks and the current will deal with commercial banks.
Mwongeli (2016)	Impact of financial regulations on bank performance in Kenya	Descriptive survey design was embraced and the association between the study variables established using Chi square test of independence.	Financial regulations has no influence on performance of Kenyan banks	The study used Chi square test of independence while in the current study multiple linear regression will be applied.
Baugatef and Mgadmi	Effect of prudential	A panel data analysis	It was concluded that prudential	This study focused on

(2016)	regulations on banks' share capital ownership and risk appetite, the case of Middle East and North Africa countries	using descriptive statistics where 24 banks were considered for data collection.	guidelines significantly affected banks performance. In particular, it was established that large capitalization improved performance of banks	only one aspect of financial regulations while the current study will focus on three aspects.
Lotto (2018)	How regulations in capital requirements impacted the efficiency of banks operations in Tanzania.	Descriptive design and a linear regression model ere embraced in data analysis.	The findings uncovered that capital ratio significantly and positively associated with the efficiency of banks operations	The study was conducted done in a different nation and hence findings may not reflect the situation among commercial banks in Kenya
Kale et al., (2015)	Impacts of regulatory, changes in macroeconomics, and political events on efficiency of banks in Turkey from 1997-2013	DEA-based Malmquist Productivity Index (DEA-MPI)	Findings showed that on new macroeconomic environments, recent regulations mainly had a positive impact on productivity and it was resolved that tighter regulation, restrictions, monitoring, strict supervision, surplus capital, and new reforms have a positive impact on bank efficiency	The study did not operationalize regulations in terms of capital adequacy, liquidity and credit risk

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

A methodology was required in outlining how the research was done to ascertain how the performance of banks is impacted by regulations. Sections incorporated in this chapter are; the design, data collection, diagnostic tests and analysis.

3.2 Research Design

The research utilized a descriptive cross-sectional design in determining how performance and regulations of banks relate. The researcher sought to describe the nature of affairs as they are hence making the design suitable for the study (Khan, 2008). It was also appropriate because the nature of the phenomenon being studied and how they relate is of major interest to the researcher (Schindler &, Cooper 2013).

3.3 Population and Sample

The population was all 42 banks operating in Kenya at the closure of year 2019. Because the population was relatively small, a census approach was embraced for all the banks (see appendix one).

3.4 Data Collection

Secondary data was extracted from annual reports from banks operating in Kenya between January 2015 and December 2019 and recorded in a collection sheet. The reports were extracted from the CBK Website and the banks' reports. The specific data collected included; total assets, net income, core capital, risk weighted assets, total deposits, total loans, non-interest income, interest income, liquid assets, non-performing loans and operating expenses.

3.5 Data Analysis

SPSS version 23 was applied in the data analysis. Findings were quantitatively presented with the use of graphs and tables. Descriptive statistics such as mean, standard deviation, skewness and kurtosis were utilized in summarizing the data obtained from the banks. Inferential statistics included regressions and Pearson correlation.

3.5.1 Diagnostic Tests

The study undertook several diagnostic tests in assessing the applicability of the research structure. The study first assessed for normality which through the Kolmogorov-Smirnov and Shapiro-Wilk tests of the residuals where in both tests, a non-important result (a p factor of greater than 5%) was deemed an indication for normality. The study also assessed for multicollinearity using the tolerance and the variance inflation factors (VIF) where a tolerance figure of greater than 0.2 or a VIF of more than 10 will be indication of the presence of multicollinearity. Additionally, the study assessed for heteroskedasticity using the Breusch-Pagan test and assessed for serial correlation (autocorrelation) by use of the Durbin Watson test where a value of between 1.5 and 2.5 indicated that there exists no auto-correlation (Khan, 2008).

3.5.2 Analytical Model

The below model was used:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon.$$

Where: Y = Financial performance which had two measures; equation one was return on assets (net income divided by total assets) on an annual basis while equation two was efficiency which was the ratio of total income (interest and non-interest income) and loans to total expenses and deposits. The intention

was to develop a profitability and efficiency matrix as borrowed from Xaba et al. (2018). This was useful in classifying firms as stars, sleepers, question marks and dogs.

α =y the regression equation intercept.

β_1, β_2, β_3, β_4, β_5 =are the regression slope

X_1 = Capital adequacy as determined by the ratio of total core capital to risk weighted assets

X_2 = Quality of assets as determined by non-performing loans to total loans

X_3 = Liquidity as determined by liquid assets to total assets.

X_4 = Size of bank as determined by the natural logarithm of total assets

X_5 = Management efficiency as determined by revenue to total assets

ε =error term

3.5.3 Tests of Significance

Parametric tests were done by the researcher to determine the model and individual variables' statistical significance. The F-test was used in assessing the models' relevance given by ANOVA while a t-test established the individual variables significance.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This section details the analysis, findings and elucidation of the secondary data obtained from the CBK and individual banks websites. The aim of the study was determining how financial regulations impact performance of Kenyan banks. The independent variables for the study were asset quality, capital adequacy, liquidity, bank size and management efficiency while the dependent variable was the financial performance measured by ROA and efficiency. Regression analysis was adopted to determine how the variables relate based on the study's objectives. In ascertaining the suitability of the analytical model, ANOVA was applied. The results were presented in tables and figures.

4.2 Descriptive Analysis

The statistics produces a representation of the mean, minimum and maximum values of variables presented including the standard deviations, skewness and kurtosis. Table 4.1 below displays the qualities of each variable. An output of each variable was extracted using SPSS software for a five-year time frame (2015 to 2019) on an annual basis.

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ROA	185	-.2	.1	-.005	.0308	-4.725	.179	27.044	.355
Bank efficiency	185	.2	9.1	.931	.6511	10.865	.179	136.16	.355
Capital adequacy	185	-.2	2.1	.236	.2173	6.397	.179	52.289	.355
Asset quality	185	.0	38.6	.358	2.8320	13.529	.179	183.66	.355
Liquidity	185	.0	.2	.077	.0537	-.132	.179	-.220	.355
Bank size	185	14.8	20.6	17.726	1.3658	.220	.179	-1.087	.355
Management efficiency	185	.0	.2	.085	.0388	-1.383	.179	1.675	.355
Valid N (listwise)	185								

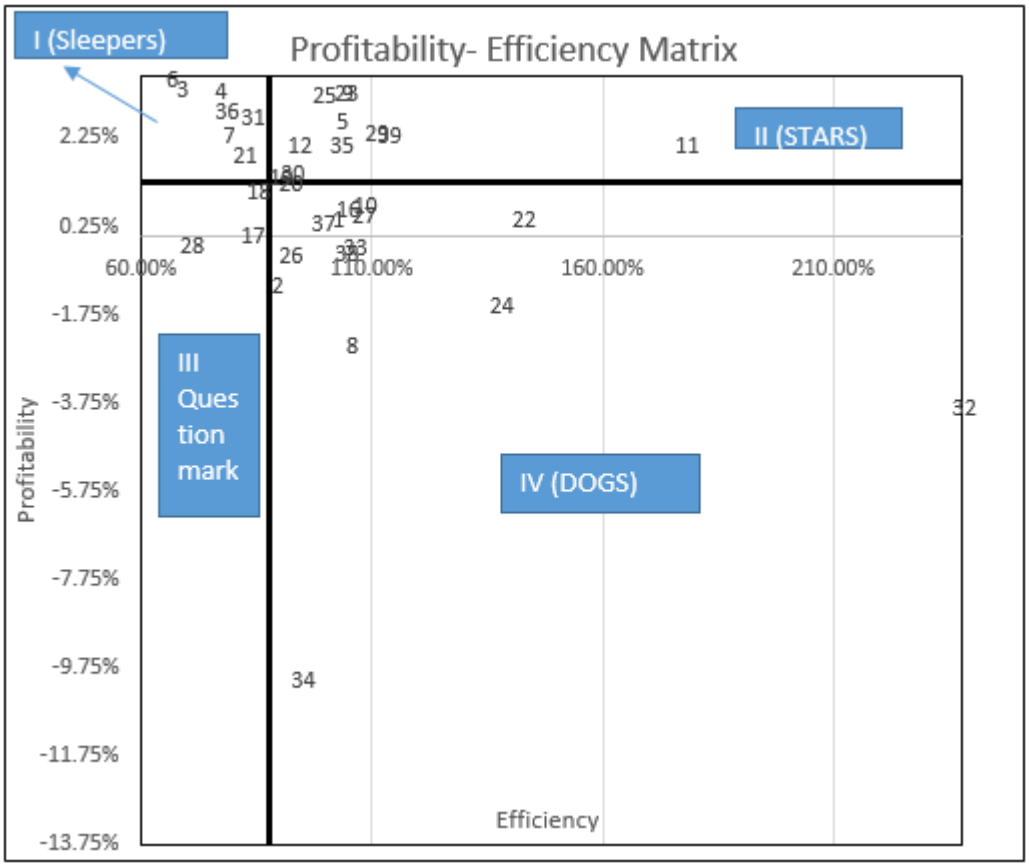
Source: Research Findings (2020)

4.3 Profitability Efficiency Matrix

The study created a profitability efficiency matrix showing the profitability in contrast to the efficiency of the commercial banks of Kenya. Banks were indexed with numbers as shown in Appendix III. From the results, the Median for profitability was 1.23% whereas the median for efficiency was 87.56%. A matrix comprising of four quadrants as shown in table 4.2 below was created. Quadrant I is also referred as sleepers, quadrant II is also referred as stars, Quadrant III is also referred as Question Mark and Quadrant IV also referred as the Dogs. Quadrant I contains those banks with high profitability and low efficiency, Quadrant II is those banks that have high profitability and high efficiency, Quadrant III is those banks with low profitability and low efficiency and Quadrant IV is those banks with low profitability and high efficiency. From the findings Majority (15/39) of the banks were 'DOGS' having high efficiency and low profitability followed by 'STARS' with (14/39) having high

profitability and high efficiency and thirdly the 'SLEEPERS' with (7/39) having a high profitability and low efficiency and finally the 'QUESTION MARK' were the least with only 3/39 banks having low profitability and low efficiency.

Table 4.2: Profitability-Efficiency Matrix



4.4 Diagnostic Tests

The data collected was subjected to diagnostic tests. The study presumed a significance level of 5% or 95% confidence interval so as to make variable deductions on the data adopted. Diagnostic tests were useful for ascertaining the falsity or truth of the data. Therefore, the nearer to 100% the confidence interval, the more accurate the data used is presumed to be. In this case, the tests conducted were normality test multicollinearity test, heteroskedasticity tests and autocorrelation test.

4.4.1 Normality Test

Shapiro-wilk test and Kolmogorov-Smirnov test was utilized for normality testing. The level of significance in the study was 5%. The outputs of the test are depicted in Table 4.3. The null hypothesis is that the data is distributed normally. If the Shapiro-wilk test and Kolmogorov-Smirnov tests contradict, the later test is picked over the former because it is more statistically sound. Since the p value in both tests of all the variables is greater than the α (0.05), then the null hypothesis is not rejected. Hence the data series of all the variables is normally distributed.

Table 4.3: Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
FP	Statistic	Df	Sig.	Statistic	Df	Sig.
Asset quality	.173	185	.264	.918	185	.822
Capital Adequacy	.180	185	.264	.894	185	.790
Liquidity	.176	185	.264	.892	185	.784
Bank size	.181	185	.264	.896	185	.792
Management efficiency	.188	185	.264	.892	185	.788

a. Lilliefors Significance Correction

Source: Research Findings (2020)

4.4.2 Autocorrelation Test

To test for autocorrelation, Durbin-Watson statistic was applied which gave an output of 2.261 as displayed in Table 4.4. The Durbin-Watson statistic ranges from point 0 and point 4. If there exist no correlation between variables a value of 2 is shown. If the values fall under point 0 up to a point less than 2, this is an indication of an autocorrelation and on the contrast a negative autocorrelation exist if the value falls under point more than 2 up to 4. As a common rule in statistics, values falling under the range 1.5 to 2.5 are considered relatively normal whereas values that fall out of the range raise a concern. Field (2009) however, opines that values above 3 and less

than 1 are a sure reason for concern. Therefore, the data used in this panel is not serially autocorrelated since it meets this threshold.

Table 4.4: Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.559[a]	.312	.293	.0259	2.261

a. Predictors: (Constant), Management efficiency, Capital adequacy, Liquidity, Asset quality, Bank size
b. Dependent Variable: ROA

Source: Research Findings (2020)

4.4.3 Multicollinearity Test

This can be defined as a statistical state where more than one predictors are highly correlated in a multiple regression model. It is an unwanted situation for independent variables to have a strong correlation. A combination of variables is said to exhibit high Multicollinearity in case there is one or more exact linear correlation among the study variables. VIF value and Tolerance of the variable were utilized where the values below 10 for VIF and values more than 0.2 for Tolerance imply no Multicollinearity. From the results, all the variables had a VIF values <10 and tolerance values >0.2 as illustrated in table 4.5 suggesting no Multicollinearity.

Table 4.5: Multicollinearity Test

	Collinearity Statistics	
Variable	**Tolerance**	**VIF**
Asset quality	0.392	2.551
Capital Adequacy	0.398	2.513
Liquidity	0.388	2.577
Bank size	0.376	2.659
Management efficiency	0.372	2.688

Source: Research Findings (2020)

4.4.4 Heteroskedasticity Test

The study checked for panel level heteroskedasticity by use of the Likelihood Ratio (LR) as indicated in the Table 4.6. This test used the null hypothesis that the error variance was homoscedastic. A chi-square value of 36.48 was produced by the likelihood-ratio test with a 0.0000 p-value. This value was substantial at 1 percent level and in this manner the invalid speculation of consistent fluctuation was rejected meaning the nearness of heteroskedasticity in the examination information as suggested by Poi and Wiggins (2001). To deal with this issue the examination utilized the FGLS estimation method.

Table 4.6: Heteroskedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity Ho: Constant variance Variables: fitted values of ROA chi2(1) = 36.58 Prob > chi2 = 0.0000

Source: Research Findings (2020)

4.5 Correlation Analysis

This test establishes the existence of an association between two variables. This may lie between a perfect positive and a strong negative correlation. This study utilized Pearson correlation to analyze the level of association between financial regulations and financial performance confidence interval at 95%, since it is more common in social sciences. A two tailed test was utilized. Table 4.7 shows the correlation analysis outcome.

Existence of a negative and statistically substantial correlation (r = -.483, p = .000, r = -.218, p = .002) between asset quality and performance was revealed given by both ROA and efficiency. Further results showed a positive substantial correlation between

bank size and banks' performance existed as demonstrated by (r = .260, p = .000, r = .530, p = .000). Bank liquidity had a positive substantial association with performance shown by (r = .154, p = .037, r = .147, p = .036). Capital adequacy showed a positive substantial impact on performance given by efficiency but an insignificant positive relationship when measured using ROA. Management efficiency exhibited a positive but weak association with performance when measured by either ROA or efficiency.

Table 4.7: Correlation Analysis

		ROA	Bank efficiency	Capital adequacy	Asset quality	Liquidity	Bank size	Management efficiency
ROA	Pearson Correlation	1						
	Sig. (2-tailed)							
Bank efficiency	Pearson Correlation	.087	1					
	Sig. (2-tailed)	.239						
Capital adequacy	Pearson Correlation	.110	.167*	1				
	Sig. (2-tailed)	.135	.017					
Asset quality	Pearson Correlation	-.483**	-.218**	.145*	1			
	Sig. (2-tailed)	.000	.002	.049				
Liquidity	Pearson Correlation	.154*	.147*	.050	-.103	1		
	Sig. (2-tailed)	.037	.036	.502	.163			
Bank size	Pearson Correlation	.260**	.530**	.026	-.172*	-.062	1	
	Sig. (2-tailed)	.000	.000	.721	.019	.402		
Management efficiency	Pearson Correlation	.113	.130	-.045	-.157*	.195**	.279**	1
	Sig. (2-tailed)	.126	.064	.542	.033	.008	.000	

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
c. Listwise N=185

Source: Research Findings (2020)

4.6 Regression Analysis

The researcher ran two regression equations as financial performance was measured using both ROA and efficiency. Model I presents the results when financial performance was measured using ROA while model II presents the results when financial performance was measured using bank efficiency.

4.6.1 Model I

Financial performance as measured by ROA was regressed against five predictor variables; capital adequacy, asset quality, bank liquidity, bank size and management efficiency. With the values being regressed at 5% significance, the critical value from the F–table was compared with the value from the regression one acquired from the regression. The summary statistics are illustrated in table 4.8 below.

Table 4.8: Model Summary for ROA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.559[a]	.312	.293	.0259	2.261

a. Predictors: (Constant), Management efficiency, Capital adequacy, Liquidity, Asset quality, Bank size
b. Dependent Variable: ROA

Source: Research Findings (2020)

R squared, is the coefficient of determination which shows deviations in the response variable resulting from variations in predictor variables. From illustration in table 4.8 above, this value was 0.312, which meant that 31.2 percent variations in performance of banks result from variations in the independent variables.

Other variables not considered are responsible for 68.8 percent variations in bank performance. Additionally, the findings showed the existence of a strong strong relation between independent variables performance as indicated by correlation

coefficient (R) equal to 0.559. A durbin-watson statistic of 2.261 indicated n serial correlation in the variable residuals because the value was greater than 1.5.

Table 4.9: Analysis of Variance for ROA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.054	5	.011	16.235	.000[b]
	Residual	.120	179	.001		
	Total	.175	184			

a. Dependent Variable: ROA
b. Predictors: (Constant), Management efficiency, Capital adequacy, Liquidity, Asset quality, Bank size

Source: Research Findings (2020)

ANOVA results produced a value of 0.000 lower than p=0.05. This confirms the sufficiency of the model in predicting how the independent variables affects performance as measured by ROA.

Coefficients of determination were utilized in indicating the direction of the relation between the variables. The p-value under sig. column indicated the significance of the relation between the dependent and the independent variables. At 95% confidence, a p-value lower than 0.05 was recognized as a measurement of statistical significance. As such, a p-value greater than 0.05 shows that a weak association exists between the variables. The findings are illustrated in table 4.10 below

Table 4.10: Model Coefficients for ROA

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.090	.026		-3.471	.001
	Capital adequacy	.025	.009	.178	2.832	.005
	Asset quality	-.005	.001	-.467	-7.261	.000
	Liquidity	.076	.037	.133	2.071	.040
	Bank size	.004	.001	.192	2.921	.004
	Management efficiency	.025	.053	.032	.476	.634

a. Dependent Variable: ROA

Source: Research Findings (2020)

From findings, it is evident that other than management efficiency, the other four independent variables had substantial values for the study (high t-values, $p < 0.05$). Capital adequacy, liquidity and bank size had positive substantial values while asset quality had a negative substantial value for this study given by a p value lower than 0.05 while management efficiency was found to be a statistically insignificant determiner of financial performance among commercial banks given by p values above 0.05.

The equation below was estimated:

$Y = -0.090 + 0.025X_1 - 0.005X_2 + 0.076X_3 + 0.004X_4$

Where,

Y = ROA

X_1= Capital adequacy

X_2= Asset quality

X_3= Bank liquidity

X_4= Bank size

From the model above, the constant = -0.090 indicates that if selected independent variables had a zero value, the performance would be -0.090. A unit increase in capital adequacy, liquidity or bank size will increase performance as indicated by 0.025, 0.76 and 0.004 respectively while a unit increase in credit risk would lower performance by 0.005.

4.6.2 Model II

Financial performance as measured by bank efficiency was regressed against five predictor variables; capital adequacy, credit risk, bank liquidity, bank size and management efficiency. The regression analysis was done at 5% significance. The critical value from the F–table was compared to the regression value.

The summary statistics from the model is shown in ```14.11 below.

Table 4.11: Model Summary for Efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.605[a]	.367	.351	.015576	1.970

a. Predictors: (Constant), Management Efficiency, Liquidity, Capital adequacy, Bank Size, Asset Quality
b. Dependent Variable: Efficiency

Source: Research Findings (2020)

The results in Table 4.11 reveal an R square was 0.367, which meant that 36.7 percent variations in efficiency of banks results from changes in capital adequacy, asset quality, liquidity, size and management efficiency. Other variables not considered account for 63.3 percent variations in efficiency of the Kenyan banks. Additionally, the findings showed the existence of a strong relation among the independent variables and performance given by the correlation coefficient (R) equal to 0.605. A durbin-watson statistic of 1.970 showed that the variable residuals had no serial correlation since the value was greater than 1.5.

Table 4.12: Analysis of Variance for Efficiency

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.028	5	.006	23.030	.000[b]
	Residual	.048	179	.000		
	Total	.076	184			

a. Dependent Variable: Efficiency

b. Predictors: (Constant), Management Efficiency, Liquidity, Capital adequacy, Bank Size, Asset quality

Source: Research Findings (2020)

The significance value is 0.000 that is lower than p=0.05. This indicates that the model was sufficient in predicting how the independent variables impact performance as measured by efficiency.

Coefficients of determination were used to indicate direction of the relation between the independent and dependent variables. The p-value under sig. column was utilized in determining the significance of the association between the variables. At 95% confidence, a p-value lower than 0.05 was considered to be statistically significant. This meant that, a p-value greater than 0.05 showed that the dependent variables had a weak association with the independent variables. The results are illustrated in 4.13 below

Table 4.13: Model Coefficients for Efficiency

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.128	.016		-8.074	.000
	Capital adequacy	.012	.005	.132	2.296	.023
	Credit Risk	-.033	.009	-.217	-3.748	.000
	Liquidity	.015	.009	.102	1.771	.078
	Bank Size	.019	.002	.517	9.027	.000
	Management Efficiency	.000	.000	.066	1.155	.249

a. Dependent Variable: Efficiency

Source: Research Findings (2020)

From the above findings, it is evident that apart from credit risk, liquidity and management efficiency, the other two independent variables had positive substantial

values for this study (high t-values, $p < 0.05$). Credit risk produced negative substantial value shown by a p value lower than 0.05 while liquidity and management efficiency were found to be weak determiners of performance as measured by efficiency among commercial banks as shown by p values above 0.05.

The equation below was estimated:

$Y = -0.128 + 0.012X_1 - 0.033X_2 + 0.019X_3$

Where,

Y = Financial performance

X_1= Capital adequacy

X_2= Asset quality

X_3= Bank size

From the model, the constant = -0.128 indicated that if the chosen independent variables (capital adequacy, credit risk, bank liquidity, bank size and management efficiency) had a zerovalue, the banks' performance would be -0.128. A unit increase in either capital adequacy or bank size will increase performance as indicated by 0.012 and 0.019 respectively while a unit increase in credit risk would decrease performance by 0.033.

4.7 Discussion of Research Findings

The investigation was to determine how financial regulations impact performance of the Kenyan banks. Financial regulations was the independent variable in this study with three measures (capital adequacy given by the ratio of core capital to risk weighted assets, asset quality given by the ratio of non-performing loans to total loans and liquidity given by the ratio of liquid assets to total assets annually. The

control variables were management efficiency given by the ratio of total revenue to total assets and bank size given by natural log of total assets per year. Financial performance was the dependent variable and was given by both ROA and bank efficiency.

The Pearson correlation coefficients revealed that capital liquidity and bank size have a positive substantial correlation with the banks' financial performance as measured by both ROA and efficiency. A negative substantial correlation exists between asset quality and performance of banks in Kenya. Capital adequacy had a significant association with financial performance as measured by efficiency but not statistically significant association with ROA. Management efficiency exhibited a positive but a non-statistically significant association with financial performance of commercial banks in Kenya.

The model summary showed that independent variables: capital adequacy, credit risk, bank liquidity, bank size and management efficiency explains 31.2% and 36.7% of changes in ROA and efficiency indicated by R^2 implying that there exists other factors outside the model accounting for 68.8% and 63.3% variation in the commercial banks' ROA and efficiency respectively. The two models were fit at 95% confidence level since $p<0.05$. This indicated that the multiple regression models were substantial and adequate in explaining how the selected independent variables impact performance of Kenyan banks.

Findings concur with Sujeewa (2015) who conducted a study on how managing credit risk influenced how the banks in Sri Lanka performed financially. The study used primary as well as secondary data. Interviews were applied to collect the primary data of the research, while the yearly bank reports provided secondary data to the

researcher. The study had a target population of 24 profit-making banks and a sample population of 8 commercial banks. The study collected data for the period between 2009 and 2013. To assess the relationship between profitability and credit risk, regression model was used. In the analysis of data, Panel data analysis was used .The study found that risk of credit impacted profitability of banks negatively.

The findings are also in line with Gudmundsson, Kisinguh and Odongo (2013) who undertook a research on the capital requirements role on the competition and stability of banks. It was done from 2000 to 2011. The Lerner index as well as the Rosse H-statistic and Panzar were used in measuring the Kenya's banking industry competition level. ROE was also utilized in measuring bank performance and stability. It was found that an additional core capital decreases competition though after a given point, competition begins to rise. This insinuates that its benefits begin to accrue when the banking sectors begins to effect consolidation. The conclusion was that there is a positive relation ascertaining that regulation in capital indeed improves the financial stability and banks' performance.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter makes a summary of results of the previous chapter, conclusions, and limitations faced. It also highlights the policy recommendations that can be implemented to achieve the expected financial performance of the Kenyan banks. Lastly the chapter will highlight suggestions for future investigations.

5.2 Summary of Findings

The study's aim was determining how financial regulations impacts performance of Kenyan banks. The independent variables included capital adequacy, credit risk, bank liquidity, bank size and management efficiency. A descriptive cross-sectional design was selected for the study. Secondary data was obtained from the CBK and analyzed using SPSS version 23. The study utilized annual data for 37 banks for five years from January 2015 to December 2019.

From the correlation analysis, capital adequacy, liquidity and bank size have a positive substantial correlation with the banks' performance. A negative substantial correlation was found between asset quality and performance. Management efficiency exhibited a positive but a weak association with performance of banks in Kenya.

The R-square values were 0.312 and 0.367 which means that about 31.2 % and 36.7 percent changes in ROA and efficiency respectively of the banks' performance results from the five selected independent variables while 68.8 and 63.3 percent variations was linked to other factors not considered. A strong correlation was also discovered

between the independent variables and the banks' performance. ANOVA findings revealed the F statistic to be significant at 5% level since $p<0.05$. Therefore the models were fit in explaining variables' associaion.

The regression findings showed that if independent variables had a zero value, the ROA of the banks will be -0.090. A unit increase in capital adequacy, liquidity or bank size will increase performance as indicated by 0.025, 0.76 and 0.004 respectively while a unit increase in asset quality would lower performance by 0.005. Further, if selected independent variables had a zero value, the banks' performance would be -0.128. A unit increase in either capital adequacy or bank size will increase performance by 0.012 and 0.019 respectively while a unit increase in asset quality would lower performance by 0.033.

5.3 Conclusions

The conclusion that can be made is that performance of Kenyan banks is significantly impacted by capital adequacy, liquidity and bank size. It therefore concludes increasing these variables by a unit significantly increases performance of banks. Asset quality had a negative but substantial influence on performance and therefore this study concludes that an increase in credit risk leads to a significant decrease in financial performance. Management efficiency is a weak determinant of performance and concluded that this variable does not significantly influence bank's financial performance in Kenya.

The conclusion of the study is that independent variables chosen for the investigation capital adequacy, credit risk, bank liquidity, bank size and management efficiency significantly impact performance of banks in Kenya. It can hence be concluded that the variables substantially impact performance of banks demonstrated by the p value

in ANOVA. The fact that the five independent variables account for 31.2% changes in ROA means that variables outside the model explain 68.8% variations in performance of banks in Kenya.

The findings are similar to Makokha (2016) who explored the effects of selected financial regulations on the fiscal performance of Kenyan banks. A descriptive design was taken up by the study to analyze the selected financial regulations relationships to the NSE listed banks' fiscal performance in Kenya. The population of study was listed 11 banks in the Nairobi securities exchange. The response rate was 100% of the total population which makes eleven listed commercial banks. The resulting data was gathered from the yearly reports of the eleven commercial banks. The data was analyzed using Advanced Excel. This study noted that all measures of capital requirement and corporate governance are significant predictors of fiscal outcome of banks listed in Kenya, while management of liquidity was not significant in explaining profitability of listed banks in Kenya.

This study differs with Mwongeli (2016) who explored the effects of the regulations in the financial sector on the Kenyan profit making banks' fiscal performance. The 43 profit-making banks in Kenya was the study population and the time study period was between 2010 and 2015. Three years before the reviewed prudential guidelines for banks of 2013 came into effect and three years after. To analyze how the two variables relate, the study applied Chi square test of independence. On each of the ratios, the test was done which showed that no relationship exist between performance of banks and regulations.

5.4 Recommendations for Policy and Practice

The findings established that capital adequacy had a positive substantial impact on performance of Kenyan banks. Thus the recommendations for policy change include: Kenyan banks should make more investments in capital adequacy since this will improve performance of the banks. The Kenyan Government through the CBK should formulate policies that create a favorable environment for banks to operate and increase capital adequacy as this will promote the country's economic growth.

The study established a negative substantial influence of asset quality on performance of banks. Thus, the study findings were that asset quality does significantly affect financial performance. It is recommended that the policy makers should prioritize asset quality when crafting policies on performance. It can also be recommended to financial institutions, and their boards that credit risk should be considered when carrying out strategic management practices to boost profitability. Thus, it is necessary to adopt sufficient measures by managers of these banks to raise their performance by reducing the level of NPLs in their books. Kenyan banks should work on increasing their asset quality by undertaking measures such as stringent vetting of customers and other controls.

The study found a positive relation between performance bank size. It hence recommends that banks' management and directors should concentrate on expanding their asset base by instituting policies that would enlarge the banks' assets since this will eventually directly impact performance of the bank. From the findings of the study, banks with bigger asset base are predicted to have better performance better than compared to smaller banks hence banks should grow their asset base.

5.5 Limitations of the Study

The research period was five years 2015-2019. It cannot therefore be ascertained that the findings will hold for an extended study period. Additionally, it is not certain that similar findings will be established beyond 2019. A longer period would be more reliable since it will consider major events excluded from this study.

One of these study limitations is data quality. It cannot be ascertained from the investigation whether findings show accurate facts from the situation. An assumption is made that the data is accurate. The measures used may change from a year to the next based on current conditions. The research used secondary data, which was in the public domain had already been obtained, unlike the first-hand information associated with primary data. The study considered selected determinants and not every factor that determines performance of Kenyan banks primarily due to unavailable data.

For analyzing the data, the multiple linear regression model was used. Because of the limitations of the model like erroneous and misleading results when performance changes, it is impossible for the researcher to generalize the findings with certainty. With the addition of more data in the model, the expected relation between the variables may fail to hold.

5.6 Suggestions for Further Research

The focus of the study was on financial regulations impact on financial performance of Kenyan banks which placed reliance on secondary data. A study in which more reliance is placed on primary data i.e. obtained by in depth questionnaires and interviews of all the 42 banks is recommended to compliment this study.

The study did not exhaust all the independent variables influencing performance and a recommendation is given that more studies be carried out to constitute other variables

for instance management financial performance, industry practices, growth opportunities, political stability and other macroeconomic variables. Determining the impact of each variable on performance shall enable the policy makers to understand the tools that can be used to control financial performance

The focus of the study was on the last five years because it consisted of recent data that was available. Future studies may use a longer study period e.g. from 2000 to date which can be useful in confirming or rejecting these findings. The study limited itself by focusing on financial institutions. The study's recommendations are that additional studies be carried out on other Kenyan financial companies. Finally, as a result of regression models' limitations, other models including the Vector Error Correction Model (VECM) may be used in explaining the various relationships among variables.

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APPENDICES

Appendix I: List of Commercial Banks in Kenya

1. ABC Bank (Kenya)
2. Bank of Africa
3. Bank of Baroda
4. Bank of India
5. Barclays Bank of Kenya
6. Chase Bank Kenya (In Receivership)
7. Citibank
8. Commercial Bank of Africa
9. Consolidated Bank of Kenya
10. Cooperative Bank of Kenya
11. Credit Bank
12. Development Bank of Kenya
13. Diamond Trust Bank
14. Dubai Islamic Bank
15. Ecobank Kenya
16. Equity Bank
17. Family Bank
18. First Community Bank
19. Guaranty Trust Bank Kenya
20. Guardian Bank
21. Gulf African Bank
22. Habib Bank AG Zurich
23. Housing Finance Company of Kenya
24. I&M Bank
25. Imperial Bank Kenya (In receivership)
26. Jamii Bora Bank
27. Kenya Commercial Bank
28. Mayfair Bank
29. Middle East Bank Kenya
30. National Bank of Kenya
31. NIC Bank

32. Oriental Commercial Bank
33. Paramount Universal Bank
34. Prime Bank (Kenya)
35. SBM Bank Kenya Limited
36. Sidian Bank
37. Spire Bank
38. Stanbic Bank Kenya
39. Standard Chartered Kenya
40. Trans National Bank Kenya
41. United Bank for Africa
42. Victoria Commercial Bank

Source: CBK (2020)

Appendix II: Research Data

Bank	Year	ROA	Bank size	Bank efficiency	Liquidity	Capital adequacy	Asset quality	Management efficiency
ABC Bank	2015	0.008	16.934	1.077	0.054	0.165	0.143	0.075
	2016	0.003	16.945	1.007	0.066	0.153	0.157	0.074
	2017	0.006	17.058	0.931	0.099	0.156	0.183	0.070
	2018	0.000	17.145	0.885	0.063	0.184	0.199	0.069
	2019	0.002	17.196	0.925	0.075	0.154	0.149	0.063
BOA	2015	(0.015)	18.054	0.860	0.086	0.164	0.232	0.052
	2016	0.000	17.841	1.014	0.114	0.162	0.261	0.096
	2017	0.001	17.808	0.963	0.095	0.158	0.282	0.063
	2018	0.004	17.709	0.801	0.202	0.160	0.338	0.059
	2019	(0.046)	17.600	0.525	0.210	0.108	0.414	0.054
Bank of Baroda	2015	0.030	18.038	0.666	0.047	1.962	0.075	0.059
	2016	0.036	18.233	0.711	0.049	0.305	0.085	0.051
	2017	0.041	18.381	0.724	0.045	0.323	0.059	0.061
	2018	0.032	18.628	0.518	0.052	0.347	0.088	0.056
	2019	0.029	18.781	0.517	0.055	0.327	0.083	0.054
Barclays Bank	2015	0.035	19.300	0.987	0.075	0.184	0.042	0.122
	2016	0.028	19.375	1.035	0.052	0.179	0.052	0.122
	2017	0.026	19.420	0.991	0.060	0.180	0.056	0.111
	2018	0.023	19.600	0.946	0.072	0.164	0.061	0.097
	2019	0.020	19.740	0.911	0.077	0.167	0.056	0.091

Bank	Year	ROA	Bank size	Bank efficiency	Liquidity	Capital adequacy	Asset quality	Management efficiency
Bank of India	2015	0.026	17.557	0.867	0.036	0.423	0.020	0.048
	2016	0.034	17.683	0.877	0.034	0.457	0.014	0.058
	2017	0.037	17.852	0.819	0.039	0.540	0.021	0.059
	2018	0.031	17.954	0.588	0.034	0.439	0.071	0.054
	2019	0.037	17.951	0.403	0.043	0.484	0.094	0.056
Citibank	2015	0.039	18.295	0.566	0.111	0.283	0.058	0.099
	2016	0.033	18.453	0.574	0.067	0.264	0.019	0.087
	2017	0.040	18.403	0.707	0.084	0.256	0.037	0.097
	2018	0.037	18.266	0.629	0.086	0.276	0.016	0.107
	2019	0.030	18.386	0.549	0.122	0.272	0.026	0.097
Commercial Bank of Africa	2015	0.017	19.189	0.746	0.081	0.179	0.106	0.068
	2016	0.029	19.251	0.753	0.134	0.184	0.075	0.087
	2017	0.023	19.320	0.693	0.095	0.173	0.083	0.082
	2018	0.023	19.317	0.722	0.075	0.157	0.080	0.086
Consolidated bank	2015	0.003	16.464	1.018	0.054	0.094	0.055	0.143
	2016	(0.015)	16.449	1.034	0.047	0.079	0.118	0.103
	2017	(0.025)	16.415	1.018	0.064	0.051	0.153	0.095
	2018	(0.042)	16.372	1.024	0.071	0.028	0.153	0.109
	2019							

Bank	Year	ROA	Bank size	Bank efficiency	Liquidity	Capital adequacy	Asset quality	Management efficiency
		(0.045)	16.289	0.882	0.076	0.135	0.257	0.104
Credit bank	2015	(0.006)	16.146	1.029	0.025	0.155	0.064	0.079
	2016	0.009	16.320	0.970	0.025	0.228	0.072	0.101
	2017	0.009	16.490	0.973	0.020	0.148	0.075	0.093
	2018	0.014	16.701	1.080	0.023	0.145	0.072	0.096
	2019	0.010	16.891	0.997	0.018	0.150	0.087	0.083
Co-operative bank of Kenya	2015	0.034	19.652	0.902	0.086	2.126	0.034	0.106
	2016	0.036	19.679	1.109	0.073	0.228	0.039	0.120
	2017	0.029	19.774	1.098	0.063	0.227	0.062	0.108
	2018	0.031	19.841	0.908	0.079	0.162	0.101	0.106
	2019	0.031	19.940	0.908	0.064	0.151	0.098	0.106
	2016	0.004	16.613	1.689	0.005	0.251	0.260	0.037
	2017	0.002	16.607	1.614	0.004	0.236	0.210	0.031
	2018	0.007	16.545	1.630	0.008	0.232	0.298	0.035
	2019	0.070	16.547	1.897	0.024	0.315	0.369	0.101
Diamond Trust Bank	2015	0.024	19.420	1.018	0.016	0.146	0.024	0.068
	2016	0.024	19.609	0.893	0.018	0.185	0.032	0.065
	2017	0.019	19.711	0.837	0.021	0.190	0.067	0.059
	2018	0.019	19.750	0.784	0.021	0.211	0.063	0.062
	2019							

Bank	Year	ROA	Bank size	Bank efficiency	Liquidity	Capital adequacy	Asset quality	Management efficiency
		0.019	19.772	0.809	0.021	0.209	0.068	0.064
	2017	(0.230)	14.775	0.154	0.042	0.701	38.554	0.005
	2018	(0.119)	15.474	0.569	0.099	0.299	0.004	0.026
	2019	(0.064)	16.011	0.778	0.126	0.149	0.010	0.025
Ecobank	2015	0.002	17.775	0.939	0.068	0.250	0.062	0.058
	2016	(0.043)	17.668	0.770	0.048	0.194	0.163	0.027
	2017	(0.021)	17.794	0.432	0.085	0.160	0.377	0.055
	2018	0.004	17.813	0.354	0.074	0.166	0.174	0.051
	2019	0.002	18.138	0.417	0.030	0.162	0.145	0.040
Equity Bank	2015	0.040	19.875	0.985	0.081	0.202	0.027	0.111
	2016	0.035	19.976	0.889	0.049	0.197	0.063	0.106
	2017	0.036	20.078	0.843	0.051	0.204	0.055	0.091
	2018	0.035	20.167	0.794	0.042	0.159	0.071	0.086
	2019	0.036	20.328	0.845	0.071	0.198	0.087	0.082
Family bank	2015	0.024	18.213	0.735	0.076	0.144	0.037	0.113
	2016	0.005	18.057	1.272	0.079	0.208	0.120	0.129
	2017	(0.014)	18.052	0.953	0.082	0.199	0.192	0.094
	2018	0.004	18.020	0.970	0.094	0.195	0.162	0.101
	2019	0.012	18.183	0.935	0.088	0.187	0.141	0.097
First Community Bank	2015	(0.001)	16.494	0.907	0.168	0.115	0.235	0.092

Bank	Year	ROA	Bank size	Bank efficiency	Liquidity	Capital adequacy	Asset quality	Management efficiency
	2016	(0.004)	16.521	0.908	0.149	0.140	0.320	0.086
	2017	0.009	16.670	0.703	0.134	0.153	0.408	0.084
	2018	(0.012)	16.699	0.652	0.127	0.091	0.488	0.066
	2019	0.010	16.747	0.662	0.168	0.081	0.415	0.064
Guaranty Trust Bank	2015	0.009	17.528	0.825	0.079	0.265	0.092	0.052
	2016	0.013	17.286	0.799	0.227	0.255	0.111	0.069
	2017	0.007	17.277	0.801	0.196	0.239	0.109	0.059
	2018	0.002	17.452	0.743	0.048	0.260	0.147	0.046
	2019	0.020	17.186	0.726	0.053	0.243	0.109	0.063
Guardian Bank	2015	0.016	16.497	0.860	0.090	0.176	0.030	0.081
	2016	0.016	16.504	0.847	0.104	0.190	0.017	0.084
	2017	0.010	16.576	0.821	0.078	0.202	0.045	0.046
	2018	0.014	16.600	0.799	0.086	0.227	0.076	0.031
	2019	0.011	16.612	0.810	0.096	0.222	0.069	0.025
Gulf African Bank	2015	0.029	17.023	0.901	0.089	0.158	0.084	0.115
	2016	0.018	17.117	0.815	0.128	0.187	0.092	0.090
	2017	0.005	17.260	0.793	0.109	0.162	0.093	0.084
	2018	0.004	17.322	0.893	0.087	0.187	0.106	0.089
	2019	0.005	17.374	0.841	0.064	0.171	0.153	0.077
Habib Bank	2015	0.029	16.141	0.710	0.053	0.321	0.079	0.081

Bank	Year	ROA	Bank size	Bank efficiency	Liquidity	Capital adequacy	Asset quality	Management efficiency
Ltd								
	2016	0.024	16.342	0.598	0.067	0.391	0.187	0.067
	2018	0.011	16.885	0.832	0.032	0.246	0.074	0.050
	2019	0.010	17.027	0.857	0.030	0.273	0.092	0.048
Housing finance Company ltd	2015	0.017	18.087	1.397	0.000	0.181	0.044	0.061
	2016	0.013	18.091	1.527	0.070	0.177	0.069	0.056
	2017	0.002	18.028	1.432	0.060	0.170	0.108	0.055
	2018	(0.010)	17.919	1.315	0.046	0.153	0.249	0.045
	2019	(0.002)	17.849	1.097	0.050	0.146	0.236	0.049
I&M Bank	2015	0.037	19.072	1.094	0.052	0.202	0.025	0.075
	2016	0.037	19.165	1.033	0.053	0.182	0.029	0.077
	2017	0.030	19.297	0.996	0.049	0.186	0.087	0.069
	2018	0.026	19.332	0.867	0.048	0.179	0.108	0.072
	2019	0.033	19.429	0.857	0.044	0.216	0.098	0.068
Jamii Bora Bank Ltd	2015	0.001	16.636	1.023	0.065	0.163	0.052	0.031
	2016	(0.011)	16.574	1.252	0.044	0.201	0.172	0.030
	2017	(0.037)	16.371	1.642	0.013	0.193	0.133	0.037
KCB Bank	2015	0.035	20.140	0.924	0.174	0.154	0.045	0.102
	2016	0.033	20.204	0.957	0.049	0.180	0.071	0.098
	2017							

Bank	Year	ROA	Bank size	Bank efficiency	Liquidity	Capital adequacy	Asset quality	Management efficiency
		0.030	20.287	0.931	0.045	0.166	0.077	0.094
	2018	0.034	20.387	0.938	0.059	0.195	0.063	0.088
	2019	0.028	20.616	0.858	0.068	0.190	0.102	0.081
	2016	(0.013)	15.471	0.975	0.058	0.393	0.159	0.051
	2017	(0.005)	15.449	0.785	0.158	0.571	0.181	0.051
	2018	0.000	15.495	0.703	0.066	0.449	0.382	0.061
	2019	0.000	15.952	0.933	0.062	0.312	0.137	0.062
	2016	0.003	16.110	1.043	0.080	0.387	0.082	0.074
	2017	0.009	16.174	1.062	0.092	0.332	0.072	0.074
	2018	0.008	16.168	1.097	0.110	0.309	0.094	0.067
	2019	(0.002)	16.333	0.826	0.086	0.344	0.193	0.051
National Bank of Kenya	2015	(0.009)	18.647	0.710	0.131	0.140	0.112	0.102
	2016	0.001	18.535	0.670	0.076	0.071	0.175	0.094
	2017	0.007	18.515	0.630	0.068	0.054	0.300	0.083
	2018	(0.001)	18.559	0.553	0.053	0.037	0.391	0.071
	2019	(0.008)	18.534	0.610	0.113	0.115	0.356	0.089
NIC Plc bank	2015	0.027	18.926	1.135	0.054	0.206	0.091	0.073
	2016	0.026	18.948	1.133	0.043	0.230	0.113	0.073
	2017	0.020	19.144	0.959	0.046	0.223	0.109	0.058
	2018	0.020	19.155	0.913	0.057	0.187	0.122	0.061
Para	2015							

Bank	Year	ROA	Bank size	Bank efficiency	Liquidity	Capital adequacy	Asset quality	Management efficiency
mount Bank Ltd		0.015	16.169	0.852	0.096	0.241	0.052	0.049
	2016	0.011	16.059	0.891	0.081	0.274	0.083	0.051
	2017	0.012	16.071	0.866	0.115	0.295	0.106	0.050
	2018	0.024	16.107	0.800	0.125	0.285	0.132	0.049
	2019	0.009	16.161	0.854	0.087	0.245	0.121	0.045
Prime Bank	2015	0.031	17.990	0.932	0.057	0.173	0.017	0.066
	2016	0.029	17.995	0.930	0.041	0.222	0.036	0.070
	2017	0.029	18.172	0.790	0.061	0.225	0.049	0.059
	2018	0.023	18.422	0.620	0.088	0.373	0.061	0.046
	2019	0.024	18.505	0.563	0.053	0.414	0.102	0.050
SBM Bank	2015	(0.005)	18.798	9.090	0.080	0.151	0.102	0.060
	2016	(0.192)	16.087	0.925	0.031	(0.128)	0.883	0.071
	2017	(0.029)	16.261	0.735	0.088	0.164	0.729	0.032
	2018	0.019	18.073	0.337	0.111	0.243	1.253	0.068
	2019	0.012	18.099	0.454	0.059	0.231	0.852	0.087
Sidian Bank	2015	0.019	16.766	1.048	0.156	0.247	0.128	0.120
	2016	0.001	16.854	1.062	0.149	0.232	0.238	0.120
	2017	(0.022)	16.776	1.016	0.199	0.165	0.278	0.154
	2018	(0.015)	17.047	0.888	0.085	0.144	0.204	0.128
	2019	0.004	17.091	0.928	0.125	0.179	0.197	0.088
Stanbic	2015	0.024	19.155	1.069	0.054	0.187	0.041	0.074

Bank	Year	ROA	Bank size	Bank efficiency	Liquidity	Capital adequacy	Asset quality	Management efficiency
Bank Kenya Ltd								
	2016	0.021	19.185	1.081	0.040	0.181	0.050	0.076
	2017	0.017	19.332	0.923	0.032	0.168	0.067	0.064
	2018	0.022	19.454	0.856	0.079	0.174	0.094	0.069
	2019	0.021	19.495	0.868	0.091	0.183	0.100	0.071
Standard Chartered Bank	2015	0.027	19.271	0.771	0.061	0.212	0.101	0.107
	2016	0.036	19.339	0.778	0.062	0.209	0.083	0.109
	2017	0.024	19.471	0.697	0.047	0.185	0.090	0.093
	2018	0.028	19.469	0.640	0.071	0.195	0.117	0.097
	2019	0.027	19.526	0.668	0.068	0.177	0.095	0.095
Spire Bank Ltd	2015	(0.034)	16.488	0.864	0.054	0.175	0.333	0.055
	2016	(0.054)	16.440	0.893	0.071	0.163	0.168	0.061
	2017	(0.101)	16.227	0.735	0.031	0.127	0.427	0.049
	2018	(0.244)	16.037	0.863	0.045	(0.220)	0.560	0.094
	2019	(0.069)	15.741	1.024	0.020	(0.206)	0.711	0.165
Transnational Bank	2015	0.016	16.162	0.988	0.097	0.216	0.110	0.097
	2016	0.011	16.155	0.898	0.124	0.223	0.116	0.105
	2017	0.004	16.142	0.909	0.139	0.291	0.242	0.095
	2018	(0.007)	16.141	0.883	0.129	0.211	0.221	0.081

Bank	Year	ROA	Bank size	Bank efficiency	Liquidity	Capital adequacy	Asset quality	Management efficiency
	2019	(0.009)	16.047	0.922	0.087	0.202	0.286	0.096
UBA Kenya Bank Ltd	2015	(0.034)	15.867	0.705	0.031	0.238	0.018	0.045
	2016	0.004	15.539	1.589	0.037	0.387	0.019	0.105
	2017	0.003	15.688	1.151	0.073	0.388	0.044	0.093
	2018	0.003	16.545	0.714	0.086	0.332	0.128	0.046
	2019	0.004	16.594	0.691	0.026	0.254	0.243	0.059
Victoria Commercial Bank	2015	0.036	16.812	1.016	0.066	0.193	0.033	0.061
	2016	0.026	16.925	1.104	0.060	0.255	0.025	0.063
	2017	0.024	17.073	1.119	0.067	0.227	0.001	0.062
	2018	0.014	17.292	1.068	0.082	0.211	0.031	0.042
	2019	0.015	17.401	1.004	0.078	0.202	0.051	0.044

Appendix III: Profitability Efficiency Matrix

No	Bank	Efficiency	Profitability
1	ABC Bank	96.50%	0.41%
2	Bank of Africa	83.28%	-1.12%
3	Bank of Baroda	62.72%	3.33%
4	Bank of India	71.07%	3.32%
5	Barclays Bank	97.40%	2.63%
6	Citibank	60.48%	3.58%
7	Commercial Bank of Africa	72.84%	2.28%
8	Consolidated bank	99.49%	-2.47%
9	Co-operative bank of Kenya	98.50%	3.24%
10	Credit bank	101.00%	0.72%
11	Development Bank of Kenya	170.76%	2.08%
12	Diamond Trust Bank	86.84%	2.09%
13	Dubai Bank	50.03%	-13.75%
14	Ecobank	58.26%	-1.13%
15	Equity Bank	87.14%	3.65%
16	Family bank	97.30%	0.61%
17	First Community Bank	76.65%	0.05%
18	Guaranty Trust Bank	77.90%	1.03%
19	Guardian Bank	82.72%	1.33%
20	Gulf African Bank	84.87%	1.23%
21	Habib Bank Ltd	74.93%	1.85%
22	Housing finance Company ltd	135.39%	0.39%
23	I&M Bank	96.92%	3.27%
24	Jamii Bora Bank Ltd	130.59%	-1.54%
25	KCB Bank	92.16%	3.21%
26	Middle East Bank (K) Ltd	84.89%	-0.42%
27	M-Oriental bank ltd	100.69%	0.46%
28	National Bank of Kenya	63.46%	-0.20%
29	NIC Plc bank	103.52%	2.32%
30	Paramount Bank Ltd	85.26%	1.43%
31	Prime Bank	76.71%	2.72%
32	SBM Bank	230.80%	-3.89%
33	Sidian Bank	98.86%	-0.24%
34	Spire Bank Ltd	87.56%	-10.05%
35	Stanbic Bank Kenya Ltd	95.97%	2.09%
36	Standard Chartered Bank	71.06%	2.86%
37	Transnational Bank	91.99%	0.28%
38	UBA Kenya Bank Ltd	97.00%	-0.38%
39	Victoria Commercial Bank	106.23%	2.28%
		87.56%	**1.23%**