

**EFFECT OF FIRM SIZE 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.

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

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DEDICATION

This research project is dedicated to my father Robert Tipis, mother Sophia Tipis and siblings who have always believed in my ability to achieve what I have set out to do.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
CBK	Central Bank of Kenya
GDP	Gross Domestic Product
GMM	Generalised Method of Moment
MSME	Micro, Small and Medium Enterprises
NBK	National Bank of Kenya
NPL	Non- Performing Loans
ROA	Return on Assets
ROE	Return on Equity
ROS	Return on Sales
SPSS	Statistical Package for Social Sciences
VIF	Variance Inflation Factors

ABSTRACT

Larger firms' performance is expected to be better than for smaller entities. This is due to their ability to harness market power and existence of economies of scale and scope. By attracting more customers, increasing the asset base and issuing new loans banks grow in size. As these banks grow, their performance improves and their risk diminishes (Joleski, 2017). Theoretically, it is expected that: the larger the bank, the higher the performance and the lower the risks associated with doing business. This study sought to investigate how firm size influences the financial performance of commercial banks in Kenya. The independent variable for the research was firm size measured using natural logarithm of total assets. Credit risk, liquidity and capital adequacy were the control variables while the dependent variable was financial performance measured using ROA. The study was guided by stakeholder theory, financial intermediation theory as well as behavioural theory of firm growth. Descriptive research design was utilized in this research. The 41 commercial banks in Kenya as at December 2021 served as target population. The study collected secondary data for five years (2017-2021) on an annual basis from CBK and individual banks annual reports. Descriptive, correlation as well as regression analysis were undertaken and outcomes offered in tables followed by pertinent interpretation and discussion. The research conclusions yielded a 0.604 R square value implying that 60.4% of changes in banks ROA can be described by the four variables chosen for this research. The multivariate regression analysis further revealed that individually, firm size has a positive and significant effect on ROA of banks ($\beta=0.484$, $p=0.000$). Credit risk exhibited a negative effect on ROA of banks as shown by ($\beta=-0.346$, $p=0.000$). Liquidity and capital adequacy exhibited a positive and significant influence on ROA of banks in Kenya as shown by ($\beta=0.318$, $p=0.000$) and ($\beta=0.282$, $p=0.000$) respectively. The study recommends the need for banks to grow their asset base as this will enable them to enjoy economies of scale leading to a rise in financial performance. The policy makers such as CBK should come up with policy guidelines to direct firms on ways to enhance their asset base without risking their financial performance.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

There exists a relationship between an institution's performance and its size with large firms recording higher performance compared to small (Terraza, 2015). However, small firms are agile, flexible and less bureaucratic hence able to adapt easily to the market and make a higher per-unit profit. According to Return on Assets (ROA), the financial performance of a firm is directly proportional to the firm size as bigger firms are able to harness market power compared to smaller firms (Nyanchama & Long, 2018). Size directly influences performance of firms as bigger firms enjoy economies of scale improving efficiency and maximising returns (Gautam, 2018).

This study drew support from stakeholder theory, financial intermediation theory as well as behavioural theory of firm growth. Stakeholder theory outlines the importance of all persons that interact with a firm. From the theory the action of managers is limited by the action of customers. Managers not only focus on the shareholders but also other stakeholders to grow a business. The theory provides descriptive accuracy, instrumental power and validity for understanding a business (Donaldson, 1995). The financial intermediation theory provides an understanding of how banks facilitate capital from savers to borrowers. Commercial institutions provide funds at a profit by using different rates for borrowers and savers (Joleski, 2017). Behavioural theory of firm growth suggests that firms will grow their market influence over time and will seek to improve their competitive position. This theory outlines the need for managers to expand in size, increase efficiency and better productivity (Gupta & Mahakud, 2020).

The study focused on commercial banks in Kenya. Banks facilitate payment processing as well as provide saving and borrowing facilities thereby providing cash flows in an

economy (Aloys, Mogwambo, & Otieno, 2019). Commercial banks in Kenya are classified into tiers based on the market share they control. Tier 1 banks comprises of the big banks while tier three has the least market share. Tier 1 banks are usually bigger in size when measured using total assets. When it comes to financial performance, there are instances where the small banks outperform the big banks. This therefore offered a good context to learn how the size of a firm affects its financial performance.

1.1.1 Firm Size

Firm size is the measure for market share that a given firm commands or controls (Radmond & Bonhnsa, 2002). It is the market proportion, influence and contribution in asset size, customer demographics or performance of a firm relative to the entire industry (Sritharan, 2015). Halkos and Salamouris (2004), define firm size as the measure of productivity and contribution to the market performance. This study defines firm size as the market position, rank or classification of banks as compared to a set benchmark this is as outlined by the CBK ranking system.

Firm size is an indicator of how much influence a given bank has on the overall banking sector, the position occupied by the firm in the market. Firms differ in terms of size; it is possible to find that firms with the same basic structure differ in their influence in the industry (Sohaob & Naveed, 2016). While firms with long histories tend to have large market shares measured by some variables such as assets, new entrants may offer stiff competition and overtake the traditional firms especially when it comes to innovation and customer numbers. Practices in firms with large market share are likely to influence the entire industry. An adverse outcome is absorbable by large firms but spell destruction of small firms.

There are various parameters used to measure firm size; these parameters independently or weighted aggregate parameters to obtain a single index that can rank the banks in order of size (Central Bank of Kenya, 2021). Customer deposits are a commonly used measuring parameter; this computes the individual bank's customer deposit over the entire industry deposit as a percentage. This index gives the picture of what percentage of the entire deposits is attributable to a given commercial entity (Wesean, 2014). Shareholder's fund (capital and reserves) is another key parameter used in measuring the bank size; this is a percentage of the bank shareholder's fund over the total industry shareholders' fund (Nyanchama & Long, 2018). Another key parameter used is the measure of total assets. In Kenya, CBK has developed a weighted composite index that combines bank characteristics. Under this index a bank with a weighted composite of above 5 percent considered large, between 1 percent and 4.9 percent medium; and the one with lower than 1 percent considered small (Central Bank of Kenya, 2021). The current study measured size in terms of natural logarithm of total assets.

1.1.2 Financial Performance

Almajali, Alamro and Al-Soub (2012) define financial performance as the capability of achieving set financial goals like profitability by a specific firm. Financial performance can therefore be the extent a firm has attained and even exceeded its financial benchmarks. It indicates the rate with which the firm's financial objectives are being met. In the opinion of Baba and Nasieku (2016), this performance helps in decision making of a company's stakeholders since it gives a direction of how the assets of a company are used to generate revenue. Nzuve (2016) states that, the largest determinant of the health of the bank industry is financial performance since it indicates the strengths and drawbacks facing individual banks. In addition, there is the need to learn

about this banks performance by the government and other agencies for regulation purposes.

The focus on financial performance is of importance as it majorly touches on things and practices that change financial statements and reports (Omondi & Muturi, 2013). According to Bonn (2000), performance is the main item of appraisal for external parties. Hence, the performance of a firm is often used as the gauge. A firm's performance is set on the extent at which the objectives of the firm have been achieved. Lin (2008) states that the financial performance of any given firm is stipulated internal and external objectives of that firm. Performance can be stated using various names like competitiveness, growth or even survival (Nyamita, 2014).

Various methods of evaluating financial performance are used and should be harmonized. Asset returns (ROA), equity returns (ROE), size of company, and sales return (ROS) are all factors recognized as measures of financial performance. However, among them, the most common methods of measuring financial performance are ROA and ROE. According to Mwangi and Murigu (2015) ROA evaluates the profitability of a company by utilizing the total assets of the company while ROE examines the way the equity of shareholders in the company is utilized. Baba and Nasieku (2016) claim that other metrics can be deployed to measure financial performance. Since ROA is the most established and used measure, it was used in this current research.

1.1.3 Firm Size and Financial Performance

Theoretically, it is expected that: a larger bank has a higher performance and consequently lower risks in doing business. Aladwan (2015) indicates that size improves the bargaining power and dominance which eventually results in supernormal returns. However, small firms are agile, flexible and less bureaucratic hence able to

adapt easily to the market and make a higher per-unit profit. Firm size is expected to be directly proportional to financial performance according to ROA as bigger firms are able to harness market power compared to smaller firms (Nyanchama & Long, 2018).

Firm size is thought to be important in understanding firm profitability, and several researchers have looked into the impact of firm size on profitability in the following ways: According to Terraza (2015), there exists no link whatsoever joining a firm's profitability to its size. As claimed by Gautam (2018), larger businesses benefit from economies of scale, which enables them to be more efficient. By setting prices above the competitive market price, they gain control over their manufacturers, distributors, and customers (Sarpong & Winful, 2017).

Larger firms are financially stable and mature and hence are able to generate more sales as a result of larger production capacity that will enable them to cut costs due to economies of scale (Halkos & Salamouris, 2004). Aladwan (2015) assessed the firm size of Thailand operating firms and its relationship to profitability; his results revealed that firm size was positively correlated to profitability. On the contrary, Tharu and Shrestha (2019) concluded that size has no significant impact on profitability particularly if increase in size leads to diseconomies of scale.

1.1.4 Commercial Banks in Kenya

The banking system in Kenya has come a long way from the first locally incorporated bank- the co-operative bank to 42 at the end of 2020. CBK regulates all commercial banks and these banks have to comply with various regulations as may be directed by the regulator. Like all banks worldwide, commercial banks in Kenya provide financial intermediation, facilitate payments, and account settlements. They contribute significantly to the GDP and fund MSMEs (Nyanchama & Long, 2018). Out of the 42

banks operating in Kenya by end of 2020; two were under receivership and one under liquidation.

The banking sector is composed of 1-mortgage finance company and 41 commercial banks (Central Bank of Kenya, 2021). In this period, there were 1,502 branches in the country: - with Nairobi County having the highest number at 597 branches. Distribution of branches is indicative of demographic and commercial activities in a region (Momanyi, Githui, & Omurwa, 2021). This explains why urban Counties have high numbers of branches while counties with low numbers of branches (Tana River and Mandera have 3 branches each) have low volume of commercial activities and sparsely distributed demographics.

In terms of financial performance, both small and big banks have posted differing performance. The acquisition of National Bank of Kenya by Kenya Commercial Bank to get a capital injection and allow it to survive is the latest example of how large and medium sized banks are struggling; this is in spite of NBK classification as a large bank by CBK. Financial performance and size of banks influence their ability to continue in business; however, size does not always guarantee stable performance (CBK, 2020).

1.2 Research Problem

The productivity of large firms is normally anticipated to be better than that of small firms. This can be explained by their potential to utilize market power and also because they enjoy economies of scale. By attracting more customers, increasing the asset base and issuing new loans banks grow in size. As these banks grow, their performance improves and their risk diminishes (Joleski, 2017). Theoretically, it is expected that: a larger bank has a higher performance and consequently lower risks in doing business.

Aladwan (2015) indicates that size improves the bargaining power and dominance which eventually results in supernormal returns.

In Kenya, the acquisition of National Bank of Kenya by Kenya Commercial Bank to get a capital injection and allow it to survive is the latest example of how large and medium sized banks are struggling; this is in spite of NBK classification as a large bank by CBK. The merger between NIC and CBA aimed at improving the two banks' combined performance. Small banks such as Chase bank have collapsed while their counterparts classified as large banks continue to post good financial returns. Additionally, smaller banks such as Transnational bank and Jamii bora have been acquired by investors to kick-start their operations for improved performance. Depositors have lost funds in the process, further eroding confidence in small and medium size banks (Araka, Mogwambo, & Simiyo, 2018).

Empirical research indicates that indeed bank size influences performance. Terraza (2015) concludes that bank profitability is influenced by size and no positive relation between efficiency and performance. Size significantly and positively influences profitability (Khalil & Muhammad, 2017). However, Tharu and Shrestha (2019) and Parvinn et al. (2014) found that size has no advantage on bank performance. Although these studies focused on size and performance as the primary variables, they focused on different geographical and demographic economies thus presenting a contextual gap.

Locally, Konya, Ambrose and George (2019), found that bank size positively influences performance. A measurable increase in the size of a firm results in proportional increase in performance. This however, does not explain why large banks seek to merge and why smaller banks are winding up or taken over. Ngware et al. (2020) and Teimet et al. (2019) affirms this position by obtaining results indicating that bank

assets have positive significant effects on return on assets. Although all these studies point to common positions, the definition of variables, their operationalization as well as their measurement has been different presenting a conceptual gap for the study to fill in.

Lack of consensus about the actual connection of the properties of firms that is, the firm size and its performance financially as well as the identified contextual, conceptual and methodological gaps necessitate this study in order to fill in the identified gaps. Contextually, many studies have been conducted outside Kenya with most of them focusing on developed economies. The findings obtained in such studies cannot be generalised since the social-economic behaviours of those countries differ with the Kenyan set up. Data collection techniques, operationalization of variables as well as data analysis techniques employed by different researchers led to different results. The present research analyses the gaps outlined above and sought to answer the research question; how does the size of a firm affect the financial performance of commercial banks in Kenya?

1.3 Research Objective

This research sought to determine how firm size affects financial performance of commercial banks in Kenya.

1.4 Value of the Study

This study is projected to add onto the existing knowledge and also assist in refining and comprehension of other existing theories. Specifically, some of the literature that will be discussed and analysed in this study include the stakeholder, financial intermediation and behavioural theory of firm growth theories. Empirical research will

assist in establishing how good the theories as put forth by scholars perform in a real operational environment.

The study will also aim at providing informative empirical findings to be used by the government and the regulator (CBK). Regulators in other financial sectors will gain insight into how size influences the performance of firms. This will enable them to make appropriate legislation and legal requirements for efficient management of such institutions.

The conclusions will aid investors as well as practitioners get to know the correlation between the two variables that is important in ensuring solid management team with diverse perspectives and competences streamlining operations as well as managing firm size and building confidence among corporate stakeholders, that will in turn optimize performance.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter states the basis of the theories of firm size and performance. It also looks into the previous studies, realized knowledge gaps and does the summary of the expected relationship of the study variables using a conceptual framework and hypotheses.

2.2 Theoretical Framework

This section looks into the established assumptions that underpin the study of firm size and performance. The study looks into the stakeholder theory, financial intermediation theory and also the behavioural theory of firm growth.

2.2.1 Stakeholder Theory

It was developed by Freeman (1984) and serves as the anchor theory. The theory developed due to the limitations of the Agency theory as brought forward by Jensen and Meckling (1976), in which the only relationship was that of shareholder-managers and their conflicting interests. An organization under agency theory is an enterprise that aims to maximise wealth for shareholders, where the managers and owners have conflicting objectives (Jamila & Abdelkbir, 2016). In a practical business environment there are other interested entities and their action influences the business processes. This includes suppliers, the government, competitors, employees, lobbies groups, natural environment, managers, and shareholders among others. They constitute both the internal and external forces that influence a firm. This theory is credited for being broad in outlining how firm management should be done with the interest of all stakeholders in mind. Assessment of performance should not be on the shareholder but rather the extended benefit to all stakeholders.

Critics of this theory urge that a firm that tries to achieve all stakeholders' goals is literally unmanageable (Argenti, 1993). Conflicting objectives of different stakeholder means that a decision that favours the shareholders might be in conflict with other stakeholders. Shareholders want highest returns for their equity but demand for higher pay by employees' lowers shareholders' return (Jamila & Abdelkbir, 2016). There is also the concept of ownership, stakeholders who did not take risk in investing in the firm should not benefit at the expense of equity holders. Proponents of the Agency theory mostly support this argument. Accordingly, managers should only focus on the business owners' objectives and all other stakeholders should only have a secondary or tertiary influence on the firm (Handy, 1991). Measurement of "stake" has also been an issue of contempt between scholars. The question remains how much stake is significant enough for managers to consider it influential for decision-making (Argenti, 1993).

The relevance of this theory is that it outlines the interrelatedness of players in the banking industry. Shareholders wish to have the highest financial returns and grow their firm size; however, their objectives are limited by customers' NPLs and management efficiency. With an efficient management, a lower NPL, financial performance improves. The theory further factors the actions of competitors and governments whose actions affect performance of the firm. The external environment and the activities of such an environment influence the goal setting and processes set out by the firm. Regulators and governments legislate laws and policies to guide businesses conduct and this influences the performance of regulated firms. These actions over time result in different firms having different growth path as well as different firm sizes for the same industry (Breuer, 2006).

2.2.2 Financial Intermediation Theory

It was developed by Gurley and Shaw (1960) stating that financial institutions exist to transform illiquid assets deposited by savers to liquid assets held by consumers. Financial institutions mobilize resources and efficiently allocate them in order to diversify risk (Buffie, 1984). Due to information asymmetry, entities with surplus do not know those with deficit cash flows, there is a need for an intermediary who will mobilize savings and issue borrowers with cash-flow deficits. In doing so, financial institutions improve circulation, deepening and financial inclusion thereby growing the economy (Breuer, 2006). The theory infers that financial intermediaries are active because of information asymmetry that prevents savers and investors to trade directly in an optimal manner (Bert & Van-Wensveen, 2003).

Critics argue that with the rapid changes in technology, the reduction of information asymmetry and introduction of alternative funding, the concept of financial intermediation will become useless and the theory will not hold (Bert & Van-Wensveen, 2003). The changing roles and functions of financial institutions overtime and government intervention changes the basic assumptions of the intermediary theory, which relied on transaction costs and information asymmetry (Benston & Clifford, 1975).

The theory offers the theoretical and basic function of commercial banks as financial intermediaries; they mobilize funds from savers and lend to investors at the least cost. It also links banks activities to its financial performance since by engaging in the business of intermediation banks create value for their owners. The assets held by a bank earn profit but at the same time are at risk of default or being managed inefficiently.

2.2.3 Behavioural Theory of Firm Growth

Cyert and March (1963), advanced this theory after previous theories failed to address how firms make decisions. It argues that decision makers seek multi objectives and goals resulting from internal and external comparison of achieved goal variables and target levels to determine organisation actions. According to the theory, decisions are made at two levels, the top managers provide the vision, policies and support while lower level managers implement the goals. In terms of firm growth, managers set their goals to grow in size and performance over a period of time (Giovani et al, 2012). This theory developed a process oriented theory of economic decision making that has stood the test of time. Furthermore, it is relevant both to economic theories and the theory of complex organisations (Greve, 2008).

Critics of this theory have emerged over the years Ahuja (2010), argue that the theory is too simplistic to encompass all the decisions of the firm. Further, there are competing goals and managers have to determine which goal to prioritise (Greve, 2008). The firm growth size is infinite and therefore setting a given level of performance might frustrate managers who do not attain the goals or cause laxity to those who out perform the set targets. The theory only assumes short term events and therefore cannot be used to predict long term events and growth patterns. This theory does not explain the characteristics of existing and new entrants in any industry (Aladwan, 2015).

Size growth objectivity, compounded with the desire of managers to out-perform their targets renders it appropriate to this study. As the firm size increases, performance grows over time: management then sets higher goals for achievement. By measuring asset value over time, one can be able to track how each bank has been performing and their size.

2.3 Determinants of Financial Performance

The factors that influence financial can either be external or internal to a firm. Internal factors are different depending on the different firms and thus specific for each firm therefore susceptible to internal manipulation. They include credit risk, liquidity, asset base and capital adequacy. GDP, inflation, interest and political stability are examples of external factors (Athanasoglou et al., 2005).

2.3.1 Firm Size

Firm size determines by how much legal as well as financial elements affect a bank. Amato and Burson (2007) claimed that since large companies collect cheap capital and produce huge income, bank size is closely linked to capital adequacy. The book value of the bank's total assets is usually used to determine its size. Additionally, ROA is positively associated with bank size showing that big banks accumulate economies of scale which helps them reduce the costs of operation and at the same time increase loan volumes.

Amato and Burson (2007) mentioned that a firm's size is dependent on the assets owned by the organization. It can be argued that the more the assets owned by a bank the more the investments it can make which generate bigger returns compared to smaller firms with less assets. Additionally, a larger firm can have more collateral which can be used as security for more credit facilities (Njoroge, 2014). According to Lee (2009) the assets of an entity impact profitability level of the firm from one period to another.

2.3.2 Credit Risk

This indicates the stability and asset risk of a bank. It estimates the asset quality magnitude among the characteristics that impact banks' health. The value of assets under the control of a bank is heavily dependent on credit risk, and the quality of the

assets owned by the bank heavily relies on specific risks, level of NPLs, and debtors cost to the bank. This ratio should be at the lowest level. If lending is susceptible to risk in a well-functioning bank, the indicator in this case would be the applied interest margins. A low ratio shows an insufficient risk cover by the margins (Athanasoglou et al., 2009).

A bank's assets primarily consist of a loan portfolio, current as well as fixed assets, and other investments. The quality of assets mostly improves with the age and bank size (Athanasoglou et al., 2005). Loans are the primary assets that generate income for banks. Therefore, the performance of a bank is influenced by the quality of loan portfolio. Good quality assets reduce losses arising from NPLs, and this subsequently impacts performance (Dang, 2011).

2.3.3 Liquidity

Liquidity refers to the potential or capability of a given firm where in this study we are looking at a bank to cover its short-term debts using money and other assets that are easily convertible to cash. It can therefore be said to be the capability to clear up financial demands of creditors without necessarily having to liquefy major firm (Adam & Buckle, 2013).

Enough amounts of liquid assets help banks and other firms fund their activities and also aid in investing where it is difficult to get external funds. The higher the liquidity, the easier it is for a firm settle unforeseen obligations and liabilities as they (Liargovas & Skandalis, 2008). According to Almajali et al. (2012), the liquidity of a bank can have a significant effect on the amount the bank can be able to lend to its clients. Therefore, he urged banks to increase their liquid assets and at the same time lower

their short-term liabilities. However, Jovanovic (1982) observed that this high bank liquidity may end up harming firms.

2.3.4 Capital Adequacy

Also called the capitalization ratio, the adequacy ratio shows how equity and total assets are related. It shows the ability of a bank to remain solvent by regulating risks. Berger and DeYoung (1997) in an investigation showed that capital adequacy and performance are inversely proportional. In imperfect capital markets, institutions with sufficient capital ought to reduce borrowing to back a specific asset class, hence lowering the predicted bankruptcy costs hence incur less financing costs.

A financial institution with sufficient capital implies a superior performance in its market. The results of Magweva and Marime (2016) revealed that capital holdings are positively related to bank profitability, indicating that Greek banks are in a stable financial position. Also, Amato and Burson (2007) showed a positive causality between capital contributions and profitability.

2.4 Empirical Review

Researches done from both the local level and international level have linked firm size to its observed performance and the discussion below shows the objectives, findings and methodology used in these researches.

2.4.1 Global Studies

Terraza (2015), researched on the connection allying the size of a bank and performance of European banks. The data for the 2005-2012 was collected for the sample of 1270 banks that were studied. Banks were categorised into 3 according to total assets and performance was measured by ROA. Panel data was factored in for the 3 categories of banks (large, medium and small) Generalised Methods of Movement (GMM) was

applied and the findings pointed to a notable positive relationship of size and firm performance of the banks.

Similar results were obtained by Khalil and Muhammad (2017), when investigating bank size effect on Islamic banks' performance in Pakistan. Natural logarithm of assets and ROA were used to measure size and performance respectively. Secondary data was acquired from 5 banks from 2007-2015, using the least square method, the results revealed that size significantly and positively influences profitability.

Tharu and Shrestha (2019), research findings indicate that profitability as measured by ROA, is not significantly affected by bank size as measured by Assets. This was after conducting a research on the influence of bank size in Nepal. Panel data was obtained from 8 sample banks and statistically analysed. This contradictory finding limits the conclusion of the previous research findings. A conceptual gap that this study will seek to address is the lack of agreement on the real result of bank size on financial performance.

Yami, Ajamal, and Sreejith (2021), conducted a research on the effect of public sector organisational size on knowledge management process and operational efficiency. Data was obtained from 383 completed survey questionnaires from public entities. From the results size has a positively influences management efficiency of public firms. The research notes that efficiency improved as entities transitioned from small to medium size but decreased as entities transition from medium to large size. Operational efficiency positively impacts on financial performance. This study has conceptual and contextual gap since it was carried out in a different geographical scope from the current one and that it focused on public entities and not commercial banks; these two different entities have diverse characteristics and findings in one does not generalise to the other.

Shakeel and Majeed, (2021) conducted a study on the impact of bank specific and macro-economic factors on non-performing loans in the banking sector: evidence from emerging economy. Panel secondary data was obtained for 20 banks from 2006-2018. Study variables measured included asset ratio, ROA, ROE, gross loan growth and micro economic measures. The findings indicated that operating efficiency, bank size and ROA (financial performance) are negatively related to NPLs. NPLs were the dependent variable and financial performance the independent variable. Conceptually, the study focused on how other variables influence NPLs while the current study will focus on how the other variables affect financial performance. Contextually, the study was done in an emerging economy and the findings may lack generalisation to the Kenyan economy.

2.4.2 Local Studies

Kinuthia (2015) observed the relationship of the size of commercial banks and their financial performance in Kenya. The researcher embraced a descriptive research design to determine the relationship. The population under study comprised of a sample of 35 commercial banks from which the researcher acquired sufficient data. The findings showed a direct relationship connecting profitability of banks and customer base, deposits, liabilities, number of branches, and market share. This study presents a methodological gap as it did not classify banks according to their sizes.

Mwangi (2016) tested the firm size contribution on microfinance banks profitability in Kenya. A census survey was conducted involving a total of 9 microfinance banks. This study was covered in duration between 2011 and 2015 (5 years). A regression equation was chosen to deduce the nexus between firm size and profitability. Firm size and operating efficiency were all established to carry a substantial and positive effect on profitability of microfinance institutions in Kenya. The study however has a contextual

gap as it only focused on microfinance banks which will often differ from commercial banks. In addition, the study focused on profitability measured by ROE instead of ROA which is the major focus of the present study.

Mwangi (2018) studied the effect of size on financial performance of commercial banks in Kenya. Asset values measured size while ROA and ROE were used for measuring performance. Data for 10 years (2007 to 2016) was obtained and regression analysis carried out. The results indicated that size has a direct effect on financial performance. This study is admissible to the present since it provides a study in the same geographical location as the current study and will be important to find out how the results of the two studies compare.

Aloys, Mogwambo and Otieno (2019) did a research on how NPLs affected the performance of banks in Kenya: a comparative study between two banks of different sizes. Data from two (National Bank Kenya limited and Equity Bank Kenya limited) banks were obtained from published financials from 2007 to 2016. A questionnaire was used to capture primary data. The results indicated that NPLs are negatively affected by performance and that NPLs increases as size of the bank increases. Although this study fits in the Kenyan context, the study variables were limited to NPLs and performance. In the current study, the study concepts have been expanded to accommodate bank size.

Momanyi, Githui and Omurwa, (2021) conducted a research on managerial controllable factors and profitability of Kenyan banks. Secondary data of the years from 2010-2019 was obtained and analysed where independent variables were operational efficiency, capital adequacy, branch network, bank size and liquidity whereas profitability was left to be the dependent variable. The research findings indicated that bank size and

operational efficiency statistically affected profitability. This study presents a methodological gap as it did not classify banks according to their sizes.

2.5 Summary of the Literature Review and Research Gaps

The reviews illustrated all projected connection linking firm size of financial institutions and their performance. All the major factors influencing performance have been considered. From these reviews, there exists a knowledge gap to be looked into and addressed. Nevertheless, there are also varied points and conclusions from these studies regarding the topic of firm size and performance. The differences in different findings can be attributed to the contrasting operationalization of firm size by independent researchers which then show that results are dependent on operationalization model.

Additionally, many evaluations carried out used different designs with some relying on empirical reviews to make conclusions and others utilizing existing literature to establish the relationship. The findings shown by the researchers are varying and inconclusive thus failed to establish and determine clearly the relationship between the two aspects. This highlights need for additional study in subsequent research to state exhaustively the effect of firm size on performance.

2.6 Conceptual Framework

Displayed in figure 2.1 is the anticipated relationship linking the involved variables. The predictor variable was firm size given by log of total assets. The control variables were credit risk given as NPL to total loans, liquidity given by liquid assets to total assets and capital adequacy given by core capital to risk weighted assets. The response variable was performance given by ROA.

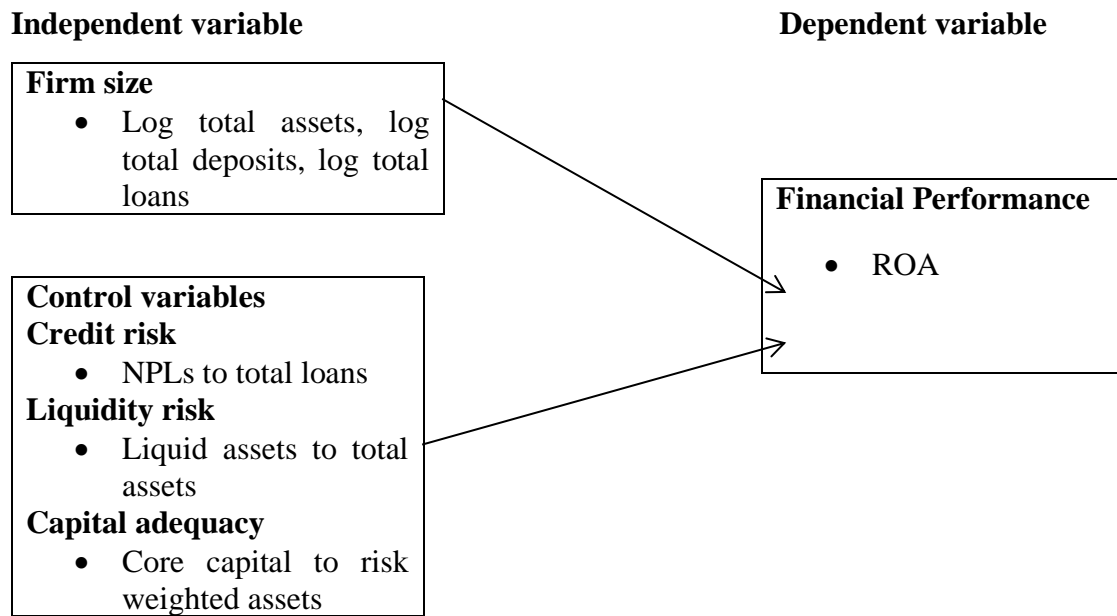


Figure 2.1: The Conceptual Model

Source: Researcher (2021)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the techniques that were employed to carry out the goals of this study that was to find out how firm size affects bank performance in Kenya. Specifically, the chapter highlighted the; design, data collection, and analysis.

3.2 Research Design

A descriptive design was embraced to look into the relationship of performance and bank size. This design was favorable because the essence of the phenomena was of key interest to the researcher (Khan, 2008). This design also sufficiently defines the interconnection between the phenomena. It also effectively and precisely represented the variables and hence offering enough responses to the study queries (Cooper & Schindler, 2008).

3.3 Population and Sample

According to Burns and Burns (2008) population describes all subjects from a pool of interest like events specified in an investigation. Population for this study comprised all the 39 out of 41 operating banks in Kenya and regulated by the CBK as at December 2021. This is because 2 commercial banks were under receivership as at end of 2021. The population list is attached in appendix I.

3.4 Data Collection

Secondary data was crucial in the current investigation. Data was extracted from CBK and published reports of banks for 5 years between 2017 and 2021. The period of 5 years was considered enough to acquire enough data for regression analysis. A data collection sheet (appendix II) was utilised as a data capture and collection tool. Data for banks that were in operation for the entire period under study was considered. Any

bank with incomplete data set (due to closure, merger or major acquisition) was eliminated from further analysis. The specific data collected included total assets, core capital, net income, total deposits, NPLs, total loans, liquid assets, and risk weighted assets.

3.5 Data Analysis

The data was examined by employing SPSS software version 24. The findings were presented quantitatively using tables and graphs. For every variable, computation of measures of central tendency, standard deviation and dispersion was done using descriptive statistics. Inferential statistics relied on correlation and regression. Correlation determined the magnitude of the relation between the study variables and a regression determined cause and effect among variables. A multivariate regression linearly determined the relation dependent and independent variables.

3.5.1 Diagnostic Tests

Several diagnostic tests were performed to discover the functionality of the model. These tests included autocorrelation, normality, homogeneity, and stationarity. Normality assumes that the surplus dependent variable is normally distributed and therefore close to the mean. The entire process was completed using the Shapiro-wilk test or Kolmogorov-Smirnov test. In case any of the variables did not have a normal distribution, adjustment was done using the logarithmic adjustment methodology. To find out if statistical properties like variance, autocorrelation and mean get modified with time, stationarity test was employed. The properties were verified by incorporating using the Levin-Lin Chu unit root test. Eventually, if the data failed to reach this property, the study utilized robust standard errors (Khan, 2008).

Autocorrelation refers to the similarity of a single time series with lagged value of other successive timings. It was measured the Durbin-Watson statistic. In case there was the breaching of the presumption, robust standard errors model was adopted. Multicollinearity occurs when independent variables have an existing accurate or almost accurate linear connection. Variance Inflation Factors (VIF) together with tolerance levels was employed. Any variable with Multicollinearity would have been eliminated. Heteroskedasticity confirms whether the variance of the errors in a regression lies among the independent variables. Breusch-Pagan test was used to test this property. However, in case the data did not match the assumed variances, robust standard errors would have been adopted (Burns & Burns, 2008).

3.5.2 Analytical Model

The following equation was applicable:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where: Y = financial performance given by net income to total assets

β_0 = y intercept of the regression equation.

$\beta_1, \beta_2, \beta_3, \beta_4$ = are the regression coefficients

X_1 = Firm size as measured by the natural logarithm of total assets

X_2 = Credit risk as measured by the ratio of NPLs to total loans

X_3 = Liquidity as measured by the ratio of liquid assets to total assets

X_4 = Capital adequacy as given by the ratio of total core capital to risk weighted assets

ε = error term

3.5.3 Tests of Significance

Parametric tests determined the general model and variable's significance. The F-test determined the model's relevance and this was achieved using ANOVA while a t-test determined the relevance of every individual variable.

CHAPTER FOUR: DATA ANALYSIS RESULTS AND FINDINGS

4.1 Introduction

This chapter presents descriptive statistics and the results and interpretations of various tests namely; test of normality, Multicollinearity, heteroskedasticity tests, autocorrelation and stationarity test. The chapter also presents the results of Pearson correlation and regression analysis.

4.2 Descriptive Statistics

This section presents the descriptive findings from the collected data. “The descriptive results include mean and standard deviation for each of the study variables. The analyzed data was obtained from CBK and individual Banks annual reports for a period of 5 years (2017 to 2021). The number of observations is 175 (35*5) as 175 Banks provided complete data for the 5 year period. The results are as shown in Table 4.1

Table 4.1: Descriptive Results

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	175	-.246	.074	.01109	.039835
Firm size	175	8.540	13.539	10.82893	1.362471
Credit risk	175	.001	.762	.17231	.137518
Liquidity	175	.002	2.865	.33524	.333243
Capital adequacy	175	-.550	1.095	.19711	.131961
Valid N (list wise)	175				

Source: Field Data (2022)

4.3 Diagnostic Tests

The most suitable linear fair estimators were sampled before undertaking linear regression (BLUE). This study employed normality, homoscedasticity, multiple-collinearity, and autocorrelation tests. The Shapiro-Wilk test was used to estimate the normality of data utilized in the analysis. The Breusch-Pagan test for homoscedasticity

was employed to decide if the independent variables employed in the study have constant variance, while to establish multi-collinearity, Variance Inflation Factors (VIF) statistics were embraced. Autocorrelation was tested using the Durbin-Watson d statistic. Stationarity test were carried out using Levin-Lin Chu unit root test.

4.3.1 Normality Test

The normality of data can be tested using a variety of methods. The most commonly utilized approaches include the Shapiro–Wilk test, Kolmogorov–Smirnov test, skewness, kurtosis, histogram, P–P Plot, box plot, Q–Q Plot, mean and standard deviation. The most extensively used normality tests are the Kolmogorov–Smirnov test and the Shapiro–Wilk test. The Shapiro–Wilk test is better for small sample sizes ($n < 50$ samples), while it can also be used on more extensive samples selections, whereas the Kolmogorov–Smirnov test is better for $n > 50$ samples. As a result, the study used the Kolmogorov–Smirnov test as the numerical method of determining normality. For both of the above tests, the null hypothesis says that the data are obtained from a normal distribution population. When P-value is below 0.05, null hypothesis is rejected and the data are said to be not normally distributed.

Table 4.2: Test for Normality

	Kolmogorov-Smirnov	P-value
ROA	0.918	0.102
Firm size	0.881	0.094
Credit risk	0.874	0.091
Liquidity	0.892	0.101
Capital adequacy	0.923	0.120

Source: Research Findings (2022)

From Table 4.2 results, all the study variables have a p value more than 0.05 and therefore were normally distributed.

4.3.2 Multicollinearity Test

Multicollinearity occurs when the independent variables in a regression model are significantly linked. Multicollinearity was assessed using the VIF and tolerance indices. When the VIF value is higher than ten and the tolerance score is less than 0.2, multicollinearity is present, and the assumption is broken. The VIF values are less than 10, indicating no problem with multicollinearity.

Table 4.3: Multicollinearity

Variable	Collinearity Statistics	
	Tolerance	VIF
Firm size	0.528	1.894
Credit risk	0.672	1.488
Liquidity	0.598	1.672
Capital adequacy	0.671	1.490

Source: Research Findings (2022)

4.3.3 Heteroskedasticity Test

The residual variance from the model must be constant and unrelated to the independent variable in linear regression models calculated using the Ordinary Least Squares (OLS) method(s). Homoskedasticity refers to constant variance, whereas heteroscedasticity refers to non-constant variance (Field, 2009). The study used the Breusch-Pagan/Cook-Weisberg test to check if the variation was heteroskedastic. The null hypothesis implies constant variance, indicating that the data is homoscedastic. The results are as shown in Table 4.4.

Table 4.4: Heteroskedasticity Results

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity		
chi2(1)	=	0.8184
Prob > chi2	=	0.6213

Source: Research Findings (2022)

Table 4.4 reveals that the null hypothesis was not rejected since the p-value was 0.6213, which was statistically significant ($p > 0.05$). As a result, the dataset had homoskedastic variances. Since the P-values of Breusch-Pagan’s test for homogeneity of variances were greater than 0.05. The test therefore confirmed homogeneity of variance. The data can therefore be used to conduct panel regression analysis.

4.3.4 Autocorrelation Test

Serial correlation, also known as autocorrelation, makes the standard errors of coefficients appear to be less than in linear panel data models, resulting in higher R-squared and erroneous hypothesis testing. Autocorrelation was tested using Durbin-Watson test. Error terms of regression variables are uncorrelated if Durbin-Watson test is equivalent to 2 (i.e. between 1 and 3). The closer the value to 2 is; the better. The results are as shown in Table 4.5.

Table 4.5: Test of Autocorrelation

Durbin Watson Statistic
2.101

Source: Research Findings (2022)

The results in Table 4.7 show that the Durbin-Watson statistic was 2.101. This shows that the error terms of regression variables are uncorrelated as the Durbin-Watson statistic was close to 2.

4.3.5 Stationarity Test

The research variables were subjected to a panel data unit-root test to establish if the data was stationary. The unit root test was Levin-Lin Chu unit root test. At a standard statistical significance level of 5%, the test was compared to their corresponding p-values. In this test, the null hypothesis is that every panel has a unit root, and the

alternative hypothesis is that at least one panel is stationary. Table 4.6 shows Levin-Lin Chu unit root test results.

Table 4.6: Levin-Lin Chu unit-root test

Levin-Lin Chu unit-root test			
Variable	Hypothesis	p value	Verdict
ROA	Ho: Panels contain unit roots	0.0000	Reject Ho
Firm size	Ho: Panels contain unit roots	0.0000	Reject Ho
Credit risk	Ho: Panels contain unit roots	0.0000	Reject Ho
Liquidity	Ho: Panels contain unit roots	0.0000	Reject Ho
Capital adequacy	Ho: Panels contain unit roots	0.0000	Reject Ho

Source: Research Findings (2022)

As demonstrated in Table 4.6, this test concludes that the data is stationary at a 5% level of statistical significance since the p-values all fall below 0.05.

4.4 Correlation Results

To determine the degree and direction of link between each predictor variable and the response variable, correlation analysis was carried out. The correlation findings in Table 4.7 display correlation nature between the research variables in relation to magnitude and direction. The correlation results disclose that firm size has a moderate positive as well as significant link with ROA of banks in Kenya ($r=0.533$) at 5 percent significance level. The results also disclose that credit risk and ROA have a negative as well as significant correlation ($r=-0.572$) at 5% significance level. The relationship between liquidity and ROA was positive and significant ($r=0.154$) at 5 % significance level. Capital adequacy had positive as well as significant relation with ROA ($r=0.352$) at 5% significance level.

Table 4.7: Correlation Results

		ROA	Firm size	Credit risk	Liquidity	Capital adequacy
ROA	Pearson Correlation	1				
	Sig. (2-tailed)					
Firm size	Pearson Correlation	.533**	1			
	Sig. (2-tailed)	.000				
Credit risk	Pearson Correlation	-.572**	-.381**	1		
	Sig. (2-tailed)	.000	.000			
Liquidity	Pearson Correlation	.154*	.165*	-.210**	1	
	Sig. (2-tailed)	.042	.029	.005		
Capital adequacy	Pearson Correlation	.352**	-.106	-.385**	.038	1
	Sig. (2-tailed)	.000	.163	.000	.621	

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

* . Correlation is significant at the 0.05 level (2-tailed).

c. Listwise N=175

Source: Research Findings (2022)

4.5 Regression Results

To determine the extent to which ROA is described by the chosen variables, regression analysis was used. In Table 4.8, the regression's findings are displayed.

Table 4.8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.777 ^a	.604	.595	.025356

a. Predictors: (Constant), Capital adequacy, Liquidity, Firm size, Credit risk

Source: Research Findings (2022)

From the conclusions as epitomized by the R^2 , the studied independent variables explained variations of 0.604 in ROA among banks in Kenya. This suggests that other factors not incorporated in this study account for 39.6% of the variability in ROA among banks in Kenya, while the four variables account for 60.4% of the variations.

Table 4.9: ANOVA Analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.167	4	.042	64.864	.000 ^b
	Residual	.109	170	.001		
	Total	.276	174			

a. Dependent Variable: ROA

b. Predictors: (Constant), Capital adequacy, Liquidity, Firm size, Credit risk

Source: Research Findings (2022)

The data had a 0.000 significance level, according to Table 4.9's ANOVA results, which suggests that the model is the best choice for drawing conclusions about the variables.

Table 4.9: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.129	.020		-6.355	.000
	Firm size	.014	.002	.484	8.832	.000
	Credit risk	-.100	.017	-.346	-5.804	.000
	Liquidity	.038	.006	.318	-6.404	.000
	Capital adequacy	.085	.017	.282	5.149	.000

a. Dependent Variable: ROA

Source: Research Findings (2022)

The coefficient of regression model was as below;

$$Y = -0.129 + 0.484X_1 - 0.346X_2 + 0.318X_3 + 0.282X_4$$

Where:

Y = ROA; X₁ = Firm size; X₂ = Credit risk; X₃=Liquidity X₄= Capital adequacy

4.6 Discussion of Research Findings

The objective of this research was to establish the effect of firm size on ROA of banks in Kenya. The study utilized a descriptive design while population was the 41 banks in Kenya. Complete data was obtained from 35 banks in Kenya and which were considered adequate for regression analysis. The research utilized secondary data which

was gotten from CBK and individual banks annual reports. The specific attribute of firm size considered was log of total assets. The control variables were credit risk, descriptive as well as inferential statistics were used to analyze the data. The results are discussed in this section.

Multivariate regression results revealed that the R square was 0.604 implying 60.4% of changes in ROA of banks are due to four variables alterations selected for this study. This means that variables not considered explain 39.6% of changes in ROA. The overall model was also statistically significant as the p value was 0.000 which is less than the significance level of 0.05. This implies that the overall model had the required goodness of fit.

The multivariate regression analysis further revealed that individually, firm size has a positive and significant effect on ROA of banks ($\beta=0.484$, $p=0.000$). Credit risk exhibited a negative effect on ROA of banks as shown by ($\beta=-0.346$, $p=0.000$). Liquidity and capital adequacy exhibited a positive and significant influence on ROA of banks in Kenya as shown by ($\beta=0.318$, $p=0.000$) and ($\beta=0.282$, $p=0.000$) respectively.

These conclusions concur with those of Terraza (2015) who researched on the connection alluding the size of a bank and performance of European banks. The data for the 2005-2012 was collected for the sample of 1270 banks that were studied. Banks were categorised into 3 according to total assets and performance was measured by ROA. Panel data was factored in for the 3 categories of banks (large, medium and small), GMM was applied and the findings pointed to a notable positive relationship of size and firm performance of the banks.

The research findings also concur with Mwangi (2016) who tested the firm size contribution on microfinance banks profitability in Kenya. A census survey was conducted involving a total of 9 microfinance banks. This study was covered in duration between 2011 and 2015 (5 years). A regression equation was chosen to deduce the nexus between firm size and profitability. Firm size and operating efficiency were all established to carry a substantial and positive effect on profitability of microfinance institutions in Kenya.

Further, the results are also in agreement with Mwangi (2018) who studied the effect of size on financial performance of commercial banks in Kenya. Asset values measured size while ROA and ROE were used for measuring performance. Data for 10 years (2007 to 2016) was obtained and regression analysis carried out. The results indicated that size has a direct effect on financial performance.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The key aim of the research was determining how firm size influences the performance of banks in Kenya. This section includes a summary of the findings from the previous chapter as well as the conclusions and limitations of the study. Additionally, it makes recommendations for potential policy measures. The chapter provides recommendations for further research

5.2 Summary

The objective of this research was to establish the effect of firm size on ROA of banks in Kenya. The study utilized a descriptive design while population was the 41 banks in Kenya. Complete data was obtained from 35 banks in Kenya and which were considered adequate for regression analysis. The research utilized secondary data which was gotten from CBK and individual banks annual reports. The specific attribute of firm size considered was log of total assets. The control variables were credit risk, liquidity and capital adequacy. Both descriptive as well as inferential statistics were used to analyze the data. The results are summarized in this section.

The correlation results disclose that firm size has a moderate positive as well as significant link with ROA of banks in Kenya at 5 percent significance level. The results also disclose that credit risk and ROA have a negative as well as significant correlation at 5% significance level. The relationship between liquidity and ROA was positive and significant at 5 % significance level. Capital adequacy had positive as well as significant relation with ROA at 5% significance level.

Multivariate regression results revealed that the R square was 0.604 implying 60.4% of changes in ROA of banks are due to four variables alterations selected for this study. This means that variables not considered explain 39.6% of changes in ROA. The overall model was also statistically significant as the p value was 0.000 which is less than the significance level of 0.05. This implies that the overall model had the required goodness of fit.

The multivariate regression analysis further revealed that individually, firm size has a positive and significant effect on ROA of banks in Kenya. Credit risk exhibited a negative effect on ROA of banks in Kenya. Liquidity and capital adequacy exhibited a positive and significant influence on ROA of banks in Kenya.

5.3 Conclusions

The study purpose of the research was to find out the association between firm size and ROA among banks in Kenya. The research outcomes depicted that bank size possessed a positive as well as significant effect on ROA which might mean that an increase in asset base of a bank leads to enhanced ROA. This can be explained by the fact that bigger banks are likely to have developed structures to monitor the internal operations of a firm leading to better ROA. Bigger banks are also likely to have better governance structure which can also explain the high ROA associated with firm size.

The findings indicated that credit risk had a negative as well as significant impact on ROA. This may imply that banks with high credit risk have low levels of ROA. Credit risk management is therefore necessary to achieve the targeted performance. The study concludes that credit risk affects ROA among banks in Kenya in a negative manner.

Additionally, the outcomes revealed that liquidity has a significant positive effect on ROA. This implies that firms with low levels of liquid assets compared to their assets end up having a lower ROA. This can be explained by the inability of illiquid firms to take advantage of investment opportunities when they arise.

The study conclusions revealed that capital adequacy had a positive as well as significant effect on ROA. This may mean that the banks that have adequate capital are able to meet their obligations when they fall due and are also able to take advantage of investment opportunities that might arise in the course of doing business and therefore high levels of ROA compared with firms that has less capital adequacy.

5.4 Recommendations for Policy and Practice

The research findings revealed that firm size has a positive and significant effect on the financial performance of a bank. The study recommends the need for banks to grow their asset base as this will enable them to enjoy economies of scale leading to a rise in financial performance. The policy makers such as CBK should come up with policy guidelines to direct firms on ways to enhance their asset base without risking their financial performance.

The research findings reveal that credit risk had a negative as well as significant impact on ROA. The research therefore commends that the administrators of banks should work on reducing the level of non-performing loans. This can be achieved by coming with effective credit risk management methods that will enable the bank distinguish between good and bad borrowers.

Further, liquidity was discovered to possess a significant and positive impact on ROA. The research therefore commends that management of banks in Kenya should ensure that they do not over commit their assets by giving excess loans as this will likely lead

to reduced ROA. The banks should come up with effective liquidity management strategies. Regulators should ensure that the banks do not lend beyond a certain set limit of their asset base.

From the study findings, capital adequacy was found to enhance ROA of banks, this study recommends that banks should keep adequate capital levels to sustain their obligations when they fall due whereas simultaneously time enjoying short term investment chances which may arise. The policy makers should set a limit of the capital adequacy level that banks should have as too much capital adequacy is also disadvantageous as it comes with opportunity costs.

5.5 Limitations of the Study

The focus was on various factors which are thought to influence financial performance of Kenyan banks. The research focused on four explanatory variables in particular. However, in certainty, there is presence of other variables probable to influence ROA of banks including internal like corporate governance attributes and management efficiency whereas others are beyond the control of the firm like interest rates as well as political stability.

In this study, a five-year period from 2017 to 2021 was selected. There is no proof that comparable results will remain the same across a longer time frame. Moreover, it is impossible to predict if the same outcomes would persist until 2021. Given that additional time contains instances of big economic transitions like recessions and booms, it is more dependable.

The quality of the data was the main restriction for this study. It is not possible to conclusively conclude that the study's findings accurately reflect the current reality. It has been presumed that the data utilized in the study are accurate. Due to the current

conditions, there has also been a great deal of incoherence in the data measurement. The study made use of secondary data rather than primary data. Due to the limited availability of data, only some of the ROA drivers have been considered.

The data analysis was performed using regression models. Because of the limitations associated with using the model, like inaccurate or erroneous findings resulting from a change in the variable value, the researcher would not be able to generalize the conclusions precisely. A regression model cannot be performed using the prior model after data is added to it.

5.6 Suggestions for Further Research

This study focused on banks in Kenya. Further studies can focus on a wide scope by covering other financial institutions in Kenya to back or contradict the results of the current study. Further, this study focused on total assets as a measure of firm size. Future studies should focus on other firm size measures that were not considered in this study.”

The current research scope was restricted to five years; more research can be done past five years to determine whether the results might persist. Thus, inherent future studies may use a wider time span, that can either support or criticize the current research conclusions. The scope of the study was additionally constrained in terms of context where banks were examined. Further studies can be extended to other financial firms to establish if they complement or contradict the current study findings. Researchers in the East African region, the rest of Africa, and other global jurisdictions can too perform the research in these jurisdictions to ascertain if the current research conclusions would persist.

The research only used secondary data; alternate research may use primary data sources such in-depth questionnaires and structured interviews given to practitioners and stakeholders. These can then affirm or criticize the results of the current research. This study used multiple linear regression and correlation analysis; future research could use other analytic techniques such factor analysis, cluster analysis, granger causality, discriminant analysis, and descriptive statistics, among others.

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APPENDICES

Appendix I: Commercial Banks in Kenya

1. ABSA Kenya Plc
2. Access Bank (Kenya) Plc
3. African Banking Corporation Ltd
4. Bank of Africa Kenya Ltd
5. Bank of Baroda Ltd
6. Bank of India
7. Citibank N.A Kenya
8. Consolidated Bank of Kenya Ltd
9. Co-operative Bank of Kenya Ltd
10. Credit Bank Ltd
11. Development Bank of Kenya Ltd
12. Diamond Trust Bank (K) ltd
13. DIB Bank Kenya Ltd
14. Ecobank Kenya Ltd
15. Equity Bank Kenya Ltd
16. Family Bank Ltd
17. First Community Bank Ltd
18. Guaranty Trust Bank (Kenya) Ltd
19. Guardian Bank Ltd
20. Gulf African Bank Ltd
21. Habib Bank A.G Zurich
22. HFC Limited
23. I&M Bank Ltd
24. KCB Bank Kenya LTD
25. Kingdom Bank Ltd
26. Mayfair CIB Bank Ltd
27. Middle East Bank Ltd
28. M-Oriental Commercial Bank Ltd
29. National Bank of Kenya Ltd
30. NCBA Bank Kenya Ltd
31. Paramount Bank Ltd
32. Prime Bank Ltd
33. SBM Bank (Kenya) Ltd
34. Sidian Bank Ltd
35. Spire Bank Ltd
36. Stanbic Bank Kenya Ltd
37. Standard Chartered Bank (K) Ltd
38. UBA Bank Kenya Ltd
39. Victoria Commercial Bank Ltd

Source: CBK (2021)”

Appendix II: Research Data

Bank ID	Year	ROA	Firm size	Credit risk	Liquidity	Capital adequacy
1	2021	0.005	10.393	0.156	0.088	0.093
2	2021	0.015	10.713	0.398	0.300	0.080
3	2021	0.035	12.022	0.124	0.715	0.198
4	2021	0.036	11.227	0.047	0.729	0.351
5	2021	0.022	12.842	0.074	0.247	0.172
6	2021	0.052	11.575	0.028	0.622	0.228
7	2021	0.014	13.105	0.139	0.169	0.156
8	2021	0.020	9.464	0.240	0.205	0.090
9	2021	0.000	10.050	0.115	0.005	0.163
10	2021	0.034	13.116	0.168	0.334	0.191
11	2021	0.001	9.754	0.337	0.041	0.386
12	2021	0.013	12.651	0.119	0.244	0.229
13	2021	0.000	11.456	0.163	0.002	0.072
14	2021	0.021	13.412	0.120	0.223	0.141
15	2021	0.015	11.414	0.149	0.149	0.162
16	2021	0.011	9.996	0.361	0.234	0.044
17	2021	0.016	10.350	0.208	0.246	0.254
18	2021	0.005	9.733	0.128	0.086	0.201
19	2021	0.015	10.536	0.176	0.194	0.155
20	2021	0.017	10.211	0.122	0.359	0.130
21	2021	0.036	12.555	0.126	0.555	0.193
22	2021	0.004	10.329	0.762	0.077	0.202
23	2021	0.031	13.539	0.123	0.311	0.173
24	2021	0.010	9.308	0.103	0.187	0.127
25	2021	0.003	11.751	0.354	0.035	0.066
26	2021	0.003	9.472	0.234	0.051	0.261
27	2021	0.009	9.339	0.171	0.175	0.189
28	2021	0.016	11.663	0.109	0.321	0.255
29	2021	0.022	12.694	0.146	0.262	0.153
30	2021	0.246	8.540	0.708	0.278	-0.550
31	2021	0.003	10.419	0.115	0.047	0.154
32	2021	0.020	12.673	0.142	0.284	0.189
33	2021	0.198	9.225	0.046	2.413	0.180
34	2021	0.003	9.839	0.407	0.053	0.291
35	2021	0.013	10.542	0.066	0.223	0.216

Bank ID	Year	ROA	Firm size	Credit risk	Liquidity	Capital adequacy
1	2020	0.006	10.264	0.177	0.101	0.107
2	2020	-	10.692	0.399	0.229	0.041
3	2020	0.038	11.873	0.084	0.705	0.193
4	2020	0.045	11.044	0.089	0.798	0.318
5	2020	0.032	12.832	0.066	0.358	0.188
6	2020	0.058	11.478	0.041	0.602	0.253
7	2020	0.020	13.050	0.125	0.354	0.177
8	2020	-	9.381	0.295	0.423	0.131
9	2020	0.014	9.978	0.101	0.169	0.169
10	2020	0.045	13.016	0.111	0.439	0.190
11	2020	0.074	9.639	0.341	0.734	0.509
12	2020	0.032	12.568	0.083	0.581	0.223
13	2020	0.003	11.230	0.198	0.080	0.109
14	2020	0.051	13.137	0.090	0.471	0.164
15	2020	0.017	11.275	0.152	0.176	0.193
16	2020	0.010	9.840	0.397	0.185	0.038
17	2020	0.017	10.278	0.185	0.267	0.311
18	2020	0.015	9.704	0.095	0.269	0.193
19	2020	0.006	10.467	0.147	0.081	0.153
20	2020	0.016	10.120	0.112	0.321	0.184
21	2020	0.047	12.446	0.123	0.648	0.193
22	2020	-	9.124	0.565	0.293	0.142
23	2020	0.049	13.421	0.074	0.458	0.170
24	2020	0.007	9.044	0.141	0.114	0.161
25	2020	-	11.627	0.415	0.098	0.072
26	2020	0.005	9.425	0.189	0.101	0.284
27	2020	0.008	9.254	0.176	0.185	0.196
28	2020	0.023	11.597	0.117	0.449	0.264
29	2020	0.042	12.619	0.139	0.440	0.156
30	2020	-	8.833	0.515	0.092	-0.310
31	2020	0.002	10.183	0.206	0.027	0.214
32	2020	0.028	12.587	0.118	0.350	0.184
33	2020	-	9.140	0.300	0.063	0.232
34	2020	0.007	9.686	0.230	0.115	0.323
35	2020	0.019	10.493	0.049	0.321	0.221
1	2019	0.006	10.211	0.227	0.093	0.137

Bank ID	Year	ROA	Firm size	Credit risk	Liquidity	Capital adequacy
2	2019	0.004	10.801	0.362	0.072	0.114
3	2019	0.042	11.720	0.090	0.750	0.197
4	2019	0.039	11.046	0.070	0.726	0.307
5	2019	0.032	12.694	0.074	0.376	0.182
6	2019	0.066	11.358	0.030	0.615	0.341
7	2019	0.034	12.356	0.078	0.421	0.007
8	2019	0.027	9.464	0.253	0.251	0.182
9	2019	0.019	9.787	0.083	0.193	0.200
10	2019	0.043	12.920	0.112	0.423	0.138
11	2019	0.011	9.637	0.287	0.316	0.309
12	2019	0.033	12.559	0.072	0.537	0.194
13	2019	0.003	10.905	0.217	0.049	0.126
14	2019	0.056	12.991	0.074	0.494	0.164
15	2019	0.006	11.111	0.173	0.062	0.220
16	2019	0.016	9.791	0.462	0.281	0.053
17	2019	0.012	10.139	0.189	0.178	0.316
18	2019	0.022	9.692	0.099	0.318	0.181
19	2019	0.009	10.414	0.109	0.098	0.163
20	2019	0.017	9.977	0.090	0.331	0.183
21	2019	0.038	12.342	0.146	0.489	0.193
22	2019	0.038	9.211	0.696	0.685	0.305
23	2019	0.050	13.340	0.069	0.499	0.185
24	2019	0.000	8.587	0.400	0.003	0.348
25	2019	0.005	11.654	0.476	0.072	0.021
26	2019	0.010	9.261	0.096	0.150	0.182
27	2019	0.015	9.199	0.173	0.315	0.194
28	2019	0.021	11.498	0.074	0.449	0.270
29	2019	0.040	12.559	0.163	0.413	0.158
30	2019	0.033	9.129	0.440	0.253	-0.251
31	2019	0.022	10.140	0.209	0.267	0.228
32	2019	0.031	12.546	0.107	0.416	0.168
33	2019	0.010	9.234	0.242	0.118	0.205
34	2019	0.002	9.638	0.128	0.034	0.360
35	2019	0.017	10.384	0.031	0.328	0.238
1	2018	0.008	10.119	0.216	0.127	0.124
2	2018	0.001	10.900	0.315	0.010	0.148

Bank ID	Year	ROA	Firm size	Credit risk	Liquidity	Capital adequacy
3	2018	0.053	11.473	0.061	0.771	0.209
4	2018	0.047	10.944	0.021	0.801	0.238
5	2018	0.037	12.512	0.071	0.375	0.205
6	2018	0.065	11.495	0.045	0.670	0.291
7	2018	0.031	12.344	0.061	0.533	0.109
8	2018	0.033	9.507	0.251	0.344	0.040
9	2018	0.012	9.579	0.086	0.131	0.226
10	2018	0.043	12.855	0.071	0.413	0.206
11	2018	0.004	9.700	0.216	0.115	0.211
12	2018	0.031	12.506	0.076	0.466	0.169
13	2018	0.027	10.887	0.386	0.488	0.126
14	2018	0.057	12.915	0.067	0.484	0.198
15	2018	0.020	11.143	0.202	0.212	0.227
16	2018	0.013	9.762	0.400	0.207	0.095
17	2018	0.009	10.227	0.103	0.129	0.317
18	2018	0.014	9.668	0.109	0.235	0.176
19	2018	0.008	10.352	0.080	0.097	0.163
20	2018	0.022	9.837	0.104	0.393	0.201
21	2018	0.041	12.122	0.139	0.454	0.222
22	2018	0.059	9.461	0.212	0.571	0.407
23	2018	0.049	13.228	0.083	0.450	0.162
24	2018	0.008	8.541	0.444	0.143	0.292
25	2018	0.007	11.608	0.406	0.081	0.035
26	2018	0.011	9.266	0.105	0.146	0.373
27	2018	0.010	9.163	0.123	0.204	0.201
28	2018	0.026	11.244	0.057	0.426	0.190
29	2018	0.033	12.561	0.126	0.359	0.158
30	2018	0.141	9.319	0.342	2.865	0.145
31	2018	0.033	9.868	0.211	0.372	0.235
32	2018	0.023	12.386	0.076	0.300	0.182
33	2018	0.005	9.239	0.217	0.056	0.237
34	2018	0.002	8.780	0.046	0.023	0.515
35	2018	0.033	10.165	0.001	0.517	0.284
1	2017	0.010	10.018	0.189	0.146	0.147
2	2017	0.000	10.933	0.288	0.004	0.162
3	2017	0.047	11.325	0.089	0.958	0.208

Bank ID	Year	ROA	Firm size	Credit risk	Liquidity	Capital adequacy
4	2017	0.046	10.775	0.014	0.794	0.321
5	2017	0.040	12.467	0.065	0.335	0.211
6	2017	0.058	11.546	0.029	0.672	0.296
7	2017	0.036	12.259	0.071	0.615	0.120
8	2017	0.020	9.541	0.198	0.193	0.079
9	2017	0.013	9.409	0.081	0.128	0.265
10	2017	0.052	12.766	0.047	0.439	0.200
11	2017	0.006	9.706	0.257	0.157	0.300
12	2017	0.036	12.405	0.039	0.526	0.175
13	2017	0.061	10.761	0.196	0.245	0.216
14	2017	0.060	12.847	0.070	0.453	0.185
15	2017	0.009	11.148	0.131	0.070	0.289
16	2017	0.003	9.613	0.323	0.032	0.116
17	2017	0.022	10.296	0.074	0.067	0.330
18	2017	0.021	9.596	0.082	0.245	0.175
19	2017	0.028	10.209	0.097	0.308	0.195
20	2017	0.037	9.743	0.029	0.524	0.247
21	2017	0.053	12.008	0.049	0.532	0.238
22	2017	0.031	9.663	0.204	0.118	0.332
23	2017	0.056	13.132	0.076	0.490	0.188
24	2017	0.019	8.563	0.297	0.375	0.294
25	2017	0.001	11.626	0.437	0.015	0.103
26	2017	0.004	9.202	0.120	0.048	0.389
27	2017	0.011	9.151	0.125	0.220	0.203
28	2017	0.036	11.087	0.046	0.522	0.198
29	2017	0.051	12.430	0.113	0.467	0.189
30	2017	0.070	9.533	0.159	1.150	0.184
31	2017	0.003	9.946	0.170	0.025	0.277
32	2017	0.034	12.230	0.059	0.396	0.237
33	2017	0.015	9.256	0.127	0.147	0.246
34	2017	0.009	8.631	0.022	0.085	1.095
35	2017	0.036	10.017	0.022	0.562	0.309

