

**THE EFFECT OF LOAN QUALITY ON THE PROFITABILITY OF
COMMERCIAL BANKS IN KENYA**

BY


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DECLARATION

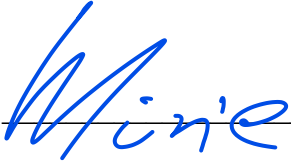
I, the undersigned, affirm that this research project is my original work and has not been previously presented in part or totality to any other learning institution for examination or award of any degree.

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DEDICATION

To my parents for their sacrifice and constantly motivating me during this research and throughout the entire course.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
CAPM	Capital Asset Pricing Model
CAR	Capital Adequacy Ratio
CBK	Central Bank of Kenya
CRBs	Credit Reference Bureaus
IIF	Institute of International Finance
IMF	International Monetary Fund
MFI s	Micro Finance institutions
NPL s	Non-performing loans
NPV	Net Present Value
OER	Operating Expense Ratio
ROA	Return on Assets
ROC	Return on Capital
ROE	Return on Equity
SPSS	Statistical Package for Social Sciences
VIF	Variance Inflation factors

ABSTRACT

The study aimed at assessing whether profitability is affected by loan quality in commercial banks in Kenya. The study adopted information asymmetry theory, capital asset pricing model and adverse selection theory. The study conducted descriptive, correlation and regression analysis on an unbalanced dataset of 39 licensed commercial banks in Kenya all the way from 2012 to 2021. The research primarily used secondary data sources of published reports from the Central Bank of Kenya. F-statistic were used in establishing the model significance. Regression results suggest that loan quality has a significant positive influence on performance of large banks. Profitability is not influenced by loan quality in medium as well as small banks. Banks size's influence on performance of all commercial banks as well as small banks is significant (+vely). Size has a positive insignificant influence on performance of medium sized as well as large commercial banks. Operational efficiency's effect on the profitability of commercial banks is negative. However, operational efficiency has an insignificant positive impact on the performance of all commercial banks as well as large ones. Medium and small banks' profitability is not affected by operational efficiency. Capital ratio's effect on profitability of all commercial banks is significant(+vely). Capital ratio has a positive significant influence on performance of large and small commercial banks but a positive insignificant effect for medium banks. The effect of deposit ratio profitability of all banks is significant (-vely). There is no effect of deposit ratio on the profitability of large commercial banks. Deposit ratio's effect on performance of medium and small banks is significant (-vely). This study findings suggest that tier 1 banks have the lowest loan quality among Kenyan commercial banks. This study advocates for commercial banks to increase their asset levels, increase their loan quality, increase their deposits, increase their capitalization as well as the operational efficiency for them to achieve higher profitability levels.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Commercial banking institutions execute a fundamental function in allocating resources in an economy by carrying out an intermediary role through channelling of funds from units that have a surplus to those that are in deficit (Ongore & Kusa, 2013). A sound financial system not only moves resources from surplus to deficit units, but also ensures that the funds are allocated to the most deserving investors that promise the best boost for the economy (Lindblom, Olsson & Willeson, 2011). Banks offer loans and advances to individuals and business organizations to enable them begin investment and fuel many development activities. This aids in their growth and consequently, economic development of a country. Chantapong (2005) states that the decision by commercial banks with respect to lending out loans (or not) to investors is dependent on various factors such as amount of deposits in a bank, the investment level, both local and foreign as well as the prevailing interest rate.

According to Rawlin et al., (2012), any business aims at making profits from its transactions and every resource acquired in order to engage in business should make money or profit for the business. In the case of commercial banks, lending money to borrowers is their primary activity, and loans are their major source of income. DeYoung and Rice (2004) in their research on how banks make money noted that the main source of a bank's profits is the interest margin earned through the intermediation process between borrowers, specifically by lending out loans. For a proper intermediation between depositors and borrowers, the banking sector has to be a profitable one. This ensures that even when faced with crisis, the financial system of the economy maintains stability (Athanasoglou, Brissimis & Delis, 2008). As financial intermediaries in the current economy, banks must be successful and a key component of their income and profit is the interest banks earn on loans.

With a high loan quality, banks earn money and have more capital to cover any losses, grant new loans as well as give savers/ depositors their money when they need it. The failure to manage bad debts because defaulters are not repaying credits leads to bankruptcy and losses among commercial banks (Abiola & Olausi, 2014). A lower loan quality impedes the capacity of banks to finance viable investments and in turn, hurts the economy of a country. It is therefore of essence to evaluate the impact that loan quality has on commercial banks' profitability in order to enable management in recognizing success and failure hints in banks and take on appropriate actions to improve how the financial institutions perform.

Three theories are critical in understanding the connection between the quality of loans and profitability of commercial banks. The first is the information asymmetry theory developed in the 1970s. It proposes that there exists a gap of information between buyers and sellers which makes markets inefficient. Information asymmetry refers to a situation where the lender or borrower has information that the other party does not which makes the borrower unable to pick proper investments while the financial institution may also be unable to screen bad borrowers due to information gap. Asymmetrical information implies that markets are inefficient and as such parties in the market do not have sufficient information to conclude a transaction by themselves. A less informed borrower may not know if the interest of the loan is high or low, sanctions for loan defaults while on the lenders end, they will have inadequate information on the borrower's credit history and the various loans that the borrowers has contracted and this leads to negative externalities. Financial intermediaries place themselves between savers and investors to alleviate this situation (Opa & Tabe-Ebob, 2020).

The second theory is Capital Asset Pricing Model (CAPM) brought forth by Sharpe (1964), established on a notion that investors must diversify their portfolios as well as hold a certain portion of the bank's market portfolio. Investors who do not have distinctive knowledge in investments are advised to hold portfolios that are well diversified (Kathali, 2019). The last

anchoring theory is the adverse selection theory which states that there are situations whereby investors have information that banks do not have and vice versa. In adverse selection, asymmetric information is exploited to the benefit of one party in a transaction process (Tumay, 2009).

The Kenyan banking sector has experienced a gradual deterioration in the quality of loans held by banks, negatively affecting the lucrativeness of commercial banks. The gross NPLs were Ksh.460 billion as of December 2021 representing about 14.1 percent of total loans. This was a growth of 5.5 percent in December 2021 from Ksh.436.1 billion at the end of year 2020. This rise was associated with a growth in the size of NPLs on one hand and a decline in the loan growth on the other. Akin to other developments in the industry, the evolution of the loan quality was heterogeneous across bank sizes. This shows the resultant deterioration of loan quality in Kenyan commercial banks. However, the banking industry recorded an increase in profitability as a result of a 6.7 percent (Ksh.31.3 billion) decrease in expenses while there was an increase of 9.3 percent of total income to Ksh.53.8 billion. The increase in profitability in the commercial banks was mainly attributed to a significant increase in income and a decrease in total expenses. A reduction in loan loss allowances by 51.4 billion led to the decrease in total expenses (Bank Supervision Annual Report, 2021).

1.1.1 Loan Quality

A loan refers to a sum of money that a borrower has to pay back with interest, usually available on a fixed basis and can be backed by some collateral or not. Loans are offered for specified amount for specific periods and form the main component of the overall assets held by banks (Mabvure et al., 2012). The bank cannot seek loan repayment before the agreed due date unless there has been default. Loan quality is defined as the likelihood that the loan a bank grants a borrower will be repaid (Tsai & Huang, 1999). Poor loan quality refers to a scenario where

borrowers are defaulting on their loans making commercial banks to charge expected loan losses against earnings made.

Loan quality is used by banks to determine the amount of loans that have the potential of being defaulted and approximate the provision to assume for the potential losses. The quality of loans granted by credit institutions is grouped into various categories, with reference to the level of the credit risk that the bank is exposed to, as stated by the Institute of International Finance (IIF). The loan categorization on the level of collectability constitutes of standard, watch, substandard, doubtful, loss (Krueger, 2002). Under the “Standard” category, the loan quality is said to be of the highest level while in the “Loss” category, the loan is totally unacceptable as it is likely to generate losses for the financial institution in the form of NPLs (Filip, 2015). A non-performing loan refers to a loan that has not been repaid as per the specified repayment period and is thus, in default. Most loans are considered non-performing if the borrower defaults payments for 90 days or as per the contract terms. Loan quality is best measured by non-performing loans (Ongore, & Kusa, 2013). The amount of NPLs in most cases reveal the quality of total loan volume, which is valuable for analysis and decision making by the management of commercial banks (Filip, 2015). NPLs can lead to the collapse of creditor banks (Basno & Dardac, 2002) and their increase if not addressed, can hurt the bank as well pose a potential crisis in the banking industry (Reinhart & Rogoff, 2010; Tangngisalu, et al., 2020). The volume and rate of NPLs to total dispersed loans are significant in typifying the overall quality of bank loans (Nkusu, 2011). The existing loan quality level enables management to come up with better strategies for their lending practices.

Loan quality management is a very important aspect both in the Kenyan and international banking sectors. The document, “core principles for effective Banking supervision”, drawn by the Basle Committee on Banking Supervision (1997) has gained tremendous acceptance by many governors of Central Banks. It contains twenty-five set of comprehensive principles with

twenty five percent of these principles addressing the relevant issues of quality of loans which make up a huge percentage of commercial banks' assets. Tsai and Huang (1997) note that the subject of quality of loans is a key concern for financial regulatory bodies in every country worldwide. In 2021, 2.9 percent, 8.1 percent and 3.2 percent of the loan book constituted of substandard, doubtful and loss loans respectively. The loss loan and doubtful categories rose by 13 percent and 6.7 percent respectively due to increased default of digital loans, increased loan loss provisions as well as changes in the external business context. This is an indication of deteriorating loan quality. Overall, NPLs were Ksh.460.0 billion as of December 2021.

1.1.2 Profitability of Commercial Banks

The ability of a business to create a return on investment based on its available resources is termed as profitability. Many organizations worldwide aim at making as much profits as possible (Niresh & Velnampy, 2014). Profits are motivators as well as rewards an entrepreneur enjoys for his or her involvement in business and they are a key source of capital in the form of retained earnings. Ayanda, Christopher and Mudashiru (2013) define profitability as a bank's ability to make profits time and again. A commercial bank's profitability indicates how competitive it is in the industry, as well as the efficiency of the bank's management. Profits allow a bank to maintain a certain risk profile as well as mitigating short –term problems.

In establishing the profitability of commercial banks, one needs to examine how a bank is making use of its equity and assets to make profits. The appropriate measures for determining the banks' profitability level are Net Interest Margin (NIM) (Naceur & Goaid, 2008), Return on Equity (ROE) (Saona, 2011) and Return on Assets (ROA) (Flamini, McDonald & Schumacher, 2009). ROA demonstrates efficiency of the bank's management in making use of and converting its assets into income. A high ROA ratio is an indicator of good performance by a firm. ROE on the other hand, measures the returns on shareholder equity. It refers to the

volume of profits that a firm earned compared to the total of the invested share capital. ROE reflects how effective the management is in using shareholder capital and as such, a higher ROE indicates higher efficiency of bank management in using shareholder capital (Diamond & Raghuram, 2012).

1.1.3 Loan Quality and Profitability of Commercial Banks

Banks enable the movement of money from the surplus to the deficit sectors of the economy, investing the money in the most promising projects. The depositors get some interest from their deposited cash while borrowers pay interest on the amount of money borrowed. The bank is essentially an intermediary with no money of its own. It earns money from interest and some non-interest income in form of payment services. This implies that even if borrowers' default on repaying the loans given, the bank still has to repay the depositors from the profit earned. Without enough funds and profits, the whole process starts to crumble which even leads to extents of banks declaring insolvency and bankruptcy since loan default affect the banks' net interest margins (Angbazo, 1997).

Yin (1999) noted that the loan quality in commercial banks not only affects the bank's financial and operating performance, but also has a huge implication of the country's financial system. The bank's management should therefore be very keen when making decisions that pertain to the loan portfolio if the financial institutions are to be profitable (Zimmerman, 1996). Loan quality is expected to be negatively related to profitability, that is the poor the loan quality, the lower the profitability of commercial banks.

1.1.4 Commercial Banks in Kenya

Part 1 of the Banking Act of Kenya Cap 488 Sec 2, defines a commercial bank as a firm which performs or plans to perform the business of banking in Kenya. As stated by the Act, a commercial bank raises money by collecting deposits from individuals, businesses and

consumers. This happens through savings, term and checkable deposits (CBK, 2014). The money collected is then lent (making loans) to other individuals and businesses, usually at the bank's own risk. Commercial banks also advance credit to borrowers through corporate bonds and debentures although the most preferred is making loans as banks can customize the terms and therefore have some form of protection against loss of credit quality. In summary, a bank's main assets are loans and bonds while its main liabilities are deposits.

Commercial banks in Kenya, as in other economies, engage in an important role of mobilizing funds (loans) to various investors and companies for investment. This unfortunately comes with a high-risk exposure for these financial institutions. Currently (as at 31st December 2021) there are 38 licensed commercial banks in Kenya that act as financial intermediaries to large companies, medium and small-sized businesses as well as individuals. Kenya also has 3 Credit Reference Bureaus (CRBs), registered by the Central Bank of Kenya whose mandate is to share information about borrowers with the commercial in order to facilitate effective allocation of funds to the most deserving unit. There were 9 large banks, 8 medium banks and 22 small banks as at end of December 2021 (CBK, 2021).

As stated in the Bank Supervision Annual Report 2021, the Kenyan banking industry experienced a rise in profitability as well as loan quality. Expressed in figures, a profit before tax as of December 2021 was at Ksh.197.0 billion while total expenses and total income were Ksh.433.1 billion and Ksh.630.2 billion respectively.

The increase in profitability in the commercial banks was mainly attributed to a significant increase in income and a decrease in total expenses. A reduction in loan loss allowances by Ksh.51.4 billion led to the decrease in total expenses. In 2021, 2.9 percent, 8.1 percent and 3.2 percent of the loan book constituted of substandard, doubtful and loss loans respectively. The loss loan and doubtful categories increased by 13 percent and 6.7 percent respectively due to

increased default of digital loans, increased loan loss provisions as well as changes in the external business context. This is an indication of deteriorating loan quality. Overall, there was an increase of 5.5 percent in NPLs from Ksh.436.1 billion to Ksh.460 billion recorded in December, 2020.

1.2 Research Problem

The quality of loans held by commercial banks is an important indicator of how profitable the bank is. Commercial banks play an intermediary role between depositors and borrowers, and in so doing earn interest from loans advanced which is their main source of money. Borrowers are expected to pay back the principal amount plus the interest on the loans given in order for the financial institutions to make profits. If this does not happen, the banks end up declaring bankruptcy as default on loans affects the banks' net interest margins (Angbazo, 1997). Therefore, the management has to be very keen when making decisions that pertain to the loan portfolio if the financial institutions are to be profitable (Zimmerman, 1996).

The loan quality in Commercial banks in Kenya has been on a downward trend owing to an increase in doubtful and loss loan categories by 6.7 percent and 13 percent respectively due to increased default of digital loans, increased loan loss provisions as well as changes in the external business context. However, Kenyan banks recorded a profitability increase in 2021 as a result of a 6.7 percent (Ksh. 31.3 billion) decrease in expenses while there was an increase of 9.3 percent of total income to Ksh. 53.8 billion.

Several researchers have carried out studies globally with respect to the concept of loan quality in terms of NPLs and its effect on commercial banks. A study by Salike and Ao (2018) found that poor asset quality, evaluated by NPLs to total loans adversely affects banks' profitability. Menamin (1999) and Hempel, Simonson, and Coleman (1994) found out that the constant factor that led to declining profitability in commercial banks was the lack of banks' loan quality

management processes in the regulation of credit value. This is supported by a study conducted by Korankaye (2014) on the reasons behind loan default where he found one of the root causes to be the lack of proper loan management and the selection of bad borrowers. Menicucci and Paolucci (2016) found that higher allowances for loan loss result in lower profitability for banks and that banks with more deposits and a high loan ratio are likely to be more profitable. Anbar and Alper (2011) found that loans that are non-performing or close to non-performing have an undesirable effect on bank profitability and recommended that banks can be boost their profitability by decreasing credit/asset ratio.

In the local Kenyan context, a few studies have assessed how commercial banks' profitability is affected by NPLs. Wanjira (2010) investigated how commercial banks can manage their NPLs better and arrived at the conclusion that commercial banks must take on better loan administration practices in order to curb the growth of NPLs while increasing profitability. Warue (2013) established that the growth in the volumes of non-performing loans was caused by factors affecting the banks internally such as poor management of credit, weak managerial and operating structure. Cheruiyot (2016) established that maintaining other factors constant, increased profitability is as a result of better quality of bank assets in the Kenyan banking sector. Abdirahman (2020) noted that poor quality loans impede the financial growth as well as the profits for commercial banks as they decrease the banks' liquidity.

While there is extensive literature on how profitability banks is affected by loan quality, there has not been an in-depth inspection of the effect of loan quality on profitability of small, medium and large commercial banks in Kenya. In addition to establishing the effect of loan quality on the profitability of commercial banks in Kenya, the research also tested the difference among the three categories. This study therefore aimed to answer the question: What is the effect of loan quality on commercial banks' profitability in Kenya?

1.3 Research Objective

The study purposed to assess the influence that loan quality has on the profitability of Kenyan commercial banks.

1.4 Value of the Study

The study, when completed, will be valuable in three different ways. The first contribution will be for commercial bank managers to recognize how important it is to manage their loan portfolios by conducting credit analysis of the borrower before lending loans and closely following up on loan repayment in order to control the occurrences of impaired loans. Findings from this study will also be beneficial to other firms in the banking industry such as MFIs, insurance firms which operate somewhat similarly to commercial banks to identify factors which may affect their profitability.

The second value of the study will be on the policy framework by assisting policy makers in Kenya such as CBK and other regulatory authorities to formulate policies which can enhance the performance of the banking sector in Kenya.

Researchers in the future can also use this study to advance their investigation in this area by reviewing the literature and identifying gaps in this study to close.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter studied literature relevant to the aim of the study, which is to research how commercial banks' profitability in Kenya is affected by loan quality. To ensure the relevance of the studies to the research problem, the literature review was based on recent, original and authoritative sources like thesis, dissertations, and peer-reviewed journals from local (Kenya) and international publications.

2.2 Theoretical Framework

A theory refers to widely-accepted scientific principles and explanations for the occurrence of certain phenomena. Theories were used in guiding researchers in analysis (Hoover, 1984). This study is grounded on three theories. These are the asymmetric information theory, Capital Asset Pricing Model and Adverse selection theory. Each of these theories were briefly discussed, including their relevance to this study's conceptualization.

2.2.1 Asymmetric Information Theory

This theory was pioneered and influenced in 1970 by George Akerlof, Michael Spence, and Joseph Stiglitz. Asymmetric information is a term given to a problem that exists between lenders and borrowers in financial markets which more often than not leads to inefficiency in the market. Information is a public commodity, which in a perfect market should be costless and available to all players in the market. However, we live in an imperfect world, information comes with a price tag and is also not available to all.

When there is information asymmetry, one party happens to have more knowledge about their financial situation. This implies that markets are inefficient and as such parties in the market do not have sufficient information to conclude a transaction by themselves. A less informed

borrower may not be able to decipher where the interest they are being charged on their loan is high or not, sanctions for loan defaults while on the lenders end, they will have inadequate information on the borrower's credit history and the various loans that the borrower has contracted and this leads to negative externalities (Cherednychenko & Meindertma, 2019).

As aforementioned, information imbalance affects both the borrowers and lenders. Ariccia (1998) states that even lenders, in this case commercial banks face the risk of loans not being repaid as the borrower may have misrepresented their risk characteristics that would have made them unable to receive the loan in the first place. Commercial banks unable to screen out such bad borrowers ultimately run into loss making in their business.

Akerlof (1970) in a paper described how asymmetric information subsequently leads to adverse selection and moral hazard issues. Since the lender may not have accurate information about the borrower, this leads to mispricing of risk and all borrowers end up being charged a normal rate of interest (Evans et al., 2000; Castro, 2013). In case the interest rate is too high, this can be offsetting to a number of good borrowers, pushing them away. The commercial banks are then left with bad debtors who may not repay their loan, making the bank's loan quality deteriorate due to a high accumulation of NPLs (Bofondi & Gobbi, 2003; Bofondi & Ropele, 2011).

This theory was relevant in this study in that the information gap that exists between the banks and borrowers can lead to inefficient markets that are not profitable. Lenders do not always know the borrower's reputation with regards to credit and therefore they face uncertainty of loan repayment which implies that the loan quality is always varying which in turn affects profitability of these institutions.

2.2.2 Capital Asset Pricing Model

The Capital Asset Pricing Model was formulated by Sharpe in 1964 and refined by Linter in 1965 and later on by Black 1972 independently. The CAPM theory is an advancement of Markowitz modern portfolio theory and diversification which stated that investors are risk averse and will always prefer the portfolio with the highest level of return for the risk involved. The Capital Asset Pricing Model is based on the notion that investors must diversify their portfolios in order to manage systematic risk which is not diversifiable. Therefore, investors - even those not so well versed in investment- need to eliminate unsystematic risk by holding well diversified market portfolios (Black, 1971).

A bank's portfolio comprises of loans and liabilities. The quality of loans is key to a bank's success and therefore, managers are responsible for coming up with well- diversified portfolios that promise the expected level of return at the lowest risk and expenses in the financial intermediation process. Such portfolios would for instance require commercial banks to adopt non-traditional methods of lending by tweaking their business model to one that generates more non-interest income. This cushions the bank from the adverse effects of a financial crisis as they focus their attention of many economic sectors instead of specializing only in a few (Chen, Shi, Wei, & Zhang, 2014).

This model is applicable in this study because it is essential in assessing of cost of equity capital for banks as well in managing their portfolios. The theory provides a good ground for estimating expected returns given the level of risk involved.

2.2.3 Adverse Selection Theory

The term "adverse selection" was first coined by insurance brokers to describe the process whereby the insured uses private information with regards to their riskiness when buying insurance. The adverse selection theory was established by Rothschild and Stiglitz in 1976.

Adverse selection occurs as a result of information asymmetry in which either the buyer or seller has private information that the other party lacks (Akerlof, 1970). One party ends up exploiting information to their benefit during the transaction process and this often leads to making wrong decision such as picking wrong investments that do not maximize the NPV (Tumay, 2009).

Adverse selection can cause commercial banks to impose lending limits for a single borrower to reduce the chances that borrowers, when given too much loan, may invest in risky projects. This way, banks reduce the risk of loan default (Stiglitz & Weiss, 1981). Due to the loan limits, both the collateral on loans and the interest rate may increase which only high-risk borrowers can afford to pay. This leads to banks having decreased profitability on loans (Agarwal, Ambrose, Chomsisengphet, & Liu, 2007).

The theory is appropriate in this study as it outlines how borrowers use their private information about the quality of the collateral for loan and investment risks while taking loans that they have a high risk of default. Due to insufficient information, banks may increase interest rates to cushion themselves from bad borrowers but this may lock out low- risk borrowers. High risk borrowers, however, may take up loans despite the borrowing terms since they may not pay back the loan anyway. This leads to higher non-performing loans and reduced profits (Bester, 1985).

2.3 Determinants of Profitability of Commercial Banks

2.3.1 Bank Size

The size of a bank in the contemporary banking literature is determined by factors such as the total loans, assets and deposits held by commercial banks. These variables enable banks to enjoy economies of scale (Athanasoglou et al., 2006). Larger size banks benefit from cost reductions and therefore efficient in their operations. Large banks also tap into markets that

smaller banks do not have access to enabling them to diversify their product offering and mitigate risks (Haron, 2004). However, larger size banks do not necessarily enjoy huge profits as they also incur management costs, agency costs and overhead bureaucratic processes which smaller banks do not (Stiroh & Rumble, 2006; Miller & Noulas, 1997; Sufian & Chong, 2008).

It is unclear what effect bank size has on profitability and therefore a regression model will be used in this study with total bank assets as the proxy for bank size in order to determine the economies of scale associated with bank size.

2.3.2 Operational Efficiency

Operational efficiency refers to efficiency and effectiveness of the management in obtaining financial resources and utilizing them to generate profits (Azam & Siddiqui, 2012). When the management is inefficient in the firm's operations, having higher expenses to income, the returns are expected to decline (Salike & Ao, 2018).

To measure efficiency, the Operating Expense Ratio (OER) is used. This assists management in formulating strategies to improve a bank's operational efficiency and therefore a good measure of efficiency. To calculate OER, the total operating expense is divided by the total revenue. A low Operating Expense Ratio is an indicator that the bank is efficient in its operations and therefore, more profitable. Operational efficiency has a significant positive influence on performance of commercial banks.

2.3.3 Capital Ratio

Capital ratio checks how bank profitability relates to its capitalization. It is computed by equity to total assets. Capital ratio is a powerful tool in assessing how strong the capital structure of a firm is in absorbing unexpected losses without running the risk of bankruptcy. Banks with a

high volume of equity require fewer external funds, and are able to acquire funds from cheaper sources which then translates to higher profitability levels.

Well capitalized banks are considered to have lower risks, higher creditworthiness compared to those with lower capital ratio whose high risk raises their cost of borrowing funds making them less profitable (Menicucci & Paolucci, 2016). Dietrich and Wanzenrid (2009) posit that banks that experience high profits are in most cases well capitalized. When a bank's loan volume is growing fast compared to the market, bank profitability increases. However, an extremely high capital ratio could imply that the bank is not operating at its full potential by rejecting investment projects that are potentially viable and therefore the bank, although experiencing low risks, may end up realizing low profits and the shareholder wealth is not maximized (Saona, 2011).

In keeping with previous works, as per the hypothesis that well capitalized banks have cheaper, less risky funding and higher loan quality, it is expected that capital ratio has a positive influence of profitability.

2.3.4 Deposit Ratio

Deposits refer to money that customers take to the bank for safekeeping. Deposit ratio is measured by deposits to total assets. When a commercial bank collects more deposits from savers, it means that it has a higher lending capacity and the bank is able to generate further profits (Menicucci & Paolucci, 2016). Therefore, the more the deposits, the more loans advanced resulting in more income; more profits. It is expected that deposit ratio has a positive impact on the profitability of commercial banks.

2.4 Empirical Literature

Menamin (1999) and Hempel et al., (1994) on the reason for banks' failure in the USA in the 1980s found out that the constant factor in their lack of success was the lack of banks' loan quality management processes in the regulation of credit value.

A study by Salike and Ao (2018) studied 145 banks in the Asian economies and found that poor asset quality, measured by NPLs to total loans, adversely affects banks' profitability. Results indicated that 1% rise in NPLs would lead to a reduction of 0.007% in the ROA of the bank. This implies when there is rising poor asset quality, it reduces bank returns because there will be more loan loss provisions or having to write off loans if the NPLs to gross loan ratio gets bigger. Moreover, the study examined the effect that inefficiency of management has on bank returns and it was established that operational inefficiency significantly erodes a bank's profits.

Anbar and Alper (2011) studied the factors that determine bank profitability using data of 10 commercial banks in Turkey and established that the size of loan portfolio and loans that the banks are following up, have an undesirable consequence on bank profitability at 5% significance level. In addition, the researchers found that bank size is statistically significant to profitability at 1% significance level with larger banks achieving higher ROE and ROA because of economies of scale. They however noted that deposit ratio has no effect on profits. They recommended that banks can be boost their profitability by decreasing credit/asset ratio.

A study by Mungure (2015) established that the effects linked to loan default in MFIs include the inability to lend money to other potentially better borrowers, reluctance to serve small scale borrowers and a lack of trust. The researcher also established that the success of MFIs is negatively affected by loan default as delinquency leads to decline in profits and high operational costs.

A study by Korankaye (2014) on the reasons behind loan default and how this menace can be controlled established that the source of loan default by the borrowers of MFIs were poor appraisal, high interest rates on loans, insufficient amount of loans, lack of proper loan management and the selection of bad borrowers. This is evidenced with results from the study showing that out of the 25 MFIs investigated, 60% of the institutions had rates of default higher than the 3% internationally acceptable rate.

Menicucci and Paolucci (2016) in their study on the factors that influence bank profitability in the European banking industry concluded that higher allowances for loan loss result in lower profitability for banks. The research sample consisted of 28 large commercial banks using a panel data multi-regression. Their findings also suggest that banks with more deposits and a high loan ratio are likely to be more profitable. However, a bank has to be very efficient in converting the growing deposits into assets that earn income for the institution. Additionally, the researchers found that size of bank has a significant positive effect on bank returns with larger banks achieving higher ROE than smaller ones. It was also inferred that well capitalized banks reap higher returns due to reduced borrowing costs and have a low risk of being insolvent

Chirwa (2003) applied the co-integration approach to assess the factors that determine profitability with respect to the Malawian banking industry. His sample consisted of 8 banks for the period 1970-1994, using ROA, ROC and ROE as measures of profitability. His findings indicate that loan to assets ratio and deposits ratio have a positively affect profits made by commercial banks both in the short term and long term. He also noted that deposits are a cheap technique of financing for financial institutions.

Warue (2013) studied the effects of factors characteristic to a bank as well as external factors on Non-Performing Loans in Kenyan commercial banks for the period 1995 to 2009 and established that the growth in the volumes of non-performing loans was mainly caused by

factors affecting the banks internally such as poor management of credit, weak managerial and operating structure.

Wanjira (2010) investigated how financial performance of banks is affected by the management of NPLs in the Kenyan setup and arrived at the conclusion that commercial banks must take on better loan administration practices such as confirming that there exists sufficient collaterals, lending only to viable investment projects that promise to generate enough revenue to repay the loan, adopting clear assessment procedures while advancing loans to borrower and ensuring that loans are secured.

Cheruiyot (2016) on the impact of asset quality on commercial banks' profitability established that maintaining other factors constant, a growth in the quality of assets leads to an increase in profitability of banks in the Kenyan banking sector. Moreover, the researcher found out that efficiency in the bank management translates to increase of profitability. It was also established that larger size banks are more profitable compared to medium and smaller sized ones due to reduced cost of capital, large market scope and higher market power.

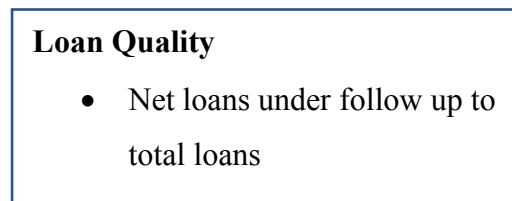
Abdirahman (2020) researched on the effect that quality of loans has on the financial performance of banks in Kenya. He found out that NPLs and the size of the bank are statistically significant at 5% and have a striking effect on how the banks under investigation performed. It can be noted from the study findings that poor quality loans impede the financial growth as well as the profits for commercial banks as they decrease the banks' liquidity which in turn limits their capacity to issue loans and advances to potentially viable businesses and households.

A specific analysis on the effect of loan quality on the profitability of the different peer groups/classifications of commercial banks is missing. This is the inspiration behind this study as the

researcher seeks to investigate the significance of loan quality on the profitability of large, medium and small commercial banks in Kenya.

2.5 Conceptual Framework

Independent Variable



Dependent Variable

Control Variables

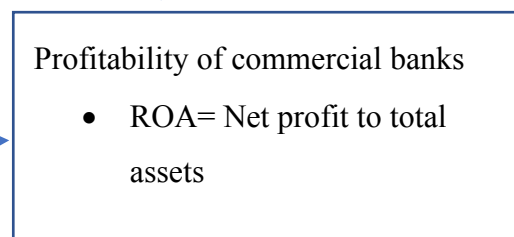
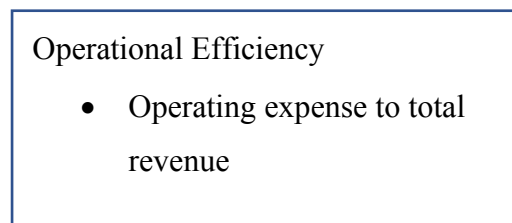
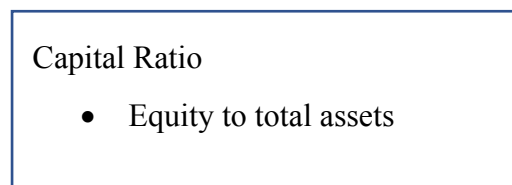
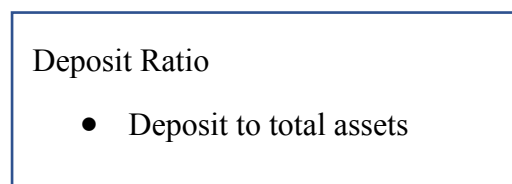
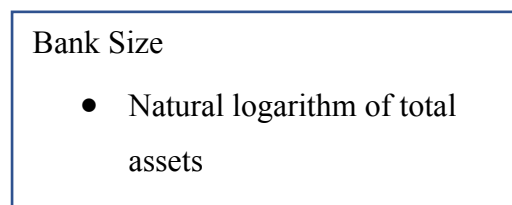


Figure 2.1: Conceptual Framework

2.6 Summary of the Literature Review

Various literature relevant to loan quality and profitability of commercial banks has been examined in this section. Summarizing results from the reviewed literature, the success of commercial banks is negatively affected by poor quality loans. Furthermore, bank management needs to be effective in loan administration through thorough assessment and selection of borrowers to ensure better returns as well as improve the overall bank performance.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section defined the research design and procedures to be used in the overall study, focusing on the approach to be used in the research, the population, sample size, data collection tools and methods, as well as data analysis.

3.2 Research Design

A good research design is one that provides maximum information with regards to the research problem as well as ensuring that the data collected and analyzed is reliable (Kothari, 2004). To realize the research objective, a descriptive technique was adopted. This design is appropriate because the study sought to describe the characteristics of certain variables and how they are correlated, estimate the percentage of the population having the specific characteristics and make forecasts.

3.3 Population

Population in research refers to the entire study units either individuals or objects with common observable characteristics that the researcher has an interest in (Mugenda & Mugenda, 2003). This research study's population included all licensed commercial banks in Kenya as at end of December, 2021 as shown in Appendix 1.

3.4 Sample Design

A census survey was done since the study population is relatively small. This involved all the 39 licensed commercial banks doing business in Kenya (CBK, 2021). The Central Bank of Kenya categorizes commercial banks into three peer groups, namely; small, medium and large. CBK (2021) defines a small bank as one with assets less than Ksh.10 billion, a medium bank

has assets of between Ksh.10 billion and Ksh.40 billion while a bank with assets of Ksh.40 billion and above is categorized as large.

3.5 Data Collection

The research primarily used secondary sources of data obtained from the Central Bank of Kenya. Published annual reports were used to extract profitability indicators for commercial banks under investigation. Data was collected for a ten-year period: 2012 to 2021.

3.6 Data Analysis

Descriptive analysis helped in analysis and presentation of statistics. Additionally, more analysis was done using mean, variance, correlation and regression/multivariate analysis to confirm that the connection between the variables is justifiable. Inferential statistics was used to analyse how the dependent variable and the independent variable are related by employing multivariate regression analysis.

For a comprehensive analysis and easy understanding of the facts, tables and figures in the presentation. The data was evaluated through descriptive methods such as variance, mean and standard deviation. Statistical package for social sciences (SPSS) V.20 software was utilized in the data analysis by use of the regression model. This software came in handy in simplifying the calculation of regression and correlation analysis and summarizing the large amount of data collected.

3.6.1. Diagnostic Tests

Multiple regression model was used to assess how loan quality relates to profitability of Kenya's commercial banks. As the researcher purposed to predict the value of the response variable (commercial banks' profitability) using a linear function of predictor variables, a number of assumptions was made. These are linearity, independence of the error terms,

unbiasness with error term having a zero mean, homoscedasticity and normality where the error term is normally distributed. Predictions based on these assumptions were the best linear unbiased predictions since they result in the least value of the squared error.

Test for multi collinearity of data was conducted using variance inflation factors (VIF) to establish if there is significant correlation with the explanatory variables. Autocorrelation test was performed using the Durbin-Watson Statistic to check whether the error terms are independent. To establish if the standard deviation of the error terms is constant or is the same, the Breusch-Pagan Cook-Weisberg Test for Homoscedasticity was used. This determined the relationship between the dependent and the independent variable, specifically the corresponding change in the dependent variable upon manipulating the dependent variable. The Shapiro-Francia test for normality checked if the error terms have a normal distribution.

The panel data underwent a Unit root test to ensure that the regression results are even more credible. The aim of conducting this test is to detect any changes in variance overtime in the variables. Fisher-type unit root was used to conduct the unit root test. Moreover, the Hausman specification test was used to check whether the study variables have a fixed effect or a random one.

The null hypothesis stated that variables had a random effect while the alternative hypothesis assumed that variables have a fixed influence. If the p-value is less than 5%, the null hypothesis was rejected and if the p-value is greater than 5% or α (0.05), the null hypothesis will be accepted.

3.6.2. Analytical Model

The Analytical model was represented by the equation below:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \epsilon$$

Where:

Y_{it} = Profitability as measured by ROA of bank i at time t

α = The constant

$\beta_1 - \beta_5$ = the regression coefficient

X_1 = Loan quality measured by Net loans under follow up to total loans

X_2 = Bank size computed as Natural log of total assets (log A)

X_3 = Capital ratio measured by ratio of equity to total assets

X_4 = Operational efficiency measured by Operating expense to total revenue

X_5 = Deposit ratio measured by deposits to total assets

ε = error term

The above regression model was used in examining the influence of loan quality on commercial banks' profitability for the entire pool of commercial banks as well as the 3 classifications of commercial banks; small, medium and large.

3.6.3 Significance Tests

Significance tests are carried out to enable the researcher determine the level of confidence or faith they would like to have in the study results. The multiple regression model and t-Statistic was employed in establishing how the independent variable; loan quality affects the dependent variable; profitability whose measure will be Return on Asset. A p-value within 0.05 will confirm that the results are statistically significant therefore rejecting the null hypothesis. In addition, the Pearson's Correlation Coefficient was applied to assess the direction and extent of the association between the study variables at 95% confidence level. Test of the effect of

loan quality on profitability across the small, medium and large size banks will be further done using one- way ANOVA (Analysis of Variance) to test if there exist significant differences across the 3 categories. F-statistic enabled in establishing the extent of the difference in the means of the categories.

CHAPTER FOUR: DATA ANALYSIS, RESULTS, AND FINDINGS

4.1 Introduction

This section presents analysis of data, interpretation along with discussion of results and findings. As the study seeks to assess whether profitability of commercial banks in Kenya is affected by of loan quality, data analysis is founded on descriptive, correlation and regression statistics outlined in this section.

4.2 Response Rate

The research involved all the 39 licensed commercial banks in Kenya as listed in Appendix I. The entire population, given that it is a small number was examined using a census approach.

4.3 Descriptive Statistics

This section sought to describe the data through descriptive statistics. These included the mean and standard deviation. The statistics are based on the entire commercial banking sector in Kenya as well as the large, medium and small banking groups within the sector.

Table 4.1: Descriptive Statistics for The Banking Sector

	Minimum	Maximum	Mean	Std. Deviation
Profitability of bank (%)	-30.25	7.40	1.1157	4.26532
Loan quality (%)	.05	76.20	16.4556	14.42373
Bank size	8.26	13.68	10.7925	1.35603
Capital ratio	-.36	.39	.1585	.06957
Operational efficiency	-17.69	12.50	.6943	1.87748
Deposit ratio	.17	.94	.7341	.10819

Table 4.1 above shows that commercial banks have an average profitability of 1.1157% indicating low profitability levels among the commercial banks. The standard deviation for profitability is at 4.265%. This shows that the profitability varied greatly across the of the commercial banks with some having high profits while others had very low profits. Loan quality has a mean of 16.456% indicating low loan quality among the banks. The standard deviation of loan quality is 14.424% indicating that the loan quality is similar across the banks. Bank size has mean of 10.762% and a standard deviation of 1.356% indicating that the assets level didn't differ much across the banks. The minimum value and maximum value with bank size at 10.762% is 8.26% and 13.68% respectively. The capital ratio amounts to an average of 0.159%, varying between -36% and 39% indicating low capitalization among the banks. Capital ratio has a standard deviation of 0.069% indicating low variation of capital ratio among the banks. Operational efficiency, one of the significant ratios for banks, has a mean of 0.694% suggesting that there is low operational efficiency among the banks. A standard deviation of 1.877% in operational efficiency shows a high variation in terms of operational efficiency. Finally, deposit ratio averages at 0.734% and a standard deviation of 0.108% indicating small difference in terms of deposits among the commercial banks.

Table 4.2: Descriptive statistics for Large Banks (Assets above Ksh.40 billion)

	Minimum	Maximum	Mean	Std. Deviation
Profitability of bank (%)	.91	7.26	4.0071	1.31840
Loan quality (%)	.05	16.85	8.7522	4.26713
Bank size	11.83	13.68	12.6505	.44160
Capital ratio	.06	.22	.1533	.03356
Operational efficiency	.29	.61	.4575	.07892
Deposit ratio	.54	.81	.7314	.05648

The descriptive statistics of large banks as in Table 4.2 above show that the profitability of large banks averages at 4.01%, less than 5% indicating low profitability levels among the large banks. Profitability has standard deviation of 1.318% among the banks. On the other hand, loan quality has a mean of 8.752%, an indication that the banks have low loan quality in their loan portfolio. There is a low variation in the loan quality among the commercial banks in Kenya with a standard deviation of 4.2671286 % for loan quality.

Bank size amounts to a mean of 12.65% indicating that the banks have a high level of assets hence large in size. The standard deviation of 0.442% shows that the size of the firms does not differ much among the banks. Capital ratio has an average of 0.153% having the greatest value of 22% and smallest value of 6%. This is an indication that the capitalization of the banks is very low as the equity ratio is less than 60%. The capital ratio standard deviation is 0.034%.

The average in operational efficiency is 0.457% varying between 29% and 61%, an indication that the large banks have low operational efficiency. A standard deviation of 0.079% indicates that the large banks do not differ too much in operational efficiency. Deposit ratio has a mean of 0.731%. This shows that the banks had very little deposits compared to the assets. The deposit ratio showed a standard deviation of 0.056% indicating that the deposit ratios did not differ much across the firms.

Table 4.3: Descriptive statistics for Medium Banks (Assets between Ksh.10 billion and Ksh.40 billion)

	Minimum	Maximum	Mean	Std. Deviation
Profitability of bank (%)	-6.13	6.59	2.2570	2.58485
Loan quality (%)	.57	69.11	16.7026	16.36471
Bank size	9.37	12.10	11.2485	.51514
Capital ratio	.05	.25	.1560	.05141
Operational efficiency	.15	2.31	.6009	.42377
Deposit ratio	.56	.91	.7638	.08601

The average profitability for medium banks is 2.257% and a standard deviation of 2.58485% over the study period, an indication that the profitability of medium banks in Kenya stands at less than 3% showing low profitability across the medium banks. Loan quality has a standard deviation of 16.36471 % and an average of 16.702590% in the study period.

Bank size mean is 11.2485% with a minimum average of 9.37% and 12.10% while the standard deviation is 0.05141%. The average of capital ratio is 0.1560% while standard deviation is 0.05141%. The average of operational efficiency amounts to 0.6009% varying between 0.15% and 2.31% and a standard deviation of 0.42377%. Finally, deposit ratio averages at 0.7638% while the standard deviation is 0.08601% in the study period.

Table 4.4: Descriptive Statistics for Small Banks (Assets below Ksh.10 billion)

	Minimum	Maximum	Mean	Std. Deviation
Profitability of bank (%)	-30.25	7.40	-.7641	4.79332
Loan quality (%)	.09	76.20	20.0736	15.32374
Bank size	8.26	11.15	9.7019	.58829
Capital ratio	-.36	.39	.1621	.08706
Operational efficiency	-17.69	12.50	.8482	2.57044
Deposit ratio	.17	.94	.7228	.13133

From the descriptive statistics, the small banks' profitability averages at -0.7641% and the standard deviation is 4.7933171% during the ten-year span. The profitability of small banks in Kenya averages at less than 5% therefore indicating low profitability levels among the small banks in Kenya. The average of loan quality is 20.0736% and a standard deviation of 15.324% for loan quality for the period of study.

Bank size mean 9.7019% averaging between 8.265% and 11.15% within the eight-year period. This shows that the firms have low levels of assets indicating small size. The standard deviation for the period is 0.588% indicating that the firms didn't differ much in terms of size. Capital ratio has mean of 0.1621%, the least and greatest values being -36% and 39% respectively and a standard deviation of 0.08706%. Operational efficiency average is 0.8482% and a standard deviation of 2.57044%. Finally, deposit ratio average is 0.7228% and a standard deviation of 0.13133% within the span of the study.

4.4 Correlation Analysis

Correlation analysis was executed to assess the association between loan quality and profitability of Kenyan commercial banks. This was based on the whole banking sector as well as the three tiers of the banks.

Table 4.5: Correlation Coefficient for Commercial Banks

		Correlations					
		Profitability of bank	Loan quality	Bank size	Capital ratio	Operational efficiency	Deposit ratio
Pearson Correlation	Profitability of bank	1.000					
	Loan quality	-.484	1.000				
	Bank size	.557	-.304	1.000			
	Capital ratio	.270	-.448	-.091	1.000		
	Operational efficiency	-.156	-.073	-.099	.244	1.000	

	Deposit ratio	.086	-.142	.091	-.302	-.135	1.000
Sig. (1-tailed)	Profitability of bank						
	Loan quality	.000					
	Bank size	.000	.000				
	Capital ratio	.000	.000	.062			
	Operational efficiency	.004	.111	.048	.000		
	Deposit ratio	.075	.009	.064	.000	.012	

Table 4.5 displays that loan quality, bank size, capital ratio and operational efficiency are significantly correlated to profitability of Kenya's commercial banks at 0.05 significance level. However, deposit ratio has an insignificant relationship with the profitability of the banks as displayed by a correlation of 0.086 at significance value 0.075.

Table 4.6: Correlation Analysis for Large banks

		Profitability of banks	Loan quality	Bank size	Capital ratio	Operational efficiency	Deposit ratio
Pearson Correlation	Profitability of bank	1.000					
	Loan quality	-.352	1.000				
	Bank size	-.068	.209	1.000			
	Capital ratio	.477	-.168	-.397	1.000		
	Operational efficiency	-.063	.014	.114	-.190	1.000	
	Deposit ratio	-.100	.337	.497	-.086	-.066	1.000
Sig. (1-tailed)	Profitability of bank						
	Loan quality	.001					
	Bank size	.286	.039				
	Capital ratio	.000	.080	.000			
	Operational efficiency	.300	.455	.171	.055		
	Deposit ratio	.202	.002	.000	.238	.290	

Table 4.6 illustrates that only loan quality and capital ratio have a significant correlate to the profitability of large commercial banks in Kenya. Loan quality has a correlation coefficient of -0.352 significance value of 0.001 implying that quality of loans has a significantly weak, negative relationship with profitability of large banks in Kenya. Additionally, bank size, operational efficiency and deposit ratio have an insignificant impact on profitability of Kenya's large banks.

Table 4.7: Correlation Analysis for Medium Banks

		Profitability of bank	Loan quality	Bank size	Capital ratio	Operational efficiency	Deposit ratio
Pearson Correlation	Profitability of bank	1.000					
	Loan quality	-.548	1.000				
	Bank size	.286	.022	1.000			
	Capital ratio	.578	-.603	-.001	1.000		
	Operational efficiency	-.831	.497	-.389	-.451	1.000	
	Deposit ratio	-.168	.231	.438	-.549	-.108	1.000
Sig. (1-tailed)	Profitability of bank						
	Loan quality	.000					
	Bank size	.011	.432				
	Capital ratio	.000	.000	.498			
	Operational efficiency	.000	.000	.001	.000		
	Deposit ratio	.095	.034	.000	.000	.199	

Table 4.7 suggests that the profitability of Kenya's medium size banks is significantly impacted by loan quality, bank size, capital ratio and operational efficiency. Loan quality has a correlation of -0.548 and a significance value of 0.000 implying that loan quality has strong, significant negative association with performance of medium banks. Bank size's effect on profitability of medium commercial banks is significant (+vely). This is shown by correlation coefficient of 0.286 and a significance of 0.011. Capital ratio has a correlation of 0.578 and a

significance value of 0.000 indicating that capital ratio has a strong, significant positive influence on profitability of medium banks. Operational efficiency has a correlation of -0.831 while the significance value is 0.000 indicating that operational efficiency has a strong, significant association with performance of medium commercial banks (-vely). However, deposit ratio exhibits a coefficient of -0.168 and significance value of 0.095 and therefore does not have a significant relationship with profitability of medium banks.

Table 4.8: Correlation Analysis for Small Banks

		Profitability of bank	Loan quality	Bank size	Capital ratio	Operational efficiency	Deposit ratio
Pearson Correlation	Profitability of bank	1.000					
	Loan quality	-.391	1.000				
	Bank size	.399	-.084	1.000			
	Capital ratio	.303	-.501	-.087	1.000		
	Operational efficiency	-.108	-.169	-.031	.286	1.000	
	Deposit ratio	.100	-.283	-.056	-.278	-.142	1.000
Sig. (1-tailed)	Profitability of bank						
	Loan quality	.000					
	Bank size	.000	.154				
	Capital ratio	.000	.000	.145			
	Operational efficiency	.095	.020	.355	.000		
	Deposit ratio	.113	.000	.247	.000	.042	

Table 4.8 shows that loan quality, banks size and capital ratio are significantly associated with the profitability of Kenya’s small commercial banks. Loan quality has a correlation coefficient of -0.391 and the significance value is 0.000. This shows that loan quality has a substantial negative relationship with profitability of small banks in Kenya. In contrast, bank size is strongly and positively significant to the profitability of medium commecial banks. This is

shown by a correlation coefficient of 0.399 and a significance of 0.000. Capital ratio has a coefficient of 0.303 and a significance of 0.000 indicating that capital ratio has a weak, significant positive relationship with profitability of small banks in Kenya. Operational efficiency and deposit ratio have an insignificant connection to profitability of small banks in Kenya.

4.5 Diagnostic Tests

Diagnostic tests were conducted prior to carrying out linear regression. This entailed multicollinearity, normality, and heteroskedasticity tests.

Table 4.9: Multicollinearity

	Collinearity Statistics	
	Tolerance	VIF
Loan quality	.679	1.473
Bank size	.839	1.192
Capital ratio	.708	1.412
Operational efficiency	.935	1.070
Deposit ratio	0.977	1.023

The VIF values as per the rules in statistics should be less than 10 for there not to be a multicollinearity problem. The findings show that the VIF statistics were less than 10 while the tolerance statistics were also less than 2. As such, the variables in this research did not exhibit any multicollinearity.

Table 4.10: Autocorrelation

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Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
4	.696 ^a	.485	.477	3.0832180	1.200

The test of autocorrelation was based on Durbin Watson test. Findings indicate a test statistic of 1.2 which is between 0 and 2 showing that the data was not autocorrelated. This implies that the variable data adopted were independent since residuals were autonomous and there was no autocorrelation.

4.6 Regression Analysis

Regression analysis was done to demonstrate how profitability of commercial banks in Kenya is influenced by quality of loans. F-statistics was used to test the overall model significance as shown by ANOVA.

4.6.1 Model Summary

Table 4.11: Model Summary for Commercial Banks

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
4	.696 ^a	.485	.477	3.0832180
a. Predictors: (Constant), X5, X4, X3, X1, X2				
b. Dependent Variable: Y				

As per the model summary on the whole sector, the predictor variables (loan quality, bank size, capital ratio, operational efficiency and deposit ratio) has a correlation (R) of 0.696 against profitability. This means that predictor variables are strongly connected with profitability of Kenya's commercial banks. The findings also show an R square of 0.485 which means that the predictor variables contributed 48.5% to the change in profitability. Loan quality, bank size,

capital ratio, operational efficiency and deposit ratio are not the major influencers of profitability in commercial banks in Kenya.

Table 4.12: Model Summary for Large Banks

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.582 ^a	.339	.289	1.1115395
a. Predictors: (Constant), X5, X4, X3, X1, X2				
b. Dependent Variable: Y				

The model summary shows that loan quality variables have a correlation (R) of 0.582 against profitability of large banks in Kenya. This suggests that loan quality variables have a strong relationship with profitability of large banks. The model summary also shows an R square of 0.339 signifying that combined, predictor variables employed in this research 33.9% to the variation in performance of large commercial banks in Kenya. This shows that loan quality, bank size, capital ratio, operational efficiency and deposit ratio are not the major factors influencing profitability of large banks in Kenya.

Table 4.13: Model Summary Medium Banks

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.879 ^a	.773	.753	1.2856799

The loan quality variables show a correlation (R) of 0.879 against profitability of medium commercial banks in Kenya. This shows that loan quality, bank size, capital ratio, operational efficiency and deposit ratio have a strong relationship with profitability of medium banks. The model summary also shows an R square of 0.773. This suggests that loan quality, size of bank,

capital ratio, operational efficiency and deposit ratio contribute 77.3% to the change in profitability of medium banks in Kenya. This shows that loan quality, bank size, capital ratio, operational efficiency and deposit ratio are the major factors influencing profitability of medium banks.

Table 4.14: Model Summary for Small Banks

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.614 ^a	.376	.355	3.8508434
a. Predictors: (Constant), X5, X2, X4, X1, X3				

Variables show a correlation (R) of 0.614 against profitability of small commercial banks in Kenya. A strong relationship is exhibited amidst loan quality and how profitable the small commercial banks are. An R squared of 0.376 means that variables in this research contribute 37.6% to the change in performance of the small commercial banks in Kenya.

4.6.2 Analysis of Variance

Table 4.15: ANOVA for Commercial Banks

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2496.354	4	624.089	65.650	.000 ^e
	Residual	2652.239	279	9.506		
	Total	5148.593	283			

a. Dependent Variable: Y

The regression model significance and fitness to the data was determined. F-statistics display the significance value at 0.000. A value less than 0.05 shows that the regression model significantly fits the data and the predictor variables significantly affect the profitability of Kenya's commercial banks.

Table 4.16: ANOVA for Large Banks

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.866	5	8.373	6.777	.000 ^b
	Residual	81.544	66	1.236		
	Total	123.410	71			
a. Dependent Variable: Y						
b. Predictors: (Constant), X5, X4, X3, X1, X2						

The F-statistics display a significance value of 0.000. This value means that the model significantly fits the data and the predictor variables are significant to the profitability of commercial banks.

Table 4.17: ANOVA for Medium Banks

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.

1	Regression	320.032	5	64.006	38.722	.000 ^b
	Residual	94.219	57	1.653		
	Total	414.251	62			
a. Dependent Variable: Y						
b. Predictors: (Constant), X5, X4, X2, X1, X3						

F-statistics show a significance value of 0.000 meaning that the model is significant and hence the profitability of medium commercial banks is significantly affected by loan quality.

Table 4.18: ANOVA for Small Banks

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1279.885	5	255.977	17.262	.000 ^b
	Residual	2120.546	143	14.829		
	Total	3400.432	148			
a. Dependent Variable: Y						
b. Predictors: (Constant), X5, X2, X4, X1, X3						

The significance value of 0.000 implies that that the regression model significantly fits the data and that a significant effect exists.

4.6.3 Regression Coefficients

Table 4.19: Regression Coefficients for Commercial Banks

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-16.622	1.927		-8.628	.000
	X2	1.545	.148	.491	10.471	.000
	X1	-.069	.015	-.233	-4.470	.000
	X3	15.696	3.130	.256	5.015	.000
	X4	-.424	.101	-.187	-4.197	.000
a. Dependent Variable: Y						

The following model was developed on the association between quality of loans and profitability of commercial banks in Kenya.

$$Y = -16.622 + 1.545 X_1 - 0.069 X_2 + 15.696 X_3 - 0.424 X_4$$

Where;

Y = Profitability of commercial banks

X₁ = Loan quality

X₂ = Bank size

X₃ = Capital ratio

X₄ = Operational efficiency

The findings show that when the variables (loan quality, bank size, capital ratio, operational efficiency and deposit ratio) are held constant, profitability of commercial banks stands at -16.622. The coefficients also show that bank size has a regression coefficient of 1.545 and significant at 0.000. This indicates that growth in size of the bank would increase profitability of commercial banks significantly. A growth in loan quality would increase profitability of commercial banks significantly as shown by regression coefficient of 0.069 while the significance value is 0.000. On the other hand, a unit increase in capital ratio would increase profitability of commercial banks significantly as shown by regression coefficient of 15.696 and significance value of 0.000. Lastly, the table shows that a change in operational efficiency would reduce the profitability of commercial banks significantly as shown by a coefficient of 0.424, significance at 0.000.

Table 4.20: Regression Coefficients for Large Banks

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-5.955	4.504		-1.322	.191
	X1	-.089	.033	-.289	-2.689	.009
	X2	.699	.379	.234	1.841	.070
	X3	20.301	4.412	.517	4.601	.000
	X4	.131	1.717	.008	.076	.939
	X5	-1.731	2.864	-.074	-.604	.548

With respect to the influence of quality of loans on the profitability of large commercial banks in Kenya, the following model was developed;

$$Y = -0.089 X_1 + 20.301 X_3$$

Where;

Y = Profitability of bank

X₁ = Loan quality

X₃ = Capital ratio

The findings show that increase in loan quality would increase profitability of large banks by 0.089 with a significance of 0.009. Bank size's regression coefficient is 0.699 and significant value is 0.070 indicating that change in size of bank increases profitability of large banks insignificantly by 0.699. On the other hand, increase in capital ratio would increase profitability of large banks significantly by 20.301 with a significance of 0.000. Further, increase in operational efficiency would increase the profitability of large banks by 0.131 with a significance level of 0.939. Finally, if the deposit ratio increased, this would lead to an insignificant decline in the profitability of large banks by 1.731 with a significance of 0.548. The researcher indicates that loan quality and capital ratio have significant effect on large banks in Kenya.

Table 4.21: Regression Coefficients for Medium Banks

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.608	4.405		1.046	.300
	X1	-.014	.013	-.091	-1.060	.294
	X2	.522	.393	.104	1.327	.190

	X3	2.551	5.314	.051	.480	.633
	X4	-4.571	.536	-.749	-8.521	.000
	X5	-7.373	2.830	-.245	-2.605	.012

The model below was developed for the influence of quality of loans on the profitability of medium sized commercial banks in Kenya.

$$Y = -4.571 X_4 - 7.373 X_5$$

Where;

Y = Profitability of bank

X₄ = Operational efficiency

X₅ = Deposit ratio

The findings from the regression analysis show that unit increase in loan quality would reduce profitability of medium banks by 0.014 with a significance of 0.191. Bank size's regression coefficient is 0.522 and significant value of 0.294 signifying that a unit growth in bank size would increase profitability of medium banks insignificantly by 0.522. On the other hand, a unit increase in capital ratio would increase profitability of medium banks by 2.551 with a significance value of 0.633. Further, a unit surge in operational efficiency would reduce the profitability of medium banks by 4.571 with as significance of 0.000. Further, a unit increase in deposit ratio would reduce the profitability of medium banks by 7.373 with significance value of 0.012. This indicates that only operational efficiency and deposit ratio significantly affect the profitability of medium sized commercial banks in Kenya.

Table 4.22: Regression Coefficients for Small Banks

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-39.098	6.808		-5.743	.000
	Loan quality	-.055	.029	-.175	-1.919	.057
	Bank size	3.391	.556	.416	6.096	.000
	Capital ratio	19.239	5.056	.349	3.805	.000
	Operational efficiency	-.382	.129	-.205	-2.952	.004
	Deposit ratio	5.171	2.982	.142	1.734	.085

The model below was developed for the influence of quality of loans on the profitability of small size banks in Kenya.

$$Y = -39.098 + 3.391 X_2 + 19.239 X_3 - 0.382 X_4$$

Where;

Y = Profitability of bank

X₄ = Operational efficiency

X₂ = Bank size

X₃ = Capital ratio

The findings show that when the variables (loan quality, bank size, capital ratio, operational efficiency and deposit ratio) are held constant, profitability of small banks would stand at -39.098. A variation in loan quality would reduce profitability of small banks by 0.055 with a

significant of 0.057. The results also show that bank size had a regression coefficient of 3.391 and significance value of 0.000. This signifies that a unit change in bank size would increase profitability of small banks by 3.391. Moreover, a unit change in capital ratio would increase profitability of small banks significantly by 19.239 with a significance of 0.000. Also, the results show that a unit change in operational efficiency would decrease the profitability of small banks by 0.382. Finally, a unit change in deposit ratio would increase the profitability of small banks by 5.171 with a significance level of 0.085.

The regression results suggest that loan quality, bank size, capital ratio, operational efficiency and deposit ratio significantly influence commercial banks' profitability. For large banks, loan quality and capital ratio have significant impact on large banks' profitability while the others have an insignificant effect. For medium banks, operational efficiency and deposit ratio have significant effect on profitability while the others had insignificant effect. For the small banks, bank size, capital ratio and operational efficiency showed a significant relationship. This indicates that capital ratio is the only factor that significantly affects profitability of Kenya's large, small and medium commercial banks.

4.7 Discussion of Findings

The research aimed at assessing whether the profitability of commercial banks in Kenya is affected by loan quality. In addition, the impact that the size of bank, capital ratio, operational efficiency and deposit ratio have on commercial banks' profitability in Kenya was also assessed.

The regression coefficients indicate that loan quality significantly affects profitability of all commercial banks as well as large banks in Kenya. This means that increased loan quality among commercial banks would lead to increased profitability. The findings are the same as those of Yin (1999) who noted that the loan quality in commercial banks affects the bank's

financial performance. Salike and Ao (2018) found that poor loan quality reduces bank returns indicating a positive effect of loan quality on profitability.

Loan quality has an insignificant effect on profitability of medium and small banks. This means that the medium and small banks experience no significant change in their profitability when the loan quality increases. The findings differ with the findings of Cheruiyot (2016) who found that quality of assets leads to more profitable banks. They also differed with those of Abdirahman (2020) who found that NPLs of the bank are statistically significant to profitability.

Bank size's effect on profitability of all as well as small banks is significant (+vely). Athanasoglou et al. (2006) observed similar results where size of firm had a positive influence on profitability. This finding differs from those of Stiroh and Rumble (2006) who found that large banks did not necessarily enjoy higher profits.

Profitability of commercial banks is negatively affected by operational. However, operational efficiency has a insignificant positive association with the profitability of large banks; but a negative significant profitability of medium and small banks. Salike and Ao (2018) found that operational efficiency increased firm profitability.

The profitability of all commercial banks is positively affected by capital ratio. Capital ratio shows a positive significant effect on performance of large and small commercial banks but a positive insignificant effect for medium banks. Dietrich and Wanzenrid (2009) found that better capitalized banks were more profitable. Deposit ratio does not affect the profitability of large banks but it is negatively significant for medium and small banks. Therefore, the more the deposits, the more loans advanced resulting in more income; more profits (Menicucci & Paolucci, 2016).

CHAPTER FIVE: SUMMARY, DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This study's endeavor was to determine whether the profitability of commercial banks in Kenya is affected by loan quality. This section summarizes finding from the research. It also gives conclusions and recommendations grounded on the findings. Limitations as well as the suggestions for more research are also outlined in this chapter.

5.2 Summary of Findings

The predictor variables (loan quality, bank size, capital ratio, operational efficiency and deposit ratio) have a correlation of 0.696 against profitability of all banks; 0.582 for large banks; 0.879 for medium banks; and 0.614 for small banks. This indicates that the variables have a stronger relationship for the medium banks. An R square of 0.485 signifies that the predictor variables contribute 48.5% to the change in profitability of all commercial banks. However, they contribute 33.9% for large banks; 77.3% for medium banks; and 37.6% for small banks. This indicates that the predictor variables had a greater effect on the profitability of medium banks followed by small banks and finally large banks. The medium banks showed greater effect for the variables compared to the general banking sector.

Loan quality has a significant positive influence on performance of large banks. Profitability is not influenced by loan quality in medium as well as small banks. Banks size's influence on performance of all commercial banks as well as small banks is significant (+vely). Size has a positive insignificant influence on performance of medium sized as well as large commercial banks. Operational efficiency's effect on the profitability of commercial banks is negative. However, operational efficiency has an insignificant positive impact on the performance of all

commercial banks as well as large ones. Medium and small banks' profitability is not affected by operational efficiency. Capital ratio's effect on profitability of all commercial banks is significant(+vely). Capital ratio has a positive significant influence on performance of large and small commercial banks but a positive insignificant effect for medium banks. The effect of deposit ratio profitability of all banks is significant (-vely). There is no effect of deposit ratio on the profitability of large commercial banks. Deposit ratio's effect on performance of medium and small banks is significant (-vely).

5.3 Conclusion

The objective of this study was to assess whether the profitability of commercial banks in Kenya is influenced by quality of loans. This study concludes that loan quality has a significant effect on profitability of all Kenyan commercial banks (+vely). This conclusion is the same as the conclusion by Salike and Ao (2018) who noted that poor loan quality adversely affects banks' profitability. Furthermore, Yin (1999) found that the loan quality in commercial banks affects the bank's financial performance.

The study further concludes that loan quality has a significant positive influence on performance of large (tier I) commercial banks in Kenya. This means that increased loan quality increases profitability levels of large commercial banks in Kenya. However, loan quality has an insignificant effect on profitability of medium and small banks. This means that the medium and small banks experience no significant change in their profitability when the loan quality increases. The findings differ with the findings of Cheruiyot (2016) who found that quality of assets leads to more profitable banks. They also differed with those of Abdirahman (2020) who found that NPLs of commercial banks are statistically significant to profitability.

5.4 Policy Recommendations

Loan quality has a significant positive influence on performance of commercial banks in Kenya. As such, it is recommended that commercial banks increase their asset levels, increase their deposits, increase their capitalization as well as the operational efficiency for them to experience increased profitability.

The study also established that loan quality has significant impact on profitability of all large banks in Kenya (+vely). Therefore, large banking institutions in Kenya ought to increase their loan quality through reduced NPLs, which will in turn translate to increased profitability. The banks can also increase loan quality by coming up with relevant procedures for loan collection which will decrease the level of non-performing loans in their loan portfolio. The banks can also transfer the NPLs to a third party for them to reduce the costs of recovery.

The study found that loan quality has an insignificant effect on profitability of medium and small banks in Kenya. This implies that even if the loan quality increases among the 2nd and 3rd tier banks, their profitability would not change that much. This also shows that optimal increase in loan quality among the banks would reduce the profitability levels among the banks. This study recommends that the 2nd and 3rd tier banks in Kenya reduce the net loans under follow up within the loan portfolio. They also need to increase the gross loans through increased customer advances. This would increase the performance of Kenya's commercial banks.

5.5 Limitations of the Study

Loan quality was measured in terms of net loans under follow up to total loans. This limited the study in that other measures were ignored. Profitability of banks was measure through Return on assets (ROA). This created a limitation for the study since there are other measures of profitability which may give differing results. Bank size, capital ratio, operational efficiency

and deposit ratio were adopted as the control variables for this study. This limits the study as there are other factors influencing profitability of commercial banks which were not considered. This shows that the study faced conceptualization limitations to the study.

This study was fixated only on commercial banking institutions in Kenya, excluding other financial institutions and countries from the research. Therefore, the results obtained in this study may be differ from those of other financial institutions and countries. In addition, since the study employed secondary data sources, some data especially that on profitability, capital ratio and operational efficiency ratio was not readily available and it took the researcher a lot of time and cost to get it. Some data was even entirely unavailable leading to unbalanced panel datasets. The data obtained also had to undergo manipulations and calculations in order for it to be useful in this study.

5.6 Recommendations for Future Studies

Loan quality is an important measure in establishing the profitability of banks, especially in the evolving banking sector. This study focused on loan quality, bank size, capital ratio, operational efficiency and deposit ratio as the variables influencing profitability of commercial banks. As an extension of this study, future studies can examine other aspects that may affect the performance of commercial banks other than loan quality as loan quality does not contribute to 100% change in profitability. Other variables may create an understanding of the major influencers of profitability among Kenya's commercial banks, enhancing the consistency of this research.

This study recommends further studies based on other measures of loan quality. This study measured loan quality through the ratio of net loans under follow up to total loans. Other measures that could be adopted include non-performing loans to assets ratio or non-performing loans coverage ratio.

This study also recommends further studies based on other measures that of profitability. The current study used return on assets as the measure for profitability. Other studies can use other profitability measures such as return on invested capital or return on equity. They can also adopt net profit margin, gross profit margin among other measures for comparison of results. Other studies can adopt primary data to examine how the relationship would change.

Furthermore, future studies may be done based on other financial institutions in Kenya like Saccos, microfinance banks or microfinance institutions as well as including banks beyond the Kenyan context in the sample.

REFERENCES

- Abdirahman, A. M. (2020). *The Effect of Loan Quality on the Financial Performance of Commercial Banks in Kenya*. (Unpublished MBA Project, University of Nairobi, Kenya).
- Abiola, I., & Olausi, A. S. (2014). The impact of credit risk management on the commercial banks performance in Nigeria. *International Journal of Management and Sustainability*, 3(5), 295-306.
- Akerlof, G. (1970). The Market for Lemons: Quality Uncertainty and the Market Mechanism. *Quarterly Journal of Economics*, 84, 488-500.
- Addae-Korankye, A. (2014). Causes and control of loan default/delinquency in microfinance institutions in Ghana. *American International Journal of Contemporary Research*, 4(12), 36-45.
- Agarwal, S., Ambrose, B., Chomsisengphet, S., & Liu, C. (2007). *Asymmetric Information in Dynamic Contract Settings: Evidence from the Home Equity Market*. FDIC Center for Financial Research, Working Paper 2007(10), 1-51.
- Anbar, A., & Alper, D. (2011). Bank specific and macroeconomic determinants of commercial bank profitability: Empirical evidence from Turkey. *Business and Economics Research Journal*, 2(2), 139-152.
- Angbazo, L. (1997). Commercial bank net interest margins, default risk, interest-rate risk, and off-balance sheet banking. *Journal of Banking & Finance*, 21(1), 55-87.
- Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money*, 18(2), 121-136.

- Athanasoglou, P., Delis, M., & Staikouras, C. (2006). Determinants of bank profitability in the South Eastern European region. *Mediterranean Journal of Social Sciences* 2(1), 58-78.
- Ariccia, G. D. (1998). *Asymmetric Information and the Market Structure of Banking Industry*, IMF Working Papers 1998(092), International Monetary Fund, Research Department, 4-21.
- Ayanda, A. M., Christopher, E. I., & Mudashiru, M. A. (2013). Determinants of banks' profitability in a developing economy: Evidence from Nigerian banking industry. *Interdisciplinary Journal of Contemporary Research in Business*, 4(9), 155-181.
- Azam, M., Siddiqui, S. (2012) Domestic and Foreign Banks' Profitability: Differences and Their Determinants. *International Journal of Economics and Financial Issues* 2(1), 33-40.
- Basno, C. & Dardac, N., (2002). *Management Bancar [Banking Management]*. Bucharest: Economic Publisher.
- Besley, T. (1994). How do market failures justify interventions in rural credit markets?. *The World Bank Research Observer*, 9(1), 27-47.
- Bester, H. (1985). Screening vs. rationing in credit markets with imperfect information. *American Economic Review* 75(4), 850-855.
- Black, F., Jensen, M. C., & Scholes, M. (1972). The capital asset pricing model: Some empirical tests. In *Studies in the Theory of Capital Markets*, ed. Jensen, Praeger Publishers Inc. 1-51.
- Black, F., Jensen, M., & Scholes, M. (1971). The CAPM: Some empirical tests. In *Studies in the Theory of Capital Markets*, ed. Jensen, M. Str, 158-169.
- Bofondi, M., & Gobbi, G. (2003). Bad loans and entry in local credit markets. *Bank of Italy*. 1-29.

- Bofondi, M., & Ropele, T. (2011). Macroeconomic determinants of bad loans: evidence from Italian banks. *Bank of Italy Occasional Paper*, (89), 5-40.
- CBK. (2014). Bank Annual Supervision Report
- CBK. (2021). Bank Annual Supervision Report
- Castro, V. (2013). Macroeconomic determinants of the credit risk in the banking system: The case of the GIPSI. *Economic Modelling*, 31, 672-683.
- Chantapong, S. (2005). Comparative study of domestic and foreign bank performance in Thailand: The regression analysis. *Economic Change and Restructuring*, 38(1), 63-83.
- Chen, Y., Shi, Y., Wei, X., & Zhang, L. (2014). How does credit portfolio diversification affect banks' return and risk? Evidence from Chinese listed commercial banks. *Technological and Economic Development of Economy*, 20(2), 332-352.
- Cherednychenko, O. O., & Meindertma, J. M. (2019). Irresponsible lending in the post-crisis era: Is the EU consumer credit directive fit for its purpose?. *Journal of Consumer Policy*, 42(4), 483-519.
- Cheruiyot, R. K. (2015). *The effect of asset quality on profitability of commercial banks in Kenya*. (Unpublished MBA project, University of Nairobi, Kenya).
- Chirwa, E. W. (2003). Determinants of commercial banks' profitability in Malawi: a cointegration approach. *Applied Financial Economics*, 13(8), 565-571.
- DeYoung, R., & Rice, T. (2004). How do banks make money? The fallacies of fee income. *Economic Perspectives-Federal Reserve Bank of Chicago*, 28(4), 34-51.
- Diamond, D. W., & Rajan, R. G. (2012). Illiquid banks, financial stability, and interest rate policy. *Journal of Political Economy*, 120(3), 552-591.
- Dietrich, A., & Wanzenried, G. (2009). What determines the profitability of commercial banks? New evidence from Switzerland. In *12th conference of the Swiss society for financial market researches*, Geneva 2-39.

- Evans, O., Leone, A. M., Gill, M., Hilbers, P., Blaschke, W., Krueger, R., & Berge, J. T. (2000). Macprudential indicators of financial system soundness. In *Macprudential Indicators of Financial System Soundness. International Monetary Fund*. (192), 1-49.
- Filip, B. F. (2015). The quality of bank loans within the framework of globalization. *Procedia Economics and Finance*, 20, 208-217.
- Flamini, V., McDonald, C., & Schumacher, L. (2009). *The determinants of commercial bank profitability in Sub-Saharan Africa*, International Monetary Fund Working Paper 2009 (15), 3-30.
- Haron, S. (2004). Determinants of Islamic bank profitability. *The Global Journal of Finance and Economics*, 1(1), 11-33.
- Hempel, G. H., Simonson, D. G. & Coleman, A.B. (1994). *Bank Management. Text and cases* (4th ed.). New York: John Wiley & Sons, Inc
- Hoover, K. R. (1984). *The Elements of Scientific Thinking*. (3rd ed.). New York: St. Martin's Press, 31-38.
- Kadioglu, E., & Ocal, N. (2017). Effect of the asset quality on the bank profitability. *International Journal of Economics and Finance*, 9(7), 60-68.
- Kathali T. (2019). Mergers and acquisitions and performance of commercial banks in Kenya, (Unpublished MBA project, Kenyatta University, Kenya)
- Kothari, C. R. (2004). Research methodology: Methods and techniques. *New Age International*. 30-52.
- Krueger, R. (2002). *International standards for impairment and provisions and their implications for financial soundness indicators (FSIs)*. Manuscript, International Monetary Fund. 1-23.
- Lindblom, T., Olsson, M., & Willeson, M. (2011). Financial crisis and bank profitability. In *Bank Performance, Risk and Firm Financing*, Palgrave Macmillan, London 83-105.

- Mabvure, T.J., Gwangwava, E., Faitira, M., Mutibvu, C., and Kamoyo, M. (2012). Non-Performing loans in Commercial Banks: A case of CBZ Bank Limited in Zimbabwe. *Interdisciplinary Journal of Contemporary Research in Business* 4(7), 1-22.
- Mc Menamin, J., (1999). *An introduction to credit risk management*. John Wiley & Son (Asia) Pte Ltd, New York, 100-112.
- Menicucci, E., & Paolucci, G. (2016). Factors affecting bank profitability in Europe: An empirical investigation. *African Journal of Business Management*, 10(17), 410-420.
- Miller S, Noulas A (1997). Portfolio mix and large-bank profitability in the USA, *Journal of Applied Economics* 29(4):505-512.
- Mugenda, O. M., & Mugenda, A. G. (2003). *Research Methods, Quantitative and Qualitative Analysis-African Center for Technology Studies*. Nairobi: *Applied Research and Training Services (ACTS)*.
- Mungure, M. E. (2015). The causes and impacts of loan default to microfinance Institutions (mfis) activities: a case of pride Tanzania ltd Pamba branch-Mwanza (Unpublished MBA Project, Mzumbe University, Tanzania).
- Naceur, B. S. & Goaied, M. (2008). The determinants of commercial bank interest margin and profitability: Evidence from Tunisia. *Frontiers in Finance and Economics*, 5(1), 106-130.
- Niresh, A., & Thirunavukkarasu, V. (2014). Firm size and profitability: A study of listed manufacturing firms in Sri Lanka. *International Journal of Business and Management*, 9(4), 57-64.
- Nkusu, M. (2011). Nonperforming Loans and Macrofinancial Vulnerabilities in Advanced Economies. *IMF Working Paper* 2011 (161), 1-27.

- Ongore, V. O., & Kusa, G. B. (2013). Determinants of financial performance of commercial banks in Kenya. *International Journal of Economics and Financial Issues*, 3(1), 237-252.
- Opa, V. O., & Tabe-Ebob, W. T. The Effects of Loan Default on Commercial Banks Profitability: Case Study BICEC Limbe. (Unpublished project, University of Buea, Cameroon).
- Rawlin, R., Sharan, S. M., & Lakshmipathy, P. B. (2012). Modeling the NPA of a mid-sized Indian Nationalized Bank as a function of advances. *European Journal of Business and Management*, 4(5), 78-89.
- Reinhart, C. M., & Rogoff, K. S. (2010). Growth in a Time of Debt. *American Economic Review*, 100(2), 573-78.
- Rothschild, M., & Stiglitz, J. E. (1976). Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information." *Quarterly Journal of Economics*, 90, 629-649.
- Salike, N. & Ao, B. (2018). Determinants of bank's profitability: role of poor asset quality in Asia. *China Finance Review International*, 8 (2), 216-231.
- Saona, P. R. (2011). Determinants of the Profitability of the US Banking Industry. *International Journal of Business and Social Science*, 2 (22), 259-269.
- Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *The Journal of Finance*, 19(3), 425-442.
- Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. *The American Economic Review*, 71(3), 393-410.
- Stiroh, K. J., & Rumble, A. (2006). The dark side of diversification: The case of US financial holding companies. *Journal of Banking & Finance*, 30(8), 2131-2161.

- Sufian, F., & Chong, R. R. (2008). Determinants of bank profitability in a developing economy: empirical evidence from the Philippines. *Asian Academy of Management Journal of Accounting & Finance*, 4(2), 91-112.
- Titus, L. W. (2010). *The relationship between non-performing loans management practices and financial performance of commercial banks in Kenya*. (Unpublished MBA Project, University of Nairobi, Kenya).
- Tumay, M. (2009). Asymmetric information and adverse selection in insurance markets: The problem of moral hazard. *Yönetim ve Ekonomi*, 16(1), 107-114.
- Warue, B. N. (2013). The effects of bank specific and macroeconomic factors on nonperforming loans in commercial banks in Kenya: A comparative panel data analysis. *Advances in Management and Applied Economics*, 3(2), 135-164.
- Zimmerman, G. C. (1996). Factors influencing community bank performance in California. *Economic Review-Federal Reserve Bank of San Francisco*, (1) 26-40.

APPENDICES

Appendix 1: List of Commercial Banks in Kenya

Large banks - Banks with assets of Ksh.40 billion and above.

1. Absa Bank Limited
2. Co-operative Bank of Kenya Ltd
3. Diamond Trust Bank (K) Ltd
4. Equity Bank Ltd
5. Investments & Mortgages Bank Limited – I&M Bank
6. KCB Bank Kenya Ltd
7. NCBA Bank Kenya
8. Stanbic Bank Kenya Limited
9. Standard Chartered Bank (K) Ltd

Medium banks - Banks with assets of between Ksh.10 billion and Ksh.40 billion.

1. Bank of Baroda (Kenya) Ltd.
2. Prime Bank
3. National Bank of Kenya Ltd
4. Citibank N.A Kenya
5. Bank of India
6. Ecobank Limited
7. Family Bank Ltd
8. SBM Bank (Kenya) Ltd

Small banks - Banks with assets of less than Ksh.10 billion.

1. Access Bank (Kenya) Plc

2. African Banking Corporation Ltd
3. Bank of Africa Kenya Ltd
4. Citibank N.A
5. Consolidated Bank of Kenya Ltd
6. Credit Bank Ltd
7. Development Bank of Kenya Ltd
8. DIB Bank Kenya Limited
9. First Community Bank Ltd
10. Guaranty Trust Bank
11. Guardian Bank Limited
12. Gulf African Bank Ltd
13. Habib Bank A.G Zurich
14. Kingdom Bank Kenya Ltd
15. Mayfair CIB Bank Ltd
16. Middle East Bank (K) Ltd
17. M Oriental Bank (Ltd)
18. Paramount Bank Ltd
19. Sidian Bank
20. Spire Bank
21. UBA Kenya Bank Ltd
22. Victoria Commercial Bank Ltd

Source: Central Bank of Kenya: Bank Supervision Annual Report 2021

Appendix 2: Data collection form

Name of Commercial Bank										
	YEAR									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
PBT										
Total Assets										
ROA										
Non-Performing Loans										
Total loans										
Loan Quality										

Total Equity										
Operating Expenses										
Total Revenue										
Total Deposits										

Appendix 3: Research Data (Large Banks)

BANK	YEAR	ROA	Loan Quality	Bank Size	Capital Ratio	Operational Efficiency	Deposit Ratio
Barclays Bank of kenya Ltd	2014	5.4%	4%	12.3285	0.1697	0.5158	0.7290
Barclays Bank of kenya Ltd	2015	5.8%	4%	12.2405	0.1919	0.5302	0.7988
Barclays Bank of kenya Ltd	2016	4.0%	7%	12.4656	0.1624	0.5394	0.6883
Barclays Bank of kenya Ltd	2017	3.7%	7%	12.5124	0.1603	0.5595	0.6968
Absa Bank Limited	2018	3.2%	7%	12.6927	0.1359	0.5466	0.6548
Absa Bank Limited	2019	3.2%	7%	12.8323	0.1208	0.5617	0.6479

Absa Bank Limited	2020	2.2%	7%	12.8425	0.1190	0.5871	0.6819
Absa Bank Limited	2021	3.4%	8%	12.9686	0.1268	0.4642	0.6427
Co-operative Bank of Kenya Ltd	2014	4.4%	4%	12.5521	0.1479	0.6087	0.7647
Co-operative Bank of Kenya Ltd	2015	4.1%	4%	12.7354	0.1437	0.5276	0.7766
Co-operative Bank of Kenya Ltd	2016	5.1%	5%	12.7657	0.1701	0.4975	0.7414
Co-operative Bank of Kenya Ltd	2017	4.3%	8%	12.8553	0.1770	0.4986	0.7470
Co-operative Bank of Kenya Ltd	2018	4.3%	11%	12.9198	0.1662	0.5336	0.7460
Co-operative Bank of Kenya Ltd	2019	4.5%	11%	13.0162	0.1705	0.5008	0.7342

Co-operative Bank of Kenya Ltd	2020	3.4%	17%	13.1160	0.1714	0.5042	0.7449
Co-operative Bank of Kenya Ltd	2021	3.9%	13%	13.2000	0.1749	0.4707	0.7392
Diamond Trust Bank (K) Ltd	2014	4.5%	1%	11.8578	0.1826	0.3891	0.7196
Diamond Trust Bank (K) Ltd	2015	3.7%	3%	12.1598	0.1571	0.3791	0.6611
Diamond Trust Bank (K) Ltd	2016	3.6%	4%	12.4054	0.1492	0.3413	0.6947
Diamond Trust Bank (K) Ltd	2017	3.0%	8%	12.5065	0.1592	0.3827	0.7748
Diamond Trust Bank (K) Ltd	2018	3.3%	7%	12.5479	0.1695	0.3972	0.7973
Diamond Trust Bank (K) Ltd	2019	3.2%	8%	12.5681	0.1810	0.4552	0.7695

Diamond Trust Bank (K) Ltd	2020	1.3%	12%	12.6514	0.1731	0.3995	0.7529
Diamond Trust Bank (K) Ltd	2021	1.4%	16%	12.6958	0.1764	0.3661	0.7275
Equity Bank Ltd	2014	7.3%	4%	12.5322	0.2249	0.4973	0.7307
Equity Bank Ltd	2015	6.6%	3%	12.7406	0.1962	0.4709	0.6932
Equity Bank Ltd	2016	6.0%	7%	12.8473	0.1867	0.4478	0.7302
Equity Bank Ltd	2017	5.7%	7%	12.9151	0.1758	0.4402	0.7350
Equity Bank Ltd	2018	5.6%	7%	12.9911	0.1698	0.4476	0.7794
Equity Bank Ltd	2019	5.1%	9%	13.1373	0.1560	0.4570	0.7510

Equity Bank Ltd	2020	3.3%	12%	13.4115	0.1177	0.4112	0.7525
Equity Bank Ltd	2021	4.7%	8%	13.6847	0.0990	0.3997	0.7433
I&M Bank	2014	5.6%	2%	11.8299	0.1589	0.2973	0.6309
I&M Bank	2015	5.7%	5%	11.9039	0.1771	0.3180	0.7017
I&M Bank	2016	5.3%	5%	12.0083	0.1907	0.2920	0.6321
I&M Bank	2017	4.1%	14%	12.1224	0.1904	0.3079	0.7298
I&M Bank	2018	3.8%	15%	12.3422	0.1673	0.3143	0.7735
I&M Bank	2019	4.7%	12%	12.4461	0.1849	0.3296	0.7703

I&M Bank	2020	3.6%	13%	12.5552	0.1845	0.3536	0.7729
I&M Bank	2021	3.4%	11%	12.6372	0.1687	0.3745	0.7653
KCB Bank Kenya Ltd	2014	5.9%	5%	12.8399	0.1914	0.4732	0.7341
KCB Bank Kenya Ltd	2015	5.0%	6%	13.0557	0.1729	0.4770	0.7434
KCB Bank Kenya Ltd	2016	5.6%	8%	13.1319	0.1362	0.3852	0.7659
KCB Bank Kenya Ltd	2017	4.9%	8%	13.2279	0.1237	0.4256	0.8016
KCB Bank Kenya Ltd	2018	5.0%	7%	13.3402	0.1224	0.5008	0.7827
KCB Bank Kenya Ltd	2019	4.9%	7%	13.4214	0.1297	0.5416	0.7961

KCB Bank Kenya Ltd	2020	3.1%	12%	13.5389	0.1030	0.3792	0.7794
KCB Bank Kenya Ltd	2021	4.9%	16%	13.6248	0.1094	0.3926	0.7675
NIC Bank Ltd	2014	4.4%	6%	11.8284	0.1697	0.3868	0.6769
NIC Bank Ltd	2015	4.0%	12%	11.9625	0.1688	0.4130	0.6710
NIC Bank Ltd	2016	3.7%	11%	11.9944	0.1871	0.5923	0.6436
NIC Bank Ltd	2017	2.9%	11%	12.1695	0.1573	0.4612	0.7365
NIC Bank Ltd	2018	3.1%	14%	12.1810	0.1529	0.4677	0.7445
NCBA	2019	2.2%	0%	13.0496	0.1351	0.4177	0.7750

NCBA	2020	0.9%	0%	13.1054	0.1186	0.3722	0.8031
NCBA	2021	1.1%	16%	13.2117	0.1108	0.3792	0.8118
Stanbic Bank Kenya Limited	2014	4.3%	4%	12.0514	0.1555	0.5015	0.5651
Stanbic Bank Kenya Limited	2015	3.6%	5%	12.1989	0.1423	0.5088	0.5445
Stanbic Bank Kenya Limited	2016	3.4%	6%	12.2303	0.1476	0.5332	0.5954
Stanbic Bank Kenya Limited	2017	2.3%	8%	12.3859	0.1381	0.5562	0.7464
Stanbic Bank Kenya Limited	2018	3.1%	11%	12.5459	0.0650	0.4948	0.7556
Stanbic Bank Kenya Limited	2019	2.8%	12%	12.5869	0.0624	0.4833	0.7021

Stanbic Bank Kenya Limited	2020	2.0%	14%	12.6729	0.0572	0.5447	0.7320
Stanbic Bank Kenya Limited	2021	3.0%	11%	12.6736	0.0571	0.5498	0.7594
Standard Chartered Bank (K) Ltd	2014	6.4%	8%	12.3133	0.1817	0.4499	0.6920
Standard Chartered Bank (K) Ltd	2015	3.8%	12%	12.3636	0.1748	0.4458	0.7348
Standard Chartered Bank (K) Ltd	2016	5.1%	11%	12.4303	0.1781	0.4464	0.7456
Standard Chartered Bank (K) Ltd	2017	3.3%	13%	12.5607	0.1564	0.4848	0.7928
Standard Chartered Bank (K) Ltd	2018	4.0%	16%	12.5592	0.1592	0.5238	0.7755
Standard Chartered Bank (K) Ltd	2019	4.2%	14%	12.6192	0.1562	0.5402	0.7822

Standard Chartered Bank (K) Ltd	2020	2.2%	15%	12.6943	0.1541	0.5927	0.7885
Standard Chartered Bank (K) Ltd	2021	3.6%	16%	12.7222	0.1566	0.5018	0.7933

Appendix 4: Research Data (Medium Banks)

BANK	YEAR	ROA	Loan Quality	Bank Size	Capital Ratio	Operational Efficiency	Deposit Ratio
Bank of Baroda (Kenya) Ltd.	2014	4.4%	4%	11.0340	0.1593	0.2346	0.7859
Bank of Baroda (Kenya) Ltd.	2015	3.6%	7%	11.1299	0.1653	0.2372	0.7763
Bank of Baroda (Kenya) Ltd.	2016	4.7%	9%	11.3255	0.1716	0.1858	0.7825
Bank of Baroda (Kenya) Ltd.	2017	5.3%	6%	11.4735	0.1862	0.1643	0.8082
Bank of Baroda (Kenya) Ltd.	2018	4.2%	36%	11.7201	0.1660	0.1686	0.8292
Bank of Baroda (Kenya) Ltd.	2019	3.8%	40%	11.8728	0.1601	0.1890	0.8327

Bank of Baroda (Kenya) Ltd.	2020	3.5%	12%	12.0216	0.1604	0.1567	0.8322
Bank of Baroda (Kenya) Ltd.	2021	3.7%	10%	12.1028	0.1598	0.2146	0.8311
Prime Bank	2014	4.2%	2%	10.9136	0.1408	0.3975	0.8183
Prime Bank	2015	4.0%	2%	11.0822	0.1342	0.3953	0.7818
Prime Bank	2016	3.6%	5%	11.0873	0.1658	0.4398	0.7547
Prime Bank	2017	2.6%	6%	11.2442	0.1876	0.5013	0.7712
Prime Bank	2018	2.1%	7%	11.4982	0.2338	0.5104	0.7253
Prime Bank	2019	2.3%	12%	11.5971	0.2248	0.4863	0.7478

Prime Bank	2020	1.6%	11%	11.6631	0.2143	0.4771	0.7624
Prime Bank	2021	2.3%	11%	11.7479	0.2223	0.4319	0.7687
National Bank of Kenya Ltd	2014	1.9%	11%	11.7188	0.0986	0.8360	0.8524
National Bank of Kenya Ltd	2015	-1.3%	16%	11.7384	0.0538	0.8004	0.8829
National Bank of Kenya Ltd	2016	0.1%	44%	11.6537	0.0587	0.8451	0.8424
National Bank of Kenya Ltd	2017	0.7%	41%	11.6077	0.0641	0.6714	0.9111
National Bank of Kenya Ltd	2018	0.5%	48%	11.6539	0.0602	0.7901	0.9140
National Bank of Kenya Ltd	2019	-0.7%	41%	11.6265	0.1045	0.7189	0.8666

National Bank of Kenya Ltd	2020	0.2%	35%	11.7507	0.0941	0.6722	0.8883
National Bank of Kenya Ltd	2021	0.9%	33%	11.8951	0.1117	0.7625	0.8469
Citibank N.A Kenya	2014	5.2%	4%	11.2822	0.2312	0.4294	0.6442
Citibank N.A Kenya	2015	6.3%	6%	11.3868	0.2202	0.3252	0.7036
Citibank N.A Kenya	2016	5.8%	3%	11.5456	0.1900	0.3391	0.6048
Citibank N.A Kenya	2017	6.5%	5%	11.4951	0.2054	0.3267	0.6664
Citibank N.A Kenya	2018	6.6%	3%	11.3579	0.2266	0.3662	0.6745
Citibank N.A Kenya	2019	5.8%	4%	11.4780	0.1972	0.3850	0.6766

Citibank N.A Kenya	2020	5.1%	3%	11.5755	0.2079	0.4189	0.7627
Citibank N.A Kenya	2021	4.5%	2%	11.7825	0.1721	0.3845	0.7882
Bank of India	2014	3.7%	1%	10.4449	0.1767	0.2460	0.7177
Bank of India	2015	3.5%	2%	10.6493	0.1704	0.2781	0.5838
Bank of India	2016	4.6%	1%	10.7751	0.1994	0.1894	0.5589
Bank of India	2017	4.7%	2%	10.9443	0.2053	0.1707	0.7915
Bank of India	2018	3.9%	7%	11.0459	0.2104	0.1941	0.7857
Bank of India	2019	4.5%	9%	11.0436	0.2483	0.1602	0.7476

Bank of India	2020	3.6%	5%	11.2270	0.2376	0.1622	0.7575
Bank of India	2021	4.0%	3%	11.3721	0.2384	0.1466	0.7572
Ecobank Limited	2014	-1.1%	10%	10.7350	0.1704	1.2483	0.7057
Ecobank Limited	2015	0.2%	8%	10.8672	0.1442	0.8736	0.6577
Ecobank Limited	2016	-6.1%	20%	10.7605	0.1551	2.3054	0.6842
Ecobank Limited	2017	-2.7%	39%	10.8866	0.1204	0.8836	0.8578
Ecobank Limited	2018	0.3%	22%	10.9053	0.1177	0.9061	0.8664
Ecobank Limited	2019	0.3%	20%	11.2303	0.0871	0.8732	0.8798

Ecobank Limited	2020	0.0%	16%	11.4556	0.0749	0.8720	0.9004
Ecobank Limited	2021	0.6%	16%	11.5462	0.0622	0.7591	0.9145
Family Bank Ltd	2014	4.2%	7%	11.0319	0.1718	0.6204	0.7634
Family Bank Ltd	2015	3.6%	6%	11.3045	0.1469	0.6638	0.7726
Family Bank Ltd	2016	0.9%	13%	11.1481	0.1817	0.8355	0.5973
Family Bank Ltd	2017	-2.0%	20%	11.1426	0.1681	0.9894	0.6897
Family Bank Ltd	2018	0.6%	17%	11.1111	0.1708	0.7744	0.7294
Family Bank Ltd	2019	1.7%	15%	11.2754	0.1574	0.7133	0.7397

Family Bank Ltd	2020	1.5%	15%	11.4141	0.1453	0.6226	0.7791
Family Bank Ltd	2021	2.8%	15%	11.6234	0.1358	0.5792	0.7585
SBM As fidelity commercial bank	2014	1.8%	8%	9.7120	0.1039	0.6434	0.8210
SBM As fidelity commercial bank	2015	-1.8%	16%	9.6175	0.1161	0.8812	0.6924
SBM Bank (Kenya) Ltd	2017	-3.1%	59%	9.3712	0.1368	2.2821	0.5825
SBM Bank (Kenya) Ltd	2018	1.4%	69%	11.1655	0.0982	0.5310	0.7225
SBM Bank (Kenya) Ltd	2019	1.6%	55%	11.1916	0.1086	1.2492	0.6974
SBM Bank (Kenya) Ltd	2020	0.8%	44%	11.2796	0.1120	0.9534	0.7210

SBM Bank (Kenya) Ltd	2021	0.3%	34%	11.3140	0.1049	0.9851	0.7504
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Appendix 5: Research Data (Small Banks)

BANK	YEAR	ROA	Loan quality	Bank size	Capital Ratio	Operational Efficiency	Deposit Ratio
Access bank as Trans- National bank	2014	1.9%	8%	9.2341	0.1870	0.7075	0.7486
As Trans- National bank	2015	2.4%	10%	9.2623	0.1930	0.6978	0.7209
As Trans- National bank	2016	1.5%	13%	9.2558	0.1989	0.7635	0.7645
As Trans- National bank	2017	0.5%	22%	9.2394	0.2019	0.8619	0.7722
As Trans- National bank	2018	-1.0%	24%	9.2336	0.1884	1.0187	0.7897
As Trans- National bank	2019	-0.6%	30%	9.1397	0.1951	0.9165	0.7620

Access Bank (Kenya) Plc	2020	-19.8%	5%	9.2249	0.1392	1.4320	0.7713
Access Bank (Kenya) Plc	2021	0.7%	6%	9.4888	0.1172	0.8799	0.8250
African Banking Corporation Ltd	2014	1.5%	7%	9.9730	0.1223	0.7392	0.7486
African Banking Corporation Ltd	2015	1.6%	17%	10.0014	0.1286	0.7402	0.7151
African Banking Corporation Ltd	2016	1.0%	19%	10.0178	0.1337	0.8538	0.7171
African Banking Corporation Ltd	2017	0.8%	22%	10.1188	0.1274	0.8733	0.8105
African Banking Corporation Ltd	2018	0.6%	23%	10.2114	0.1307	0.9070	0.8075
African Banking Corporation Ltd	2019	0.6%	18%	10.2640	0.1286	0.8984	0.8013

African Banking Corporation Ltd	2020	0.5%	16%	10.3934	0.1169	0.9120	0.8603
African Banking Corporation Ltd	2021	0.3%	20%	10.5007	0.1079	0.9286	0.8654
Bank of Africa Kenya Ltd	2014	0.3%	6%	11.0383	0.1272	0.7849	0.6698
Bank of Africa Kenya Ltd	2015	-2.1%	24%	11.1459	0.1226	0.6816	0.6855
Bank of Africa Kenya Ltd	2016	0.0%	29%	10.9330	0.1503	0.7320	0.6155
Bank of Africa Kenya Ltd	2017	0.1%	31%	10.9003	0.1563	1.0850	0.6151
Bank of Africa Kenya Ltd	2018	0.4%	36%	10.8012	0.1237	1.0440	0.6149
Bank of Africa Kenya Ltd	2019	-6.7%	40%	10.6919	0.0972	1.4524	0.7575

Bank of Africa Kenya Ltd	2020	-1.5%	40%	10.7126	0.1207	0.9249	0.6229
Bank of Africa Kenya Ltd	2021	0.7%	32%	10.6771	0.1297	1.0146	0.6412
Consolidated Bank of Kenya Ltd	2014	-1.8%	26%	9.6209	0.1040	0.8744	0.7058
Consolidated Bank of Kenya Ltd	2015	0.3%	19%	9.5565	0.1143	0.6837	0.7071
Consolidated Bank of Kenya Ltd	2016	-2.0%	20%	9.5409	0.1008	0.9774	0.6820
Consolidated Bank of Kenya Ltd	2017	-3.3%	25%	9.5072	0.0794	1.0343	0.6581
Consolidated Bank of Kenya Ltd	2018	-2.7%	25%	9.4640	0.1645	0.9880	0.6847
Consolidated Bank of Kenya Ltd	2019	-4.4%	29%	9.3814	0.1685	1.0718	0.7413

Consolidated Bank of Kenya Ltd	2020	-2.0%	24%	9.4639	0.1426	1.0277	0.7207
Consolidated Bank of Kenya Ltd	2021	-2.0%	28%	9.5668	0.1073	0.9969	0.7972
Credit Bank Ltd	2014	-1.0%	10%	9.0899	0.1299	5.6710	0.8136
Credit Bank Ltd	2015	-1.7%	7%	9.2386	0.1353	1.3024	0.7064
Credit Bank Ltd	2016	1.3%	8%	9.4094	0.2016	0.8540	0.7486
Credit Bank Ltd	2017	1.2%	9%	9.5795	0.1842	0.8528	0.7940
Credit Bank Ltd	2018	1.9%	8%	9.7873	0.1608	0.7901	0.8083
Credit Bank Ltd	2019	1.4%	10%	9.9777	0.1393	0.8167	0.8053

Credit Bank Ltd	2020	0.0%	12%	10.0495	0.1390	0.9945	0.7841
Credit Bank Ltd	2021	0.8%	28%	10.1617	0.1285	0.8737	0.7865
Development Bank of Kenya Ltd	2016	0.6%	26%	9.7061	0.1768	0.8437	0.3526
Development Bank of Kenya Ltd	2017	0.4%	22%	9.7001	0.1795	0.6285	0.4697
Development Bank of Kenya Ltd	2018	1.1%	29%	9.6371	0.1874	0.6619	0.4452
Development Bank of Kenya Ltd	2019	7.4%	34%	9.6394	0.2572	0.3597	0.3926
Development Bank of Kenya Ltd	2020	0.1%	34%	9.7539	0.2220	0.8941	0.4807
Development Bank of Kenya Ltd	2021	0.4%	29%	9.7578	0.2211	1.0678	0.5169

DIB Bank Kenya Limited	2018	-16.6%	0%	8.5661	0.3705	7.3174	0.6091
DIB Bank Kenya Limited	2019	-8.8%	1%	9.1036	0.2235	4.4258	0.7245
DIB Bank Kenya Limited	2020	-5.2%	1%	9.4927	0.2146	2.9448	0.7652
DIB Bank Kenya Limited	2021	-4.4%	15%	9.6501	0.2038	2.0981	0.7683
First Community Bank Ltd	2014	0.7%	15%	9.6342	0.0993	0.8424	0.8731
First Community Bank Ltd	2015	0.1%	24%	9.5897	0.1104	0.8289	0.8451
First Community Bank Ltd	2016	-0.3%	32%	9.6133	0.1041	0.8363	0.8458
First Community Bank Ltd	2017	1.2%	40%	9.7619	0.0985	0.6857	0.8516

First Community Bank Ltd	2018	-1.6%	46%	9.7915	0.0711	0.9806	0.8692
First Community Bank Ltd	2019	1.0%	40%	9.8396	0.0779	1.1325	0.8679
First Community Bank Ltd	2020	1.1%	36%	9.9964	0.0935	0.7899	0.8675
First Community Bank Ltd	2021	2.4%	29%	10.1146	0.0999	0.4912	0.8709
Guaranty Trust bank	2014	2.1%	4%	10.4040	0.2172	0.6211	0.5375
Guaranty Trust bank	2015	1.9%	4%	10.2879	0.2691	0.7170	0.5273
Guaranty Trust bank	2016	2.2%	7%	10.2962	0.2825	0.6702	0.5592
Guaranty Trust bank	2017	0.9%	10%	10.2266	0.3116	0.7744	0.6009

Guaranty Trust bank	2018	1.2%	19%	10.1395	0.3338	0.7451	0.6618
Guaranty Trust bank	2019	1.7%	18%	10.2779	0.3029	0.6727	0.6510
Guaranty Trust bank	2020	1.6%	21%	10.3503	0.2939	0.5274	0.6817
Guaranty Trust bank	2021	2.6%	14%	10.4429	0.2842	0.4744	0.6506
Guardian Bank Limited	2014	2.6%	8%	9.5868	0.1162	0.6272	0.8677
Guardian Bank Limited	2015	2.3%	10%	9.5894	0.1516	0.6902	0.8553
Guardian Bank Limited	2016	2.1%	8%	9.5959	0.0737	0.5604	0.8373
Guardian Bank Limited	2017	1.4%	11%	9.6680	0.1503	0.6930	0.8302

Guardian Bank Limited	2018	2.2%	10%	9.6919	0.1536	0.6158	0.8239
Guardian Bank Limited	2019	1.5%	10%	9.7042	0.1629	0.6920	0.7981
Guardian Bank Limited	2020	0.5%	13%	9.7326	0.1643	0.7091	0.7853
Guardian Bank Limited	2021	0.8%	16%	9.7834	0.1649	0.6851	0.8090
Gulf African Bank Ltd	2014	3.1%	7%	9.8911	0.1593	0.6577	0.7996
Gulf African Bank Ltd	2015	4.4%	9%	10.1151	0.1569	0.5449	0.7698
Gulf African Bank Ltd	2016	2.8%	10%	10.2094	0.1611	0.6706	0.8011
Gulf African Bank Ltd	2017	0.8%	10%	10.3519	0.1411	0.6627	0.8336

Gulf African Bank Ltd	2018	0.9%	11%	10.4141	0.1341	0.6644	0.8009
Gulf African Bank Ltd	2019	0.6%	15%	10.4666	0.1320	0.7478	0.7920
Gulf African Bank Ltd	2020	1.5%	18%	10.5362	0.1336	0.6668	0.7960
Gulf African Bank Ltd	2021	1.8%	16%	10.5368	0.1452	0.7032	0.7742
Habib Bank A.G Zurich	2018	1.7%	9%	9.9768	0.1412	0.6694	0.7616
Habib Bank A.G Zurich	2019	1.7%	12%	10.2114	0.1177	0.6409	0.8115
Habib Bank A.G Zurich	2020	1.9%	12%	10.2596	0.1165	0.5276	0.8609
As Jamii Bora Bank Ltd	2021	0.7%	9%	9.4817	0.2367	1.4271	0.6468

As Jamii Bora Bank Ltd	2015	0.2%	7%	9.7281	0.1885	1.9678	0.6522
As Jamii Bora Bank Ltd	2016	-3.1%	20%	9.6629	0.2283	12.5000	0.5148
As Jamii Bora Bank Ltd	2017	-5.9%	21%	9.4612	0.2688	2.1000	0.4367
As Jamii Bora Bank Ltd	2018	-3.8%	70%	9.2108	0.1447	1.6967	0.4785
As Jamii Bora Bank Ltd	2019	-13.3%	57%	9.0577	0.0468	8.0269	0.5586
Kingdom Bank Kenya Ltd	2020	-0.4%	76%	10.3291	0.0487	0.9410	0.1660
Kingdom Bank Kenya Ltd	2021	1.6%	74%	10.3638	0.0595	0.5328	0.2013
Mayfair CIB Bank Ltd	2019	-4.2%	1%	9.0656	0.1202	2.6136	0.8429

Mayfair CIB Bank Ltd	2020	-2.8%	3%	9.4516	0.3237	1.2696	0.6349
Mayfair CIB Bank Ltd	2021	0.6%	4%	9.5076	0.3085	0.8985	0.6614
Middle East Bank (K) Ltd	2014	1.3%	30%	8.6890	0.2078	0.7141	0.8029
Middle East Bank (K) Ltd	2015	0.8%	27%	8.6444	0.2225	0.7689	0.7422
Middle East Bank (K) Ltd	2016	-1.9%	30%	8.5629	0.2278	1.3743	0.7635
Middle East Bank (K) Ltd	2017	-0.8%	44%	8.5411	0.2269	1.1590	0.7631
Middle East Bank (K) Ltd	2018	0.0%	40%	8.5869	0.2160	0.9970	0.7736
Middle East Bank (K) Ltd	2019	0.7%	14%	9.0438	0.1365	0.8593	0.8431

Middle East Bank (K) Ltd	2020	1.0%	10%	9.3076	0.1156	0.7221	0.8714
Middle East Bank (K) Ltd	2021	1.3%	8%	9.3224	0.1252	0.7287	0.8551
M Oriental as Oriental Commercial Bank Ltd	2014	1.1%	11%	8.9693	0.3908	0.9440	0.7929
M Oriental as Oriental Commercial Bank Ltd	2015	0.5%	15%	9.0474	0.3582	0.8729	0.7319
M Oriental Bank (Ltd)	2016	0.4%	12%	9.2023	0.3090	0.6060	0.6993
M Oriental Bank (Ltd)	2017	1.1%	10%	9.2664	0.2863	0.6505	0.7056
M Oriental Bank (Ltd)	2018	1.0%	10%	9.2606	0.2788	0.6476	0.7042
M Oriental Bank (Ltd)	2019	0.5%	19%	9.4250	0.1807	0.5903	0.7413

M Oriental Bank (Ltd)	2020	0.3%	23%	9.4716	0.1229	0.3960	0.7508
M Oriental Bank (Ltd)	2021	0.5%	27%	9.5220	0.1116	0.3799	0.7573
Paramount Bank Ltd	2014	1.3%	20%	9.2498	0.1325	0.6048	0.7737
Paramount Bank Ltd	2015	1.6%	13%	9.2616	0.1460	0.6309	0.7664
Paramount Bank Ltd	2016	1.1%	12%	9.1513	0.1744	0.6485	0.8134
Paramount Bank Ltd	2017	1.0%	12%	9.1634	0.1844	0.6667	0.8101
Paramount Bank Ltd	2018	1.5%	17%	9.1990	0.1706	0.6542	0.8219
Paramount Bank Ltd	2019	0.8%	18%	9.2537	0.1703	0.7597	0.8119

Paramount Bank Ltd	2020	0.9%	17%	9.3394	0.1680	0.6011	0.8143
Paramount Bank Ltd	2021	1.2%	19%	9.4293	0.1654	0.6103	0.8192
Sidian Bank Ltd As K-Rep Bank Ltd	2014	4.6%	7%	9.6677	0.1539	0.6512	0.7637
Sidian Bank Ltd	2015	2.7%	12%	9.8578	0.2008	0.6794	0.7003
Sidian Bank Ltd	2016	0.3%	17%	9.9463	0.1853	0.8510	0.6556
Sidian Bank Ltd	2017	-3.3%	21%	9.8680	0.1786	1.0986	0.7326
Sidian Bank Ltd	2018	-2.2%	21%	10.1397	0.1594	0.8961	0.8103
Sidian Bank Ltd	2019	0.2%	21%	10.1831	0.1519	0.7992	0.6810

Sidian Bank Ltd	2020	0.3%	11%	10.4193	0.1218	0.8677	0.7096
Sidian Bank Ltd	2021	1.7%	12%	10.6313	0.1146	0.6239	0.6659
Spire Bank as Equitorial Commercial bank Ltd	2014	-2.8%	26%	9.7165	0.0696	0.6982	0.8624
Spire Bank as Equitorial Commercial bank Ltd	2015	-4.5%	33%	9.5798	0.1430	1.3723	0.7172
Spire Bank	2016	-7.0%	16%	9.5326	0.1317	1.3575	0.6190
Spire Bank	2017	-14.1%	34%	9.3190	0.1065	2.4818	0.6119
Spire Bank	2018	-3.3%	44%	9.1295	-0.1117	-9.4118	0.7687
Spire Bank	2019	-6.6%	51%	8.8335	-0.0805	-17.6852	0.6637

Spire Bank	2020	-24.6%	71%	8.5397	-0.3559	2.2434	0.9372
Spire Bank	2021	-30.2%	76%	8.2571	0.1070	3.3184	0.4620
UBA Kenya Bank Ltd	2014	-7.0%	7%	8.4672	0.2395	2.1789	0.7519
UBA Kenya Bank Ltd	2015	-3.9%	2%	8.9594	0.1438	1.8138	0.5317
UBA Kenya Bank Ltd	2016	0.9%	2%	8.6307	0.3827	0.9015	0.3476
UBA Kenya Bank Ltd	2017	0.2%	5%	8.7803	0.3324	0.9320	0.6447
UBA Kenya Bank Ltd	2018	0.2%	13%	9.6377	0.1418	0.8990	0.8455
UBA Kenya Bank Ltd	2019	0.7%	23%	9.6858	0.1393	0.6667	0.8453

UBA Kenya Bank Ltd	2020	0.3%	41%	9.8386	0.0912	1.3402	0.8293
UBA Kenya Bank Ltd	2021	-10.2%	48%	9.5177	0.0605	-14.3472	0.9001
Victoria Commercial Bank Ltd	2014	3.7%	0%	9.7552	0.1668	0.3888	0.7127
Victoria Commercial Bank Ltd	2015	3.4%	0%	9.9045	0.1754	0.4468	0.7005
Victoria Commercial Bank Ltd	2016	3.6%	0%	10.0170	0.2259	0.4911	0.7006
Victoria Commercial Bank Ltd	2017	3.3%	0%	10.1653	0.2160	0.5282	0.7268
Victoria Commercial Bank Ltd	2018	1.7%	3%	10.3840	0.1844	0.5233	0.7527
Victoria Commercial Bank Ltd	2019	1.9%	5%	10.4933	0.1762	0.5893	0.7582

Victoria Commercial Bank Ltd	2020	1.3%	7%	10.5424	0.1780	0.4244	0.7603
Victoria Commercial Bank Ltd	2021	1.2%	14%	10.6798	0.1607	0.4075	0.7832