THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

Credit Risk and the Financial Performance of Commercial Banks in Kenya

Hilda Mideva Akidiva
Student, Department of Accounting and Finance, Kenya Methodist University, Kenya
Doreen K. Mutegi
Lecturer, Department of Accounting and Finance, Kenya Methodist University, Kenya
Jane Munga
Lecturer, Department of Accounting and Finance, Kenya Methodist University, Kenya

Abstract:
The research is on Credit risk and the financial performance of commercial banks in Kenya. The purpose of the study was to assess the relationship between credit risk and the financial performance of commercial banks in Kenya. The study focused mainly on commercial banks in Kenya. The purpose of the study was to assess the effects of credit risk and the financial performance of commercial banks in Kenya. The research used the purposive sampling method for convenience since the data of the banks selected was readily available. The study covered the period from 2011 to 2015. From a population of forty-twobanks, a total of seven commercial banks were selected on a Purposive basis for the five years. Data was collected from the financial statements of the banks and the central bank of Kenya. The return on assets (ROA) and return on equity (ROE) were used as the financial performance measures with credit risk measured in terms of Portfolio at Risk which was derived at using the loans and advances to customers and the non-performing loans, Recovery Rate that used the value of collateral held by the bank and the value of the loan, Non-Performing Loans which used the ratio of total loan portfolio to the non-performing loans and Bad Debts Written Off that used the value of the loan written off and the average gross portfolio. The descriptive, correlation and regression analysis results were derived with the help of SPSS to perform the data analysis. Significance was tested at 5% level. The findings were presented using tables and narratives. The findings of this study show that the constant term was significantly different from zero indicating that a Part of the variation in ROA and ROE could not be explained by variation in credit risk across commercial banks. This indicates that Credit Risk had a positive effect on the financial performance of commercial banks. However, credit risk did not actively explain variation in ROA and ROE. Thiswas confirmed by the weak value of the coefficient of determination and the analysis of variance. This leads to the conclusion that even though proper credit risk management is essential in determining the financial performance of commercial banks; it is not an essential driver of profitability of commercial banks in Kenya. Most commercial banks in Kenya fail due to poor governance. The mean ROA for the seven banks was 0.894 with a standard deviation of 0.176. The study showed that credit risk did not have a significant effect on the financial performance of commercial banks in Kenya. A rise in Credit risk led to the decrease of financial performance and vice versa. The study established that most of the bank's poor financial performance is not caused by credit risk but by poor governance. It is recommended that banks put in place measures and guidelines that will compel banks to share information about their borrowers to ensure that loans are granted to the honest borrowers. The study can be done with a broader population across all countries in East Africa. The East African community is an emerging market that is affecting the Horn of Africa Region. A study conducted in the region will provide handy and current input for decision making concerning effects of fraud on the performance of commercial banks in the East Africa region.

Keywords: *Credit Risk, bank performance, recovery rate, portfolio at risk, non-performing Loans, bad debts written off, bad debts*

1. Introduction

1.1. Background of the Study

Banks are the largest financial institutions in Kenya and around the world. Commercial banks are financial institutions that provide financial services that include, issuing money in various forms, receiving deposits of money, lending money and processing transactions and the creation of credit (Campbell, 2007). Performance is the ultimate test of the effectiveness of risk management. Performance and Activity of banks aresignificantly affected due to the exposure to different kinds of risks.

Credit risk is the primary risk that banks face, and its one of the primary sources of income in most commercial banks hence the management of the credit risk affects the performance of the banks (Altman, 2008). The concept of the study includes portfolio at risk, recovery rate, non-performing loans, and bad debts written off, this forms the independent variables, and the bank's financial performance is dependent on the three variables (Basurto, 2006).

Credit risk is the likelihood that the borrower will default on any debt by failing to make the required payments. The burden of credit risk is primarily to the lender and may include loss of principal and interest, disruption to cash flows, and increased collection costs (Bharath, 2005). Losses incurred due to due to credit risk may be complete or partial and can arise in some circumstances. The Credit default theory is needed to understand the lending risks systematically and ultimately to measure credit risk dynamically for financial system stability. Credit default is treated by joint process delinquency and insolvency (Elul, 2006). Credit Default theory represents the economic failure of an entity which is either a person or a company. Credit default theory framework leads to the determination of the probability of default (PD) and the loss given default (LGD). The liquidity preference theory suggests that investor's demands higher interest rate or premium, on the securities with long-term maturities, which carry higher risk. For an investor to sacrifice more liquidity willingly, he prefers being offered a higher rate of return in exchange for agreeing to have his cash tied up formore extended periods of time (Jones, 2007). The Modern Portfolio Theory (MPT) is a theory that is based on the idea that adverse risk investors can construct portfolios to optimize or maximize expected return based on a given level of market risk, with emphasis on risk being an inherent Part of a higher reward (Yunus, 2006).

Exposures to credit risk have led to the failure of many banks worldwide. The Basel states that credit risk is the significant financial risks that commercial banks face. The primary sources of revenue for banks worldwide are private deposits, and credit market borrowing (BIS, 2005). The Kenyan commercial banks have grown both in number, branches, and offering a variety of services like loans, credits and debit cards services, and the introduction of automatic teller machines (ATMs), Electronic banking services (e-banking) and other services. With Kenya being Part of the East African community, some of the major banks in the region have penetrated the market and are operating in Kenya, and others have opened branches outside Kenya. The leading banks with activities outside Kenya include Kenya Commercial Bank (KCB), and Equity Bank.

1.2. Bank Performance

Every banking institutions main aim is to operate profitably to maintain its stability and improve in growth and expansion. In the last two decades, the banking sector has been faced by with various challenges that include and not limited to, Non-performing loans, political interference, and fluctuations of interest rates among others (Altman, 2005). Credit risk management is the most important as it forms the most important Part of the loans processing, Credit risk management maximizes bank risk, adjusted risk rate of return by maintaining credit risk exposure. Credit risk measurement is an essential exercise for any financial institution. Credit risk is classifiedinto two categories, Issuer risk and Counterparty risk (Yam, 2003). Financial Performance is the profit or loss incurred by the bank. Several measures have been used to measure the financial performance of commercial banks. Measures of Financial performance are measured using the Capital adequacy, Asset quality, Management, Earnings, liquidity and sensitivity (CAMELS). CAMELS refer to the six components of a bank's conditions that are assessed and also regulate the banking sector by giving guidance on governance (Ramos, 2000).

Issuer risk is when the issuer/obligor defaults and is unable to fulfill their payment obligations while counterparty risk includes default risk, replacement risk, and settlement risk. Default Risk occurs when counterparty defaults without making any payment or incomplete payment on the loan. Settlement risk is when the Parties involved in the settlement fail before the full settlement of the transaction; Replacement risk is the risk that after the default by the obligor, it is not possible to replace the deal under the same conditions (Pagano, 2004).

Under Basel II, banks must employ the standardized approach to estimate their economic capital for credit risk. Basel II expects banks to apply the gradedapproach to evaluate their economiccapital for credit risk (Kargi, 2010). Basel II allows banks to use their credit risk models, which enable them to segregate risk better and include diversification effects of the bank's portfolio. The Bank of International Standards (BIS) recognizes the main components of credit risk as Probability of Default (PD) which is the probability that the obligor will default within a given time horizon, Exposure at Default (EAD) i.e. The Amount that is outstanding with the obligor at the time of default, Loss Given Default (LGD) i.e. Percentage loss incurred relative to the EAD, Maturity (M) i.e. Effective maturity of the exposure (Abiola, 2013).

1.3. Credit Risk

Administration of credit in commercial banks helps to reduce risks of delinquency and default. It is advisable for a bank to have an efficient loan appraisal system. The loan appraisal system helps to determine the lending Parameters to be implemented when identifying investment opportunities (Wenner, 2007). If banks are aware of the creditworthiness of a borrower they are more likely to make higher profits. Serious banking problems are caused by low credit standards for borrowers and counterparties, poor portfolio management. High leverage is used by banks to generate acceptable levels of profits. Massive levels of non-performing loans in commercial banks can be attributed to poor corporate governance practices, lax credit administration process and the lack of adherence to the credit risk management practices (Varma, 2003).

Portfolio at risk (PaR) is loans that are late in payments. When calculating PaR, it is assumed that the whole outstanding loan is at risk even if it is just a portion of the loan installment is late. It is also assumed that the borrower who breaches the installment contract could easily fail to pay the entire amount (A. H. L., 1998). PaR is a method that s mostly used by microfinance institutions (MFI's). PaR is the percentage that represents the Proportion of an MFI's total gross outstanding loan portfolio that is at default risk. PAR attempts to measure the default risk in a portfolio by using past data and future data. Estimation PaR is based on the vital question of whether all delinquent borrowers completely defaulted and how much money would make the MFI stand to lose. The PaR trends are, a decreasing PaR is positive while an Increasing PaR is negative. However, many researchers disagree with this approach to measuring PaR (Aburime, 2008). Re-scheduling, Refinancing and Loan write-offs can portray a lower PaR ratio while the default risk may still be high (S.Arunachalam, 2013). The Records Required for Calculating PaR Include, Loan Ledger with disbursement date, installment schedule, and repayment data, on individual loans backed-up by a comprehensive credit policy outlining the terms and conditions, Aggregation of the loan ledger about delinquent and current loans (Baral, 2005).

The Provision of Expense Ratio (PER) measure indicates the expense incurred by a financial Institution to anticipate future loan losses. The institution should expect this ratio to increase in step with the overall portfolio growth (Borio, 2009). For MFI's Local Banking and tax laws will prescribe the minimum rate at which to allow for loan losses. The PER is calculated by, dividing the loan loss provision expense for the period by the period's average gross portfolio. Risk Coverage Ratio shows the percentage of the portfolio at risk coverage by the actual loan loss reserve. It shows how well the financial Institution is well prepared for the worst-case scenario. High reserves of Portfolio Risk in commercial banks indicate whether to give or not to give a loan (Brown, 2011). A higher risk Coverage should be preferred

The Write-off Ratio states that the loans the institution has removed from its books because of substantial doubt will be recovered. The writing off of a loan is an accounting transaction that to prevent assets from being unrealistically inflated by loans that may be recovered (Kosmidou, 2008). Writing off of loans affects the gross loan portfolio and the loan loss reserves equally. If provisions reserves are inadequate, the transaction will not affect total assets, net loan portfolio, expenses or net income. Write-offs do not rely on the collection efforts or the client's obligation to repay. Non-Performing Loans (NPL) are loans that no longer produce revenue for the bank (Auronen, 2003). A loan is termed as nonperforming when a borrower stops making payments towards its repayment. A loan amount is considered to be nonperforming when it has been in default for three consecutive months, if the borrower is declared bankrupt, or loses the income needed to repay the debt. The measure of Nonperforming loans is calculated as the ratio between nonperforming loans and the total loans expressed as a percentage (Lexicon, 2015). The NPL measures the bank's ability and effectiveness in receiving payments on its loans.

Analyst view lenders with high NPL ratios as engaging in high-risk lending policies, which may lead to bank failure (Verde, 2003). Economists, on the other hand, examine NPL ratios to predict potential instability in the financial markets. Investors can use the NPL ratios to make investment decisions and always prefer banks with a low NPL ratio as being a low-risk investment as compared with those that have high ratios (Hanks, 2016). NPL is the primary indicator of commercial banks credit risk. It is the ratio of NPL to the total loan. It usually represents the number of bank loans and advances that are becoming nonperforming, and in turn measures the extent of credit default risk that the bank has incurred (Aburime, 2008). As the NPL ratio increases, it indicates the probability of the bank not recovering the major asset (Akerlof, 1970).

1.4. Credit Risk & Bank Performance in Kenya

Knowing the impact of credit risk have on the performance of the bank is very important as it enables the bank to manage the risk efficiently (Fan, 2014). Commercial banks perform universal banking services as per the reasonable efficiency standards. There are forty-two registered commercial banks in Kenya (Nworji & Adeyanju, 2011). Credit risk in financial institutions arises from granting credit, which is also the primary source of income in commercial banks, the management of that risk related to the credit given affects the performance of banks. Credit risk is a risk that the borrower may default or fail to pay on time.

Financial Performance of Commercial banks is determined by many factors with the main one being credit risk (A. H. L., 1998). These threats can either be internal or external. Commercial banks have shut down due to credit risks which are the leading cause of poor performance loans. Commercial banks have policies which guide the process of advancing credit. These policies involve the characteristics of who should access the loan and the collateral required. Some banks even guard themselves through insurance. Once this is achieved the financial performance is expected to go up (Elyor, 2009).

Through effective management of credit risk exposure, banks not only support the viability and performance of their own business but also contribute to the system stability and an efficient allocation of capital in the economy (Baral, 2005). Other sources of credit risk exist throughout the activities of a bank, including the banking book and in the trading books, and both off and on the balance sheet (Hennie, 2003). Banks face credit risk or counterparty risk every day, in different forms of financial instruments other than loans (Glen, 2011).

1.5. Statement of the Problem

Expansion, stability, and growth are the main aims of every banking institution. Loans are the most prominent assets in most banks and generate the most significant share of operating income, and it also represents the banks most considerable

risk exposures (Fan, 2014). The banking sector in Kenya has been faced with various challenges that include non-performing loans (NPL), and the fluctuations of interest rate among others, this are threats to banks stability (Brown, 2011).
The relationship between credit risk and commercial banks performance is the concern of various studies proving that credit risk is the primary factor that affects the financial performance of commercial banks (Ndwiga, 2015). From the year 2014, three banks have been placed under receivership by the Central Bank of Kenya; these banks include; Dubai Bank, Imperial Bank, and Chase Bank. Dubai Bank was placed under receivership by the CBK in August 2015; the bank was placed under receivership following 'liquidity challenges and Capital Deficiencies' (Michira, 2015)

Imperial Bank LTD, was placed under receivership in October 2015. CBK appointed the Kenya Deposit Insurance Corporation (KDIC) to take over the management and control of the bank for 12 months. Imperial bank LTD was ranked as one of the best banks in Kenya being ranked seventeenth on total customer deposits with 1.8 percent of the total industry.The launch of a two Billion shillings corporate bond offer in August was followed by the bank's receivership (Ngigi, 2015). Chase bank which was the latest bank to be placed under receivership by the CBK, the bank has been put under statutory management for a year from April 2016 due to the unfavorable financial conditions (Kangethe, 2017).

Most commercial banks in Kenya experience bad loans on their credit portfolios every year due to fluctuations in interest rates (Riaga, 2016). It is crucial that credit risk need to be pursued to enable banks to manage loan portfolios, in return this will minimize losses and earn acceptable levels of return for shareholders. Thus this research is focused on the Credit risk and the financial performance of the commercial banks in Kenya as they manage to perform their intermediation function.The customers mainly cause credit risk, The primary aim of this study is to establish the relationship between credit risk credit risk and the financial performance of commercial banks in Kenya (Kithinji, 2011). The study uses the variable approach to credit risk.

2.Research Objectives

2.1. General Objective

The primary objective of this study was to assess the effect of credit risk and the financial performance of the commercial banks in Kenya.

2.2. Specific Objectives

The objectives of the study were:

- To determine the impact of Portfolio on Risk and the Financial Performance of Commercial Banks.
- To assess the effect of Recovery Rate & financial Performance of Commercial Banks
- To evaluate the impact of Non-performing Loans &Financial Performance of Commercial Banks in Kenya.
- To assess the effect of bad debts written off on the financial performance of commercial banks in Kenya.

2.3. Research Questions

This research addressed the following questions

- How does Portfolio at Risk affect the financial performance of Commercial Banks?
- How does Recovery Rate affect the Financial Performance of Commercial Banks?
- How does Non-performing loan affect the Financial Performance of Commercial Banks in Kenya?
- How does a Bad debt write off affect the financial performance of commercial banks in Kenya?

2.4. Significance of the Study

This study is beneficial to the commercial bank as it focuses mainly on the credit risk about the bank's performance. The study adds value to better identification of credit risk practices in Commercial Banks in Kenya through improved business practices and better service delivery. In the banking industry, this information is valuable mostly to the commercial bank's management as it provided insights into the best credit risk measurements practices that can be adapted to enhance financial performance in the industry.

In academia, the study adds value to academic research in the area of credit risk in commercial banks and forms a basis which further studies on credit risk and financial performance in the financial industry can be conducted. The information obtained will be useful to future investors in the industry and the senior management. The information is also being relevant to credit departments in banks and the senior managers as it provides insight into the bank's image.

The government of Kenya and the regulating body the Central Bank of Kenya (CBK) has information on the importance of implementation of various legal frameworks in relation credit risk and the financial performance of commercial banks. The information obtained will be of helping them in developing policy papers, policy-making regarding credits and other regulatory requirements of the commercial banks in Kenya.

In academics, the study is relevant information regarding Credit Risk and the financial performance of commercial banks. This research may form a basis for further study and contribute to the general knowledge of credit risk.

2.5. Research Scope

Conceptually, the study finds out the effect of credit risk on the financial performance of commercial banks in Kenya. Included is the concept of credit risk and the financial performanceOf Kenyan Commercial Banks. The study was limited to seven commercial banks in Kenya between the years 2011 to 2015.

2.5.1. Limitations

The study only focuses on the commercial banks in Kenya. The findings of this research may therefore not be generalized to all financial institutions in Kenya. The banks that have closed or put into receivership were not be included in this study. Some commercial banks were not willing to give out information due to the policies within their organization about privacy and confidentiality thus referred the researcher to official records and to publications which were available online.

2.5.2. Delimitations of the Study

The researcher built confidence with the correspondents by assuring them that any information used or collected during the study was to be treated with confidentiality and were not be shared to any third Party without their consent and their identity would not be revealed, This made the correspondents feel comfortable with the researcher. Out of the forty-two commercial banks in Kenya, the researcher chose a sample of seven banks. Banks that were closed were not included in the research as the researcher could not get information on the banks. Primary data will not be used as the research focuses mainly on the past data, this can only be found obtained using secondary data.

2.6. Definition of Keywords / Terms

2.6.1. Credit Risk

Credit risk is also known as the default risk. It is the risk of loss of losing an outstanding amount partially or due to some unavoidable credit events. (Supervision, 2001)

2.6.2. Bank Performance

It is merely the performance of the bank (Gieseche, 2004). Bank profits is an appropriate way of measuring the bank's financial performance.

2.6.3. Recovery Rate

This is the proportion of bad debt that can be recovered.

2.6.4. Portfolio at Risk

Portfolio at risk is the ratio of all outstanding loan balances with areas over 30 days, plus all refinanced/restructured loans, by the exceptional gross portfolio as of a specific date.

2.6.5. Non-Performing Loans

this is a loan which a borrower is not making interest payments or repaying any principal. A bank loan becomes a non-performing when more than 90 days pass without the borrower paying the installments or interests agreed by the bank.

2.6.6. Bad Debts

Non – performing loans are also called bad debts

2.6.7. Bad Debts Written off

this is the ratio of the total write-offs for the period by the period's average gross portfolio.

3. Literature Review

3.1. Introduction

This chapter reviews the previous work done by researchers on the topic of Credit Risk about the performance of Commercial Banks. The study will also aid in identifying and filling the gaps that previous researchers left. The main sections in the chapter will focus on the critical review and analysis of past studies and literature review and a summary of the vital issues in the research. The researcher will also look at the theories that build up the study like the credit default theory, the liquidity preference theory, and the modern portfolio theory.

3.2. Theoretical Orientation

This study has been founded on the theories of credit risk and performance of commercial banks, especially the Credit default theories, liquidity preference theory, and Modern portfolio theory. These theories will help the researcher take a closer look at the theoretical foundations and contributions on the subject matter.

3.2.1. The Credit Default theory

Credit Default represents financial Failure of an entity. Existing Credit default theories do not link causes directly to the effect of default and are unable to evaluate credit risk in the rapidly changing market environment (Krakah, 2010). Theories of credit default are needed to understand lending risks systematically and ultimately to measure and manage credit risk dynamically for financial system stability. Credit default theory is, therefore, a systematic understanding of the causes which lead directly to the effects which are associated with credit defaults. The credit default theories lead to a unified default theory where PD and the LGD are determined endogenously and consistently (Glen, 2011).

In commercial banks, an unsecured loan, a credit default is defined as delinquency while for a secured loan; a credit default is defined as the occurrence of both delinquency and insolvency. The term Credit default has been used to mean late payment of a debt obligation, and the bank can apply a penalty, i.e., an interest rate between the due date and the actual payments date. It can also mean bankruptcy or insolvency of the borrower and the lender is forced to initiate a recovery process to limit loss from a collateralized loan. Collateralized loans have less credit risk as compared to uncollateralized loans (Brown, 2011). Credit default theory is used in this study to determine the delinquency, insolvency, and expected loss of the commercial bank (Baral, 2005).

3.2.2. Liquidity Preference Theory

The demand for money is known as the liquidity preference. The concept was developed by John, (1936) when he wrote his book, the general theory of employment, interest, and money. The book explained the determination of the interest rate by supply and demand for money. The need for money as an asset was theorized to depend on the interest forgone by not holding bonds, where bonds can represent stocks and other; less liquid assets in general including government bonds (Kithinji, 2011).

According to Keynes, liquidity demand is determined by three motives, the transaction motive where people prefer to have liquid to assure necessary transactions because their income is not consistent(Azeem, 2013). The amount of liquidity demanded is determined by the level of income; a higher income demands more money to carry out the increased spending. The precautionary motive, people prefer to have liquidity in the case of unexpected social problems that need unusual costs (Barta, 2003). As income increases and as the amount of money demanded increases. Speculative Motive, people retain liquidity to speculate the bond prices may fall (Auronen, 2003). Demand for money is affected by the interest rates; People tend to spend less when the interest rates decrease and pay more when the interest rates increase.When the interest rate decreases, people demand more money to hold until the interest rate increases, this will drive down the price of an existing bond and keep it in line with the interest rate (Albertazzi, 2009).

A mutual determination is a fallacy that the liquidity preference theory faces. Keynes alleged that the liquidity preference determines the rate of interest but as an unexplained force imposing that is itself on the other elements of the economic system(Aburime, 2008). The two reasons for holding cash are mainly transaction reasons and investment reasons. When people hold onto money, Credit risk becomes high hence affects the financial performance of banks (Aburime, 2008).

3.2.3. Modern Portfolio Theory

According to (Markowitz, 1952), Modern Portfolio Theory (MPT) is among the most potent economic theories in finance and investment. MPT measures the benefits of diversification. The theory explains that investors can maximize their returns and minimize their risks by diversification in their investment decisions. (Tobin, 1958) did a further study on the Markowitz study on Portfolio Theory, he added that the analysis of Risk-free assets that made it possible to influence portfolios on the efficient frontier. (Tobin, 1958) Moreover, (Markowitz, 1952) showed that identifying the composition of an optimal portfolio of risky securities, with given forecasts of future returns and appropriate covariance of share returns. The MPT emphasizes that risk is an inherent part of higher yields.

The MPT approach plays a vital role in the studies of the financial performance of banks (Atemnkeng, 2010). It tries to show that portfolio diversification and the desired portfolio composition of commercial banks are as a result of decisions taken by the bank's management. The ability to obtain maximum profits depends on the feasibility set of assets and liabilities which are determined by the administration and the unit costs incurred by the bank for producing each component of assets, (Atemnkeng, 2010). Commercial banks should diversify their investments portfolio to minimize default risk by Credit takers in loan payments and causing non-Performing loans portfolios that affect financial performance.

The Revenue Diversification which follows the concept of Portfolio theory that states that individuals should reduce firm-specific risk by diversifying their portfolios. Activity diversification or product mix argue that diversification provide a stable with a less volatile income, Economies of scope and scale, and the ability to leverage managerial efficiency across products and reduce NPL and increase ROA which is a measure of financial performance (Kithinji, 2011).

When applying MPT to the Credit risk associated with borrowings, we assume that where there is a low credit risk, the banks should expect to get a low return on loan. It is essential to the portfolio theory in relation to bank borrowing is the relationship between Credit risk and the performance, and the assumption that the investors who are the commercial banks must be compensated for assuming credit risk and lending the borrower, hence the interest rate is charged to all lending made by the banks (Tomak, 2013). Borrowers who ask for higher borrowings are riskier than those who request for less.

3.3. Theoretical Framework

The theoretical framework is informed by the various theories discussed in the Theoretical review on the performance of commercial banks in Kenya.

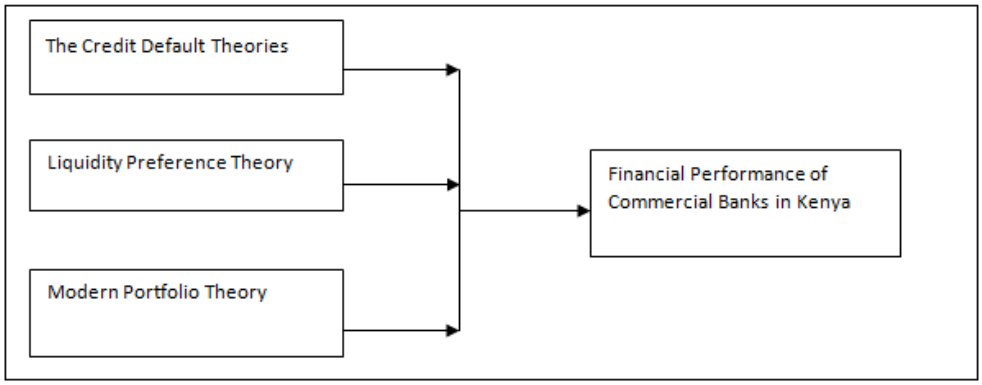

Figure 1: Theoretical Framework

3.3.1. Empirical Review

The empirical review looks more systematically at the Credit risk and the financial performance of commercial banks and the measures of credit risk which include, Portfolio at risk, recovery rate, non-performing loans, and bad debts written off.

3.3.2. Credit Risk

Commercial banks play a dominant role in the lending of funds to borrowers (Allen, 2014). Almost all commercial banks across the world perform investment banking activities by providing new debt to their customers (Gande, 2008). Credit creation process can only work smoothly when funds are transferred from the ultimate savers to borrowers (Bernanke, 2003). Commercial Banks are faced with many potential risks that include liquidity risk, credit risk, interest rate risk, market risk, foreign exchange risk and political risks, but Credit risk is a significant risk that affects the bank's performance (Campbell, 2007). Of all the risks faced by commercial banks, Credit risk is the most significant risk faced by the commercial banks and financial intermediaries (Gray, 2007). The indicators of credit risk include the level of bad loans, i.e., NPL (Jimenez, 2006).

According to (Funso, 2012) on their investigations on the quantitative effects of credit risk on the financial performance of commercial banks in Nigeria from 2000-2010, Profit was measured using Return on Asset (ROA), as a function of the ratio of the non-performing loan to loan and advances, ratio of total loan and advances to total deposit and the ratio of loan loss provision to classified loans as a measure of credit risk.A Panel Model analysis estimated the determinants of the profit function. The findings showed that the effect of credit risk on bank financial performance measured by the ROA of banks is Cross-Sectional invariant (Ongore, 2011).

The risk is the possibility of losing the original investment and the amount of the interest accrued on it. Credit risk is the risk of a borrower defaulting and does not honor the service of the debt. It mainly occurs when the borrower is unable to pay on time (Gestel, 2012). A study done by (RPS, 2012) on the factors affecting commercial banks financial performance using the linear regression analysis technique, revealed that a significant inverse relationship between commercial bank financial performance measured by ROA and credit risk measured by default rate and capital adequacy ratio.

Hosna, (2009) found similar results in his study; The results showed the rate of Non-Performing Loans (NPL) and capital adequacy ratios were inversely related to the ROE through the magnitude varies from one bank to another. Credit risk is the probability that a loan borrower might fail to make payments required to offset his borrowings. This risk primarily affects the lender and includes the loss of the principal amount and the interest earned on the amount; Thisdisrupts the lender's cash flows and increased collection costs (Krakah, 2013).

Measures of credit risk are linked to the banking innovations and technologies, which enables rapid decision making and reduce the cost of controlling credit risk. The banking business involves taking and managing risks (Azeem, 2013). Some empirical studies have evidenced the negative and significant relationship between credit risk and commercial banks performance. Some studies done by (Boahene SH, 2012) suggest that, a positive and significant relationship between commercial banks performance and credit risk. He uses the panel data analysis model in his study and reveals that the indicators of credit risk which include, non-performing loans rate, Net-Charge off rate, and the pre-provision profit as a percentage of net total loans and advances were positively related with performance measured by ROE (Glen, 2011).

Credit risk is the risk that is relatedto the loans where banks lend to the borrower and usually charge a fee against it (Brown, 2014). There is no assurance that the amount borrowed would be repaid by the borrowers and the default risk is faced by the lenders who are the commercial banks. Credit risk is divided into three risks which include; default risk, exposure risk and recovery risk (Panzaru, 2011). Default risk: This is the likelihood of nonpayment of debt by the borrower when the scheduled payment has not been made in a minimum period from the due date. Exposure Risk: Exposure risk quantifies the

uncertainty on the collection of the amount borrowed. When the loan is repaid under a firm contract, the exposure risk is considered to be low or negligible. Recovery Risk: Recoveries depend on the type of default and other factors such as the debtor's collateral, or third Party. Nonpayment does not necessarily mean that the debtor will not pay, but specific actions such as renegotiations of the payment obligation outstanding (Atemnkeng, 2011).

The credit risk in a bank's loan portfolio consists of three components (Arunkumar, 2005). Transaction Risk: It focuses on the volatility in credit quality and earnings resulting from how the bank underwrites individual loan transactions. Transaction risk has three dimensions they include; Selection, Underwriting, and operations. Intrinsic Risk: This focuses mainly on the inherent risks in certain kinds of business and loans to specific industries. Intrinsic risk addresses the susceptibility to historical, predictive, and lending risk factors that characterize and industry. Concentration Risk:This is the aggregation of the transaction and inherent risk within the portfolio and may result from loans to a borrower or industry, geographical area, or lines of business. Banks are required to define acceptable portfolio concentrations for each of these aggregations (Azeem, 2013).

Credit risk according to (Hosna, 2009) is the most significant risk in the commercial banks due to its association with possible losses. The author goes further and divides credit risk into three different types such as default risk, exposure risk, and recovery risk. They also argue that commercial banks consider credit risk about bank loans which makes the overall analysis and investigation of the market dependent on the credit risk management (Aduda, 2011). The credit process works well when funds are transferred from the savers to the borrowers (Bernank, 1993).

Before financial sector deregulation, banks were motivated to grant credit facilities to their clients who could express their creditworthiness (Bryant, 1999). Granting of credit requires strict procedures and control systems to be in place for the assessment of the loan application by the borrower (Boyd, 1993). It is necessary to establish proper credit risk environment, with sound credit granting process, appropriate credit administration, measurement, monitoring and control over credit risk.
Credit risk, market risk, and operational risk are the type of risks facing banks and can be efficiently managed through proper management(Alam, 2011). Two distinct dimensions of credit risk management can be identified as Preventive measures and curative measures. Preventive measures include risk assessment, risk measurement and risk pricing, early warning systems to pick signals of future defaults and better credit portfolio diversification this research will focus mostly on the credit risk measurement (Aburime, 2008).

3.3.3. Financial performance of Commercial Banks

Performance indicates the capacity of banks to handle risk while increasing their capital. It indicates the bank's competitiveness and measures the quality of the bank's management (Alkhatib, 2012). The total debt to equity ratio is one of the determinants of bank performance. For lower debt to equity ratios, higher debt financing may motivate managerial behavior resulting in decreased agency costs, and consequently, higher performance. However if debt levels reach a high level, which implies that equity financing is too low, there is no incentive for managers to act on behalf of the shareholders' benefit and there will be an increased costs related to debt financing, due to a higher likelihood of bankruptcy. At such excessive debt levels, total debt to equity may be negatively associated with performance (Paolo, 2011).

Several studies suggest that a positive relationship between higher debt levels and credit risk and a positive or insignificant relationship between higher debt levels and performance. The regulatory asset risk-based measure for credit risk and indirect measure for debt to equity, i.e., based on equity to risk-based assets, where higher equity is equivalent to lower debt levels, (Salah, 2012) and (Corcoran, 2010) found that there is a negative relationship between equity levels and credit risk.

The determinants of commercial banks performance can be concluded into two categories, and include, those that are controllable, i.e., internal determinants and the ones that are beyond the management control, i.e., external determinants. The internal determinants reflect on the bank's management policy and their decisions on the sources and uses of funds management. These statements are examined using the financial statements of the commercial banks. The external factors are including the environmental factors and firm-specific ones (Mausya, 2012).

The quantitative effects of credit risk on the performance of commercial banks in Nigeria, Profits were measured on ROA, as a ratio function of the non-performing loan to loan and advances, ratio of total loan and advances to deposit and the ratio of the loan provision to classified loans as a measure of credit (Brown, 2011). The panel data analysis model was used in the study to estimate the determinants of the profit function which showed that, the effects of credit on bank performance measured by the return on asset of banks is cross-sectional invariant (Funso & Kolande, 2012).
Felix (2008), investigates the relationship between bank performance and the credit risk. The study found out that ROE and ROA both measuring performanceswas inversely related to the ratio of the non-performing loan to total loan of financial institutions which led to a decline in profits.

A banks short-term liquidity risk is affected by the timing of cash inflows and outflows along with prospects of performance (Azeem, 2013).
Return on Equity (ROE);ROE measures the amount of net income after taxes earned for each shilling of equity capital contributed by the bank's shareholders (Saunders & Marcia, 2011). Stockholders of banks prefer higher ROE; however, a higher ROE demonstrates an increased risk. A massive drop in equity Capital may resultin a violation of minimum regulatory capital standards and increases the risk of insolvency for the banks (Saunders & Marcia, 2011).

ROE is calculated using the Net Income divided by the total equity capital. In order to identify potential problems, ROE can be decomposed into two components, which is the ratio of Net Income to total assets (ROA) (Bascio, 2017), Multiplied by the ratio of total assets to total equity capital (EM), Whereby; ROA = Return on Assets (a measure of performance linked to the size of the bank), EM= Equity Multiplier (a measure of leverage) Net income is the profit after tax (Saunders & Marcia, 2011).The higher the EM ratio indicates, the more leverage (or debt) that is used by banks to fund its assets, A higher EM ratio and ROA ratio have a positive influence on the ROE ratios. Return on Assets (ROA)**;** ROA is the ratio of net income and total resources of the CB's. It measures the efficiency of the bank's management in generating profits out of its scarce resources. The more the ratio of ROA, the better the effectiveness of the bank's management.

Capital Adequacy Ratio (CAR); theoretically, it is acceptable that banks with sound capital adequacy ratio have a good performance. A bank with strong capital adequacy can absorb possible loan losses and avoid insolvency and failure. Nonperforming Loans;NPL are the significant indicators of commercial banks credit risk. It is the ratio of NPL to the Total loan. It indicates the bank's loans and advances that are becoming nonperforming and measures the extent of the credit default risk that the bank will have sustained.

Credit Scoring Models; Credit scoring models are used in the process of accepting or rejecting a clients' credit by the bank. Most banks use the judgmental approach based on the 3c's, 4c's, or 5c's which represent The Character, i.e., thereputation of the client, Capital, i.e., the leverage, Collateral, Capacity, i.e., Volatility of earnings by the borrower and condition. The credit scoring models are used by the creditors to assign credit applicant to either proper credit or bad credit. Good credit is one that is likely to repay their financial obligations while a bad credit is one that is most likely to default on the payment of their obligations.

Although credit scoringis widely used for loan applications, in financial and banking institutions, it can also be used in other types of organizations such as insurance, real estate, telecommunications and recreational clubs for predicting late payments. Credit scoring was introduced in the 1940's since then it has evolved and developed significantly (Beaver, 1967) and (Altman, 1968). Some of the variables used by (Marvi, 2008)include Gender, age, education, marital status and monthly income to estimate the risk of credit card applicants. (Vojtek, 2006) Provided a table of indicators that are very important in retail credit scoring models. The indicatorsare classified as demographic, financial, employment, and behavioral indicators.
A study done by (Abdou, 2008), in his research, he used twenty variables which included, loan amount, loan duration, sex, marital status, age, monthly salary, additional income, house owned or rent, and the education level of the borrower to build the credit scoring models to evaluate the credit risk which was either paid or default by individuals. (Koh, 2004) used annual income, gender, age, marital status, number of children, number of other credit cards held and if the applicant has an outstanding mortgage loan to construct a credit scoring model to predict credit risk of credit card applicants and classified them as a severe loss, bad profit, and reasonable risk.

When the profiles of late paying customers were investigated by (Ang, 1979), using variables such as gross amount of loan, age, sex, marital status, number of dependants, years lived at residence, other monthly income, net salary, total monthly payments on all debts, type of bank accounts, number of credit reference listed, years on the job,total family income per month, debt to income ratio, total number of payments on the loan, and annual percentage interest on the loan. The model of logistic-regression was employed by (Steenackers, 1989) came to a conclusion that the variables influencing credit loans include; age, having a telephone or not, how long the debtor has lived in the current residence, how long he has worked in the same company, the standard of living area, job, if he is a civil servant, monthly income, ownership of the house, the number of past loans (Azeem, 2013).

Determinants of commercial Banks Financial performance drivers are in two categories; they are internal and external or factors of Financial performance. Internal elements of financial performance on the bank's financial performance can be defined as the factors influenced by the bank's management decision-making process. The internal factors include Capital Adequacy, Liquidity Risk, and Efficiency of Management (Kithinji, 2011).

External Factors that determine the bank's financial performance include the factors that are beyond the control of the bank's management. The significant determinants are the macroeconomic factors and financial structure factors. However, the management can anticipate the Changes in the external environment and prePaRe the organization to take advantage of the developments expected (Krakah, 2010). The CAMEL has been used by (Elyor, 2009) and (Uzhegova, 2010) to examine the factors affecting the Financial bank performance. CAMEL which means Capital adequacy, Asset quality, Management efficiency, Earnings Financial performance and Liquidity, This system was developed by the US Federal Deposit Insurance Corporation (FDIC), This was meant to detect problems in banks at an early stage (Uzhegova, 2010). More alternative bank financial performance have been proposed, the CAMEL framework is recommended by Basell Committee and is the most widely used (Baral, 2005).

3.3.4. Portfolio at Risk

Microfinance Institutions (MFI's) use PAR to assess the asset quality (Borio, 2009). PAR attempts to measure the default risk in a portfolio by using past as well as the future date. It also assumes that if all delinquent borrowers were to default, how much money would the MFI stand to lose (Batra, 2003). It is assumed that a decreasing PAR is positive and an increasing PAR is negative. However, this assumption can be misleading because; a lower ratio can be obtained by decreasing the numerator or increasing the denominator. Therefore, a sudden rise or large disbursement of loans could mask the actual

default risk. This limitation applies to MFI that is fast expanding regarding loan disbursements. Re-scheduling, refinancing and loan write-offs can portray a lower PAR ratio while the default risk may still be high. Loan repayment frequency is yet another relevant factor in assessing PAR (AHL, 1998). PAR is the best indicator to assess the risk of potential losses.

When referring to PAR, an MFI should always specify the number of days. MFI should also indicate whether restructured loans have been included in their calculations. Most MFI automatically comprises of restructured loans in their PAR. This practice reflects the belief that restructured loans carry a higher risk than the current loans (Azeem, 2013). PAR can be calculated by dividing the outstanding balance of all loans with arrears over 30 days plus the refinanced loans by the outstanding gross portfolio as of a specific date. PAR indicates the portion of the portfolio that has more arrears and therefore at risk of not being repaid. The older the delinquency, the less likely the loan is to be repaid (Auronen, 2003). Thus, any PAR exceeding 10% should raise danger signs. PaR is said to measure the total risk and not the immediate threat. PAR is a useful measure, but like all performance measures, it can be manipulated by the users. It is highly recommended that PAR be analyzed together with the write off ratio. PAR has traditionally been far lower in MFI than in the commercial banking sector (Kithinji, 2003)

3.3.5. Recovery Rate

It is assumed that when Recovery Rate (RR) is not constant, additional risk is introduced. RR is the chance of recovering less than the full amount of principal and accrued interest due, given a default event. Recovery is almost always uncertain and often less than the total amount due; i.e.,RR varies between zero and one hundred percent. Previous studies allow the RR to differ randomly; they also assume it is not systematically related to factors like default rate or the business cycle. This assumption simplifies the portfolio analysis because the correlation between defaults and recoveries does not have to be modeled. Moreover, most researchers' disagree about the need to modeled systematic recovery in practice. Some have argued that since the RR represents the outcome of a bargaining process between the debtor and the creditor, it is reasonable to assume that it is unsystematic (Long & Schwartz 2010).

There is an inverse relationship between RR and PD because of the frequency dependence on an aggregate factor such as the business cycle, i.e., economic downturn causes defaults to rise at the same time push down the recovery rate. RR uses Stress Testing to understand how adverse macroeconomic conditions would affect the losses revenues and capital levels of the companies, individually and as a group, and then to require specific actions to ensure that the companies could remain viable should such adverse conditions occur. RR is critical inputs in the estimation of potential losses in the stress test (Akerlof, 2009).

3.3.6. Non-Performing Loans

Loans and advances play a vital role in gross earnings and the net profits in the commercial banks. According to the International Monetary fund (IMF), an NPL is any credit facility where the principal and interest payments are more than ninety days overdue or more than 90 days' worth of interest has been refinanced, capitalized or delayed by agreement, or payments that are less than 90 days overdue but are no longer anticipated by the lender (IMF, 2015). According to (Glen. J, 2011), NPL is also a loan whereby the maturity date has passed, but Part of the loan is still outstanding. The financial strength and soundness of the banking system primarily depend on the repayment of loans and advances. NPL has a fundamental effect on how banks set their interest rates; banks transfer the burden of NPL to those who pay their loans through higher interest rates (Glen, 2011).

NPLs are the most significant burdens in the banking industry. Factors that contribute to the increasing NPL is divided into two categories, the internal factors and the external factors (Nkusu, 2011). The internal factors include diversion of funds, time/cost overrun during the project implementation stage, business failure, and inefficiency in management, slackness in credit management and monitoring, inappropriate technology/technical problems, lack of coordination among lenders. Some of the external factors include; recession, input/power shortage, price escalation, exchange rate fluctuation, accident and natural calamities, changes in the government policies, etc. (Albertazzi, 2009).

NPL can be prevented with the use of special investigative audit, negotiated settlement, internal checks and system for early indications of NPL. According to a study done by (Messai, 2013) on the determinants of NPL in Spanish, Italian and Greek banks, they found out that problem loans increase when the unemployment rate and the interest rate rise, and a decrease when the GDP growth rate and profitability of banks assets fall. When (Borio, 2009) did a study based on a sample of Spanish banks; he highlighted that during the recession, NPL increase as a result of firms and households financial distress. As the economy grows, businesses request more loans and can repay them more efficiently, but when there is an economic recession, the borrowers show difficulty in repaying the debts.

A study was done by MacDonald (2006), there are 5C's of bad credits that represent the issues used to guard against and prevent bad loans, they include, Complacency, which is the tendency to assume that because of the good things in the past, the future is also good, e.g., judging from the past loan repayments of a borrower. Carelessness indicates the poor underwriting which is evidenced by improper and inadequate loan documentation, lack of current financial information, or any other information that is Paramount in the credit process, lack of loan agreements (Akerlof, 1970). This makes it difficult to monitor the borrower's progress and identifies problems. Communication ineffectiveness is the inability to communicate the bank's objectives and policies. Contingencies are the lender'stend to ignore circumstances in which a loan might default. It

focuses more on making the deal work rather than identifying the downside risks. Competition is when the bank monitors its competitor's actions rather than monitoring the banks own credit standards (Auronen, 2003).

A study conducted by (Boudriga, 2009)on bank-specific determinants and the role of the business and the institutional environment on problem loans in the MENA countries during the 2002-2006 periods. The study revealed that credit growth rate is negatively related to NPL. CAR is positively significant justifying that highly capitalized banks are under regulatory pressure to reduce their credit risk and make more risks. Moreover, RAO has a negative and statistically significant effect on NPLs (Baral, 2005).

(Tomak, 2013) Did a study on the determinants of bank lending behavior on a sample of Turkish banks, there was a relationship between NPL and Bank lending behavior in state-owned banks and NPL showed a negative impact on the total loans growth (Bengt J. T., 1997). There is a need for banks to develop and implement credit scoring and assessment methodologies, review and update their insider lending policies and adopt prudential corporate governance practices hence reducing the NPL and contributing to high bank financial performance (Auronen, 2003).

3.3.7. Bad Debts Written-off

A debt is said to be bad when there is no hope of recovering the amount from the debtor. In banks, bad debt is typically written off as a loss and classified as an expense because the debt owed the bank is unable to be collected, and reasonable efforts have been exhausted (Tomak, 2013). Before a bank can classify the loan as a bad debt, the bank will try to recover it. Bad debts destroy loans which are the primarybank'searning assets. They are the source of earnings as well as the essential determinants of the liquidity and ultimate solvency of the bank (Hennie, 2003). Because the higher the bad debts are written off from the profits of the banks, the lower the net profits which also affects the amount available to for shareholders in dividends (Verde, 2003). The amount plowed back into the business becomes minimal. The funds available for future credit are lowered, because the loan is lost, which makes it hard to recycle the funds. The customers will lose a substantial portion of their deposits (Azeem, 2013). When a banks cash quantity is not stable, the bank is unable to expand their lending and make profits. Most of the written off loans are caused by the improper management of the loan applications.

Kent (1960) suggested that an account not become bad overnight and it must have shown signs of default over some time. Bad debts destroy loans which are the banks' earnings and negatively compromise banks profitability. The higher the interest rate, the more the outstanding balance the borrower has to pay relative to the principal. As such interest rates are argued to influence the default rates and ultimately the bad debts (Azeem, 2013). Bad debts are inevitable because banks cannot do without lending to borrowers.

3.4. Conceptualization

The conceptual framework below illustrates the dependant and independent variables. The independent variables in Credit risk and Financial performance of commercial banks are the Expert systems, Credit Scoring Systems, and the rating systems while Profits are dependent on the independent variables.

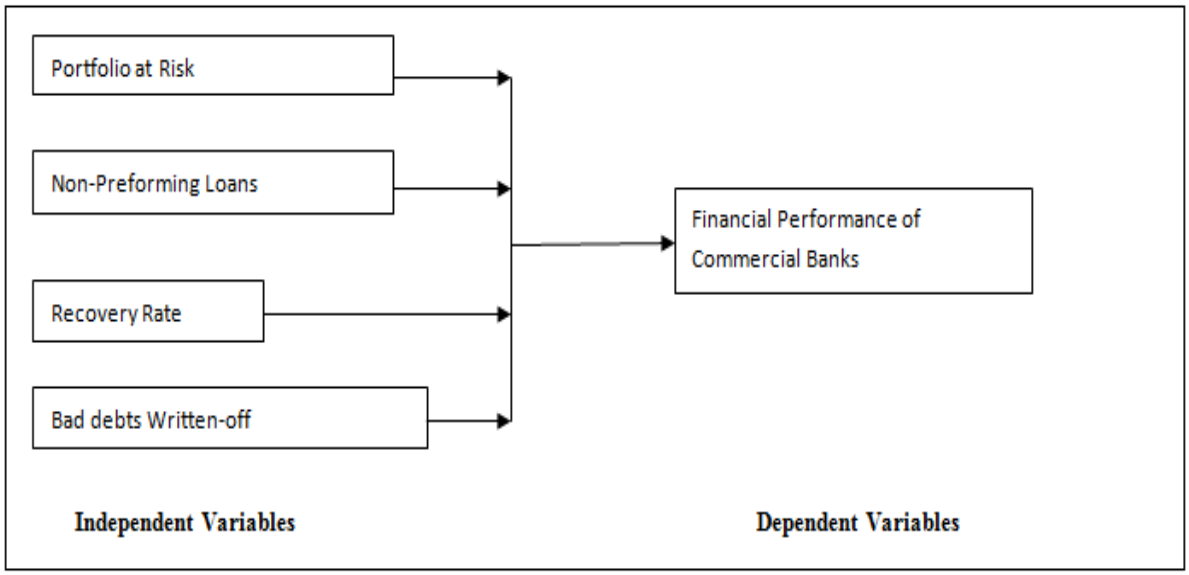

Figure 2: Conceptual Framework

3.5. Operationalization

The relationship between the independent and dependent variable is explained in the Operational framework below which further lists the indicators used to measure the constraints.

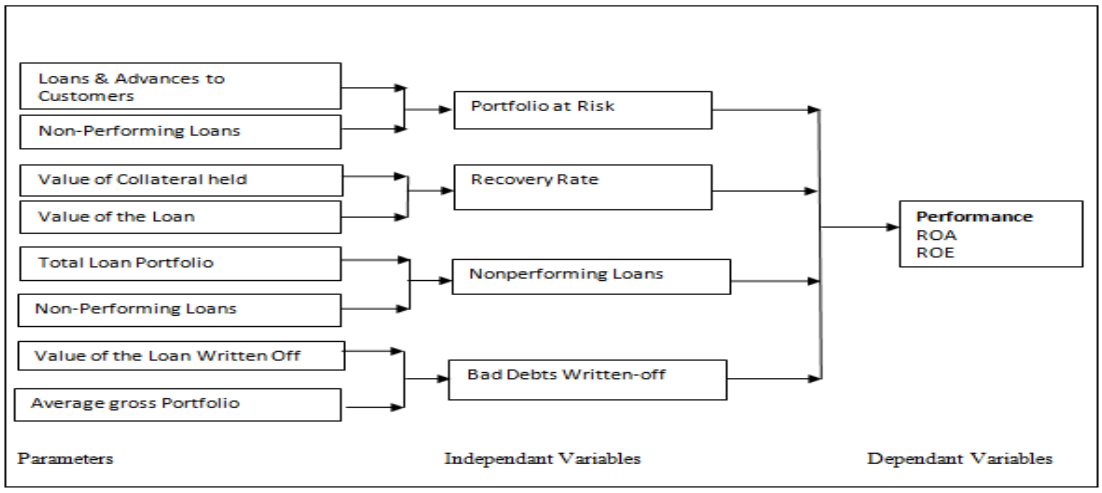

Figure 3: Operational Framework

4. Research Methodology

4.1. Introduction

This chapter discusses the methodology that the researcher employed in the investigation of Credit Risk and the performance of Commercial Banks in Kenya. The researcher will describe the target population, techniques used in data collection methods and as well as the data analysis Techniques.

4.2. Research Design

The study on Credit Risk and the performance of commercial banks is of descriptive survey design in nature. A descriptive survey is a design that involves establishing what is happening as far as a Particular variable is concerned, and the design has been used to investigate Credit Risk and the performance of Commercial banks in Kenya (Atemnkeng, 2006). Capital, Assets, Management, Earnings, and Liquidity (CAMEL) factors affecting performance namely; Capital adequacy, Operational Costs efficiency and Liquidity have been considered in the analysis as the controlling variables. Return measured performance on Assets (ROA), ROE which is a dependent variable and measures the return on Shareholders' Investment in the bank; ROE and ROA were used as the indicators of the performance in the regression analysis because ROE along with ROA which has been widely used in earlier research studies (Brown, 2011).

Capital Adequacy Ratio (CAR) is an independent variable and chosen because it is the core measurement of a bank's financial strength from the regulator's point of view. It consists of the types of financial capital considered, the most reliable and liquid, primary shareholders equity. Banks with good CAR have good performance. With the best capital requirements, Commercial banks in Kenya can absorb loans that have gone bad. Both the independent and dependent variables in this study aremeasurable(Glen, 2011).

4.3. Target Population

Research Population according to (Mugenda, 2003), is the set of the entire entities concerned with the statistical inference are to be drawn. The study targets the Commercial Banks in Kenya.

The research will focus on the Credit risk and the financial performance of Commercial Banks in Kenya for the fiscal years 2011 to 2015. The target population will be considered as a focal point for the study. Seven out of the forty-two commercial banks in Kenya will be discussed during this review. A listing of all the commercial banks in Kenya was obtained from the Central bank of Kenya website. The various commercial banks were categorized according to the peer classification. The commercial banks will be classified into three categories that are large sized banks which have a market share of 58.21%, Medium sized banks which have a market share of 32.42%, and Small sized banks which have a market share of 9.24%. This classification is according to a survey conducted by the central bank of Kenya for the period ended December 31, 2015. Charterhouse bank under statutory Management and Imperial bank and Chase bank under receivership have been excluded in the study.

4.4. Sampling Design

Sampling is selections of few items known as a sample from a larger group of items which is called the population which becomes the basis for predicting a situation or outcome regarding the population as a whole (Lawrence Palinkas, 2016). The researcher used Purposive sampling; Purposive sampling is also known as judgmental, selective or subjective sampling (Cole, 2017), This is a non-probability sampling technique, and the choice of the banks was based on the judgment of the researcher (Crossman, 2017). The researcher purposively chooses specific items which according to his judgment are the best representatives of the entire population (Cole, 2017). The researcher deliberately chose the seven banks due to the availability of information and based on own idea of the sample units, the researcher's expert knowledge of the population. Using this

method, the chance of inclusion of some items in the sample is very high while that of others is very low (Dudovskiy, 2017). For a better selection of the items under this method, specific criteria of selection were laid down and the researcher allowed making the selection of the items. The main advantage of this method ensures proper representation of the population when the researcher has full knowledge of the composition of the entire population and is not bias, It prevents unnecessary and irrelevant items entering the sample, It ensures intensive study of the selected items, and it gives better results if the investigator is unbiased and has the capacity for keen observation and sound judgment (Lund Research LTD, 2012). Purposive sampling saves time, money and effort. It is flexible and meets multiple needs and interests. It enables researchers to select and sample based on the purpose of the study and knowledge of the population (Cole, 2017). The subjects were chosen because of specific characteristics. In each of the three banking categories, each bank was assigned a random number and 70% of the companies picked at random. .

No.	Strata(Peer Classification of Commercial Banks)	Population	Sample Inclusion	Sample Size
1	Large	7	7/42*7	1
2	Medium	14	14/42*7	2
3	Small	21	21/42*7	4
Total		42		**7**

Table1: Sample Size
Source: Central Bank of Kenya (CBK)

4.5. Data Collection Instruments And Procedures

The study on Credit risk and the performance of commercial banks in Kenya is based on secondary data. The secondary data was obtained from published financial statements of commercial banks in Kenya, bank publications, journals, andperiodicals Printed forms and documentation supplied by the commercial banks, auditor's reports, Web sites of the selected commercial banks. The published financial statements mainly include the balance sheet and the income statements of the commercial banks for a given period.

4.5.1. Secondary Data

Secondary data are facts and figures collected by someone else other than the researcher himself. These data can be used differently by different researchers. Most of the literature in the theoretical background of the study uses secondary data from numerous sources such as publications which include books, journal articles, etc. and electronic media such as websites, etc. Other researchers like Saunders, Lewis and (Thornhill, 2009) gives categories of the documentary to include books, reports, newspapers, transcripts, voice recordings, video recordings, Audited annual financial statements of the concerned banks in Kenya.

In Kenya, the disclosure of financial information by commercial banks is a sensitive issue. Primarily, the researcher has to base the analysis on the information provided by the bank in the published annual reports or news and existing regulation documents.

4.5.2. Validity of the Research Instruments

Expert opinion will be requested from the supervisors on the representativeness and suitability of questions and suggestions of corrections to be made to the structure of the research tool; Thisimproved the content validity and reliability of the data that was collected. The researcher sought expert opinion in the field of study especially the research supervisors which significantly enhanced the validity of the study.

Content validity will be employed by the study as a measure of the degree to which data collected using a Particular instrument represents a specific domain or content of a Particular concept. (Mugenda & Mugenda, 1999) contend that the usual procedure for assessing the content validity of a measure is to use a professional expert in a Particular field.

4.6. Data Analysis

Data analysis is a process of systematically searching, arranging to organize, and breaking data into manageable units, synthesizing the data, searching for patterns, discovering what's important and what more is there to be discovered. The data from secondary data will be presented using tables and graphs; Secondary data will be analyzed using trend analysis to show the extent that banks are exposed to credit risk, to interpret, analyze and summarize the data; the researcher will use descriptive and inferential statistics. Descriptive statistics will be used to show the trends of banks ROA with the help of graphs. The inferential statistics will be used to make an inference based on the findings regarding the effect and the relationship between ROA and the different variables; this will be achieved using the regression model. The statistical tool for the analysis will be the statistical package for social sciences (SPSS).

The study utilized both descriptive and econometric analysis based on a panel data over a specifiedperiod to examine the relationship between Credit risk and the financial performance of commercial banks in Kenya. The data Collected from the

different sources were coded, checked and entered into an excel program to make the data ready for analysis. The data was processed and analyzed through SPSS software packages.

The results were presented using tables, and charts. The results of the descriptive statistics such as mean, standard deviation, minimum and maximum values describe the characteristics of the variables under investigation.

4.6.1. Analytical Model

The Linear Regression Model used to determine the relationship between dependent and independent variables is as follows.

$Y = \alpha_1+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\varepsilon$

Where:

Y = Bank performance which is the dependent variable

α_1 = Constant, it explains the bank's performance given, andit is the Y value when all the predictor values (X_1, X_2, X_3, X_4) are zero

β_1, β_2, β_3, β_4 = Coefficients of the determinants of Credit Risk

X_1 = Probability of Risk

X_2 = Recovery Rate

X_3 = Non-Performing Loans

X_4 = Bad Debts Written Off

ε = Error term that explains the variability of financial performance as a result of other factors not accounted for

4.6. 2. Research Limitations and Findings

The study focused only on commercial banks in Kenya. A comprehensive study should be conducted on a bigger population to enhance the findings of the study. The Microfinance institutions should also be considered. The data that was used was only from Commercial banks whose information was available in the public domain and from their website.

The research includes only five years data from 2011 to 2015. To be able to find consistent results, long time series data is required. The researcher had to rely on organizations for the data collected since secondary data was used. Some of the banks were reluctant because of the sensitivity of the information hence the researcher used purposive sampling due to the availability of data.

The scope of this research was for the five years ending and including the year 2012. Had a more prolonged period been considered, it is possible that the results may have been different. The findings of the research are limited to commercial banks in Kenya. However, the financial sector is made up of many other organizations that are not commercial banks and that grant credit to the Kenyan population.

The ratio of loans to deposits, which is one of the variables used for data analysis, keeps on changing from period to period depending on prevailing financial situations in commercial banks in Kenya. Therefore, the findings may not reflect the exact financial and liquidity ratios across the selected commercial banks in Kenya for the period considered.

The ROA which has been used as a measure of financial performance is an accounting measure of financial performance. Being that the figures are prepared by managers, they are subject to managerial manipulation and differences in accounting procedures. The study focused on Kenya only and for five years. It is not known how the results would have turned out if the study was extended to other countries, say, in East Africa, in the whole of Africa or Sub-Saharan Africa.

4.6.3. Ethical Issues

Ethical considerations in any research are a very critical element. Ethics distinguish between right and wrong and help determine acceptable and unacceptable behavior (William, 2006). The banking industry deals with confidential information relating to customers. The research will use secondary data; the secondary data will reduce the burden on the respondents. Data in the form of hard copies will be kept in safely locked cabinets whereas softcopies will be kept as encrypted files in the computer. The use of the data obtained will not result in any damage or distress. The data will be reasonably obtained and processed for the specified purpose. The data will be accurate and up to date, Relevant and not excessive.

5. Results and Discussion

5.1. Introduction

This chapter focuses on data analysis, presentation and interpretation of the data collected. The data was obtained from publications of seven commercial banks. The research applied Panel regression analysis in which the return on Assets and return on equity were taken as dependent variables measuring financial performance while the credit risk was measuredregarding Probability of Default, Recovery Rate, Non-Preforming Loans, and Bad-debts written off. The chapter, therefore, discusses how the variables were operationalized and provideda statistical description of the distribution of the data on the variables and their correlation. Further, the regression analysis findings are presented,and an interpretation of the results is presented in the last subtitle of this chapter.

5.2. Descriptive Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
Portfolio at Risk	7	.4080	1.0120	.660857	.2334976
Recovery Rate	7	1.4000	1.9020	1.605143	.1672796
Non-Performing Loans	7	1.4360	2.7160	2.050857	.5288615
Bad Debts Written Off	7	.2680	.5320	.422571	.0867391
Return on Assets	7	.6620	1.2000	.894571	.1758360
Return on Equity	7	9.0380	14.4820	12.466857	1.8237890

Table 2: Descriptive Statistics of the Mean and Standard Deviation
Source: Research Data, 2017

Descriptive statistics of the six variables were calculated to provide a descriptive insight into their nature. Individually, the minimum, the maximum, the mean and the standard deviation of each of the six variables were calculated. The findings are tabulated in Table 2 above.
As shown in the table, the highest return on assets was 1.2000 while the lowest realized return on assets was .6620. The highest return on Equity was 14.4820while the lowest realized return on Equity was 9.0380. The mean return on assets for the seven banks was 0.894571 with a standard deviation of .1758360. The mean return on Equity for the seven banks was 12.466857 with a standard deviation of 1.8237890. The maximum credit risk realized by the banks was the Non-Performing Loans at 2.7160 while the least credit risk recorded was that of Bad Debts Written Off at .2680.

5.3. Trend Analysis

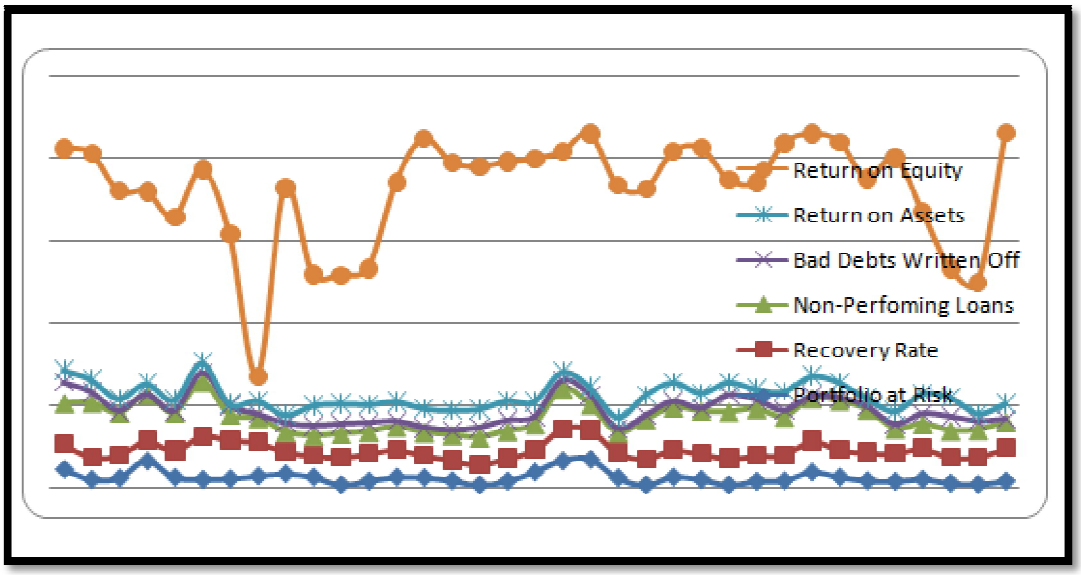

Figure 4: Overall Trend Analysis for the Seven Banks Over the 5 Five Years of the Study
Source: Research Data, 2017

As shown in Fig. 4 above, credit risk here viewed from the lenses of (Probability of Default, Recovery Rate, Non-Preforming Loans, and Bad-debts written off) was relatively low and inversely related to return on equity which remained high throughout the period. Notably, the return on assets was positively correlated to the Probability of Default, Recovery Rate, Non-Preforming Loans, and Bad-debts written off. The trend pattern is relatively dissimilar which shows a low dependence. However, the rate of return on equity is way above the return on assets.

5.*4. Trend analysis of credit risk and financial performance*

The researcher combined all the variables of credit risk (Portfolio at Risk, Recovery Rate, Non-Performing Loans and Bad Debts Written Off) and calculated the averages and compared it with combined average of financial performance (Returns on Assets and Return on Equity) to be able to give a clearer picture of the trend line pattern. The figure below is a presentation of the finding for each of the seven banks sampled for this study.

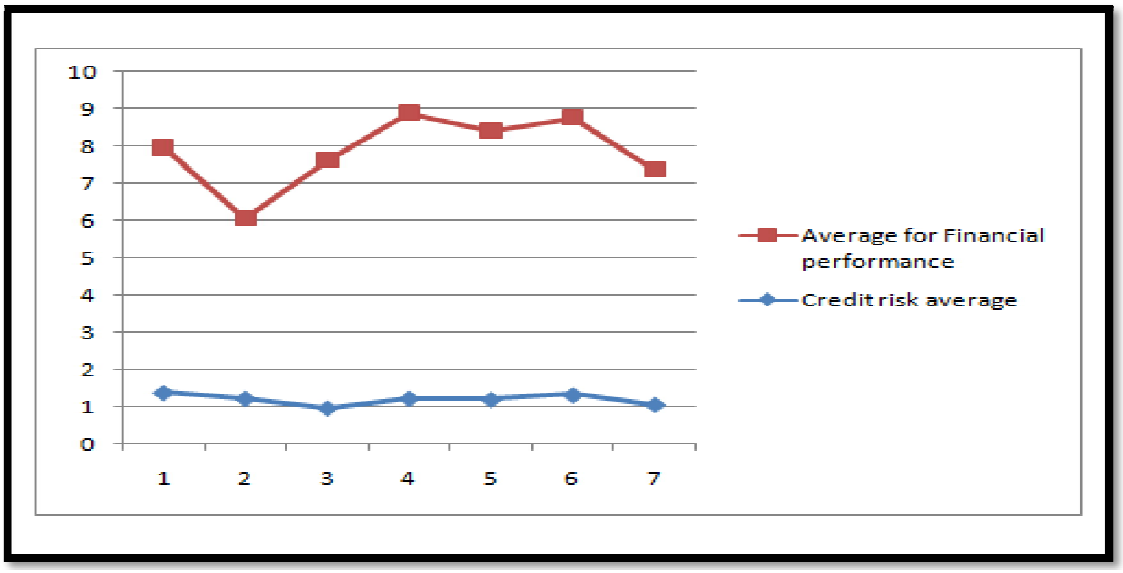

Figure 5 : Trend Analysis of Average Credit Risk and Financial Performance
Source: Research Data, 2017

As shown in Fig. 5 above, credit risk and financial performance do not seem to play the same impact across all banks. Taking the first bank as an example with an average credit risk of 1, 3669 the performance stood at 6,588 while bank four had an average credit risk of 1.2145 had its financial performance stand at 7.674; This shows that credit risk is not the sole determiner of financial performance and that there must be other factors which are not covered in this study which determine financial performance, therefore sets room for further research which will be elaborated in detail in the subsequent sections

5.5. Inferential statistics

Statistical inference is the process of deducing properties of an underlying distribution by analysis of data. Inferential statistical analysis infers properties of a population and allows researchers to conclude from data that might not be immediately obvious. They enhance the researcher's ability to develop hypotheses and use standardized tests such as t-tests, ANOVA tests, and regression to validate their claims.

5.5.1. Pearson Correlation Analysis

Correlations

		PAR	RR	NPL	BDWO	ROA	ROE
PAR	Pearson Correlation	1	-0.351	0.283	0.365	0.558	0.226
	Sig. (2-tailed)		0.440	0.539	0.421	0.193	0.626
	N	7	7	7	7	7	7
RR	Pearson Correlation	0.351	1	-0.321	0.169	-0.373	-0.675
	Sig. (2-tailed)	0.441		0.483	0.717	0.410	0.096
	N	7	7	7	7	7	7
NPL	Pearson Correlation	0.283	-0.321	1	-0.587	-0.391	0.397
	Sig. (2-tailed)	0.539	0.483		0.166	0.386	0.378
	N	7	7	7	7	7	7
BDWO	Pearson Correlation	0.365	0.169	-0.587	1	-0.308	-0.305
	Sig. (2-tailed)	0.421	0.717	0.166		0.501	0.506
	N	7	7	7	7	7	7
ROA	Pearson Correlation	-0.558	-0.373	-0.391	-0.308	1	0.365
	Sig. (2-tailed	0.193	0.410	0.386	0.501		0.421
	N	7	7	7	7	7	7
ROE	Pearson Correlation	0.226	-0.675	0.397	-0.305	0.365	1
	Sig. (2-tailed)	0.626	0.096	0.378	0.506	0.421	
	N	7	7	7	7	7	7

Table 3: Pearson Correlation Analysis
Source: Research Data, 2017

As presented above, the study performed Pearson correlations for the relationships between the various credit risk and financial performance of commercial banks in Kenya. From the findings, the correlation analysis of ROA and ROE versus

the Credit Risk (Probability of Default, Recovery Rate, Non-Performing Loans, and Bad-debts written off) was calculated. The Pearson correlation coefficient is a standard tool used to show how two variables co-move. The significance level was set at 5% with a two-tailed test the results are shown by the correlation matrix in Table 3 .

From the findings (Table 2), a negative correlation is seen between each credit risk variables namely Probability of Default, Recovery Rate, Non-Performing Loans, and Bad-debts written off to return of assets as shown by -.558, -.373, -.391and -.308 respectively. As for the Return on equity Recovery Rate and Bad Debts Written Off recorded a negative correlation as shown by -.675 and -.305 respectively. All the other variables including return on assets were positively correlated. All the independent variables were found to have a statistically significant association with the dependent variable at 0.05 level of confidence.

Stigler (2002) offers that the Pearson product-moment correlation coefficient measure linear correlation (dependence) between two variables *X* and *Y*, giving a value between +1 and −1 inclusive, where one is a totalpositive correlation, zero is no correlation, and −1 is a total negative correlation. He further demonstrates that P values less than 0.05 level of confidence can be considered statistically significant.

From the table, all the factors have a positive correlation with the dependent variable; This indicates the credit risk of the commercial banks in Kenya has a positive association with their financial performance. The strength of the association is measured based on the Pearson's correlation scale where a value between 0.0-0.3 is an indicates no correlation, 0.3-0.5 is a weak correlation, 0.5-0.7 is a fair correlation, and a correlation value in the interval 0.7 and 1 is an indication of a strong correlation. A correlation of 1 indicates a presence of a perfect association between the variables. The magnitude of the association (+ or -) indicates the nature of association (positive or negative association.

The table highlights the correlation coefficients between the variables and financial performance.

5.5.2. Regression Analysis

The regression analysis was conducted to determine the objectives of the study. The regression analysis gives the relationship between the independent variable and independent variables. Credit risk (Portfolio at Risk, Recovery Rate, Non-Performing Loans and Bad Debts Written Off) againstReturn on Assets as a measure of performance. Data was collected for five years thus giving the researcher a five year period data that facilitated the linear regression analysis.

The combined effect of credit risk on the performance was examined using multiple linear regression analysis where the model summary (Table 4.), regression coefficients (Table 4), and ANOVA (Table 5) results were obtained.

Table 4 gives the regression model summary results. The R-value has been represented as the measure of association between the dependent and independent variables. The R square is the coefficient of determination measuring the extent to which the independent variables influence the defendant variable as well as the Adjusted R Square which is a measure of the reliability of the regression results.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.558[a]	.312	.174	.1597883
2	.825[b]	.681	.521	.1217184
3	.919[c]	.845	.689	.0980329
4	.971[d]	.944	.831	.0723603

Table 4: Regression Model Summary for Return on Assets against Credit Risk
Source: Research Data, 2017
a. Predictors: (Constant), Portfolio at Risk
B. Predictors: (Constant), Portfolio at Risk, Recovery Rate
c. Predictors: (Constant), Portfolio at Risk, Recovery Rate, Non-Performing Loans
d. Predictors: (Constant), Portfolio at Risk, Recovery Rate, Non-Performing Loans, Bad Debts Written Off

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (return on equity and return on assets) that is explained by all the four independent variables (Portfolio at Risk, Recovery Rate, Non-Performing Loans and Bad Debts Written Off).

The four independent variables that were studied explain 94.4% of the variance in the financial performance of commercial banks in Kenya as represented by the R^2. This, therefore, means that other factors not studied in this research contribute 5.6 % of the variance in the dependent variable. Therefore, further research should be conducted to examine other credit risk attributes that determine the performance of commercial banks in Kenya.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.058	1	.058	2.266	.193[b]
	Residual	.128	5	.026		
	Total	.186	6			
2	Regression	.126	2	.063	4.261	.102[c]
	Residual	.059	4	.015		
	Total	.186	6			
3	Regression	.157	3	.052	5.434	.099[d]
	Residual	.029	3	.010		
	Total	.186	6			
4	Regression	.175	4	.044	8.357	.110[e]
	Residual	.010	2	.005		
	Total	.186	6			

Table 5: Regression ANOVA for Return on Assets against Credit Risk
Source: Research Data, 2017
A. Dependent Variable: Return on Assets
B. Predictors: (Constant), Portfolio at Risk
C. Predictors: (Constant), Portfolio at Risk, Recovery Rate
D. Predictors: (Constant), Portfolio at Risk, Recovery Rate, Non-Performing Loans
E. Predictors: (Constant), Portfolio at Risk, Recovery Rate, Non-Performing Loans, Bad Debts Written Off

The F critical at 5% level of significance was 8.357. Since F calculated is higher than the F critical, this shows that the overall model was significant. The significance is less than 0.05, thus indicating that the predictor variables), explain the variation in the dependent variable which is the financial performance of commercial banks in Kenya.
Analysis of the Variance (ANOVA) was used to make a comparison simultaneously between the variables. Therefore ANOVA was used to determine whether there is a significant relationship that exists between the dependent and independent variables. ANOVA indicates a significant F statistics implying that the model was fit for estimation.

From the table 5 The F-Statistic (PAR) of 2.266 with a distribution of F (1, 5), and the probability of observing a value greater than or equal to 2.266 is less than 0.19 as given by the significance value of 0.193, this is less than the critical value of a 5% level in a 2-tailed test. Therefore the regression model is statistically significant and can be relied upon to explain the effects of specific factors on the performance of commercial banks in Kenya.

Coefficients						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	Std. Error	Beta		
1	(Constant)	1.172	0.194		6.036	0.002
	PAR	-0.421	0.279	-0.558	-1.505	0.193
2	(Constant)	2.380	0.581		4.096	0.15
	PAR	-0.592	0.227	-0.786	-2.604	0.60
	RR	-0.682	0.317	-0.648	-2.149	0.98
3	(Constant)	2.820	0.529		5.327	0.13
	PAR	-0.528	0.187	-0.701	-2.831	0.66
	RR	-0.797	0.264	-0.758	-3.024	0.57
	NPL	-0.145	0.081	-0.436	-1.779	0.173
4	(Constant)	3.241	0.451		7.191	0.019
	PAR	-0.271	0.195	-0.359	-1.391	0.299
	RR	-0.706	0.201	-0.671	-3.517	0.072
	NPL	-0.275	0.092	-0.827	-2.993	0.96
	BDWO	-1.114	0.595	-0.549	-1.873	0.202

Table 6: Regression Coefficients for Return on Assets and Credit Risk
Source: Research Data, 2017
A. Dependent Variable: Return on Assets

To get the relationship between the proposed model for the relationship between performance and the independent variables, the regression coefficients were calculated in Table 6 above. These with their significance values which have been represented in the table above, measure the effect of independent variable on the performance of the commercial banks.

From the regression findings, the substitution of the equation ($Y= a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + e$) becomes:
$Y= 3.246+ -.271X_1+.706X_2+ -.275X_3+-1.114X_4$,

Where Y is the dependent variable (Return on Assets), X_1 Portfolio at Risk, X_2 is Recovery Rate, $X_3$is, Non-Performing Loans and X_4 is Bad Debts Written Off. According to the equation, taking all factors (Portfolio at Risk, Recovery Rate, Non-Performing Loans and Bad Debts Written Off) constant at zero, financial performance will be 3.241. The data findings also show that a unit increase in Portfolio at Risk variable will lead to a .271 decrease in financial performance; unit increase in Recovery Rate variable will lead to a .706 increase in the financial performance; unit increase in Non-Performing Loans variable will lead to a. 275 decreases in financial performance, and a unit increase in Bad Debts Written Off variable will lead to a 1.114 decrease in financial performance

5.5.3. Regression analysis of Credit risk and Return on Equity

The combined effect of credit risk on the Return on Equity as the measure of financial performance was examined using multiple linear regression analysis where the model summary (Table 6), regression coefficients (Table 7), and ANOVA (Table 8) results were obtained.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.226[a]	.051	-.139	1.9460412
2	.675[b]	.456	.184	1.6473010
3	.703[c]	.494	-.011	1.8338543
4	.710[d]	.504	-.488	2.2245197

Table 7: Regression Model Summary for Return on Equity against credit Risk
Source: Research Data, 2017
a. Predictors: (Constant), Portfolio at Risk
b. Predictors: (Constant), Portfolio at Risk, Recovery Rate
c. Predictors: (Constant), Portfolio at Risk, Recovery Rate, Non-Performing Loans
d. Predictors: (Constant), Portfolio at Risk, Recovery Rate, Non-Performing Loans, Bad Debts Written Off

The four independent variables that were studied explain 50.4% of the variance in the financial performance of commercial banks in Kenya as represented by the R^2. Therefore, means that other factors not studied in this research contribute 49.6 % of the variance in the dependent variable, further research should be conducted to examine other credit risk attributes that determine the performance of commercial banks in Kenya.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.022	1	1.022	0.270	0.626[b]
	Residual	18.935	5	3.787		
	Total	19.957	6			
2	Regression	9.103	2	4.551	1.677	0.296[c]
	Residual	10.854	4	2.714		
	Total	19.957	6			
3	Regression	9.868	3	3.289	0.978	507[d]
	Residual	10.089	3	3.363		
	Total	19.957	6			
4	Regression	10.060	4	2.515	0.508	0.746[e]
	Residual	9.897	2	4.948		
	Total	19.957	6			

Table 8: Regression ANOVA for Return on Equity against Credit Risk
Source: Research Data, 2017
A. Dependent Variable: ROE B. Predictors: (Constant), PAR
C. Predictors: (Constant), PAR, RR D.Predictors: (Constant), PAR, RR, NPL
E.Predictors: (Constant), PAR, RR, NPL, BDWO

The F critical at 5% level of significance was .508. Since F calculated is higher than the F critical, this shows that the overall model was significant. The significance is less than 0.05, thus indicating that the predictor variables), explain the variation in the dependent variable which is a returnon equity.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.299	2.366		4.776	0.005
	PAR	1.767	3.402	0.226	0.519	0.626
2	(Constant)	24.421	7.863		3.106	0.036
	PAR	-0.094	3.076	-0.012	-0.031	0.977
	RR	-7.408	4.293	-0.680	-1.726	0.159
3	(Constant)	22.211	9.904		2.243	0.111
	PAR	-0.414	3.489	-0.053	-0.119	0.913
	RR	-6.828	4.932	-0.626	-1.385	0.260
	NPL	0.727	1.523	0.211	0.477	0.666
4	(Constant)	23.570	13.855		1.701	0.231
	PAR	0.418	5.980	0.054	0.70	0.951
	RR	-6.532	6.169	-0.599	-1.059	0.401
	NPL	0.306	2.825	0.89	0.108	0.924
	BDWO	-3.603	18.286	-0.171	-0.197	0.862

Table 9: Regression Coefficients for Return on Equity against Credit Risk
Source: Research Data, 2017
a. Dependent Variable: ROE

From the regression findings, the substitution of the equation ($Y= a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + e$) becomes:
$Y= 23.570+ .418X_1+6.532X_2+ .306X_3+3.603X_4$,

Where Y is the dependent variable (Return on Equity), X_1 Portfolio at Risk, X_2 is Recovery Rate, $X_3$is, Non-Performing Loans and X_4 is Bad Debts Written Off. According to the equation, taking all factors (Portfolio at Risk, Recovery Rate, Non-Performing Loans and Bad Debts Written Off) constant at zero, financial performance will be 23.570. The data findings also show that a unit increase in Portfolio at Risk variable will lead to a .418 decrease in financial performance; unit increase in Recovery Rate variable will lead to a 6.532 increase in the financial performance; unit increase in Non-Performing Loans variable will lead to a .306 decrease in financial performance, and a unit increase in Bad Debts Written Off variable will lead to a 3.603 decrease in financial performance

5.6. Interpretation of the Findings

The correlation between ROA versus Credit Risk and that of ROE versus Credit Risk shows a pattern that indicates changes in ROA and ROE across commercial banks did not replicate the pattern of changes in credit risk. Their movements were independent to a large extent. From the regression analysis, the constant terms were significantly different indicating that a Part of the variation in ROA and ROE could not be explained by variation in credit risk across commercial banks. The coefficients of Credit Risk were positive values which indicate that Credit Risk did not strongly explain variation in ROA and ROE for commercial banks in Kenya. However, the coefficients of Credit risk were positive indicating that higher credit risk led to a better financial performance for commercial banks in Kenya as measured by an improvement in the ROA and ROE.

These findings are similar to those of the study done by Boahene, Dasah, and Agyei (2012). This study found that in Ghana, banks enjoyed high profitability despite high credit risk, contrary to the standard view that credit risk indicators were negatively related to profitability. Their results were attributed to prohibitive lending rates, fees and commission charged. The findings are in support of those by Afriyie and Akotey (2011). In their study, Afriyie and Akotey (2011) sought to find out the effect of the impact of credit risk management on the profitability of rural and community banks in the Brong Ahafo Region of Ghana. The study found a positive relationship between credit risk and profitability of the community banks. Just like the findings of this research, Afriyie and Akotey (2011) found that the banks benefited from the high credit risk.

The findings of this research are, however contrary to those of Poudel (2012) in Nepal. The study by Poudel (2012) was done to determine how credit risk indicators like default rate that is pertinent to credit risk management affect banks' financial performance in Nepal. In agreement with the conventional views, the study found a negative relationship between credit risk and financial performance of banks in Nepal. However, just like the findings of this research, the research by Poudel (2012) found a weak correlation between credit risk and financial performance.

The findings of this research are also contrary to those of Ogboi and Unuafe (2013) in Nigeria. They carried out a study to find out the effect of credit management on the financial performance of banks in Nigeria. They found a negative

relationship between financial performance and credit risk indicators like loan loss provisions, loans and advances and non-performing loans. The findings indicated that tighter credit risk management resulted in higher financial performance. The contrast is that this research finds a weak positive relationship between credit risk and financial performance.

The inconsistencies in the results by researchers in the different countries could be explained by the differences in banking regulations between the different counties and the number of commercial banks in the different countries. There are Forty two commercial banks in Kenya as compared to smaller numbers of Twenty Five banks and Thirty One banks in Nigeria and Nepal respectively.

6. Summary, Conclusion, and Recommendations

6.1. Introduction

This chapter provides a summary of the findings of this study. The first section provides a summary of the findings. The other sections provide the conclusions of the study, the limitations of the study, suggestions for further research and recommendations in that order. The researcher had intended to establish Credit risk and the financial performance of commercial banks in Kenya focusing on NPL, BDWO, PAR, and RR.

6.2. Summary of Research Findings

The objective of this research was to establish the relationship between credit risk and financial performance of commercial banks in Kenya. Management of risk is viewed as a mechanism for ensuring financial performance of firms in the financial sector. However, the methods used vary from bank to bank. The research was done on all the commercial banks in Kenya. Variables used for the research were ROA and ROE as the dependent variables with credit risk measured in terms of Portfolio at Risk, Recovery Rate, Non-Performing Loans and Bad Debts Written Off. The variability measured credit risk in the ratio of loan advances to deposits by customers. Return on assets was determined as the ratio of EBIT to book values of assets. For each bank, the ROA variable was the arithmetic average of ROAs for the study period.

The regression results show that the constant term was positive and significantly different from zero. From the regression analysis, the constant term was also significantly different from zero indicating that a Part of the variation in ROA could not be explained by variation in credit risk across commercial banks. However, the coefficient of Credit risk was positive indicating that higher credit risk led to a better financial performance for commercial banks in Kenya as measured by an improvement in the ROA. The researcher conducted a Pearson Correlation. From the findings in the table above, the study found that there was a weak negative correlation of 0.351 between PAR of commercial banks and the RR. This weak factor is statistically significant as the significant value was 0.440 which is less than 0.5. The findings also indicated that the model was slightly significant.

6.3. Conclusion

The study objective was to examine the credit risk and the financial performance of commercial banks in Kenya. The conclusions are made from the study findings from the analyzed data.

In the regression analysis, the constant term was significantly different from zero indicating that a Part of the variation in ROA and ROE could not be explained by variation in credit risk across commercial banks. The coefficient of Credit Risk was a positive and which was not significantly different from zero. This indicates that Credit Risk had a positive effect on the financial performance of commercial banks. However, credit risk did not actively explain variation in ROA and ROE. Thiswas confirmed by the weak value of the coefficient of determination and the analysis of variance which showed the regression model was not. This leads to the conclusion that credit even though proper credit risk management is essential in determining the financial performance of commercial Banks; it is not an essential driver of profitability of commercial banks in Kenya. Most of the financial performance of Commercial Banks could be attributed to bad governance, Unethical employees, and Managers, Poor accountability measures, Bank size, total deposits received policy objectives of banks, political interference, competition from other banks. The mechanisms of handling risk seem to have reduced the importance of risk to the financial performance of commercial banks in Kenya.

The findings are similar to those by Oretha (2012) on the relationship between credit risk management practices and financial performance of commercial banks in Liberia. The research objective was to gain a better understanding of credit risk management practices and its relationship with financial performance. The measure of financial performance was the return on asset. The results of the researcher showed a positive relationship between credit risk management practices and the financial performance of commercial banks in Liberia.

The findings of this research are however contrary to those of Ogboi and Unuafe (2013) in Nigeria. They carried out a study to find out the effect of credit management on the financial performance of banks in Nigeria. They found a negative relationship between ROA and credit risk indicators like loan loss provisions, loans and advances and non-performing loans. The findings indicated that tighter credit risk management resulted in higher financial performance. The contrast is that this research finds a weak positive relationship between credit risk and financial performance. The findings of this research are also contrary to those of Poudel (2012) in Nepal. The study by Poudel (2012) was done to determine how credit risk indicators like default rate that is pertinent to credit risk management affect banks' financial performance in Nepal. In agreement with the conventional views, the study found a negative relationship between credit risk

and financial performance of banks in Nepal. However, just like the findings of this research, the research by Poudel (2012) found a weak correlation between credit risk and financial performance.

The inconsistency in the findings by the researchers from different countries could be explained by the different regulations by the regulatory bodies in the different countries. It could also be explained by the numbers of commercial banks in the different countries. Kenya has a total of 42 commercial banks while Nigeria and Nepal have 25 and 31 commercial banks respectively.

Bank managers need to practice prudent credit risk to safeguard the assets of the bank and protect the shareholders' interests. This led to the researcher to conclude that commercial banks with lower NPL, PAR, RR, and BDWO have higher RAO and ROE hence good profitability since they are indicators of credit risk management.

6. 4. Recommendations

From the findings, there seems to be uniformity in the manner in which commercial banks handle credit risk. However, to enhance the quality of the loans advances and reduce the level of nonperforming loans there is need to put in place guidelines that compel banks to share information about their borrowers. This would ensure that loans are granted to the honest borrowers.

From the above findings, Banks should be regulated to ensure that their credit policy objectives encompass the regulatory environment, the availability of funds, the selection of risk, and loan portfolio balance. Banks should also diversify their loan portfolio to diversify the risks, as a portfolio of loans may have fewer risks than an individual loan. The study also recommends banks to conduct credit risk analysis on businesses and individuals before lending. From the study, it was found out that loan appraisal and approvals should be based on the borrower's capacity, character, condition, credit history, and collateral. The study recommends commercial banks to use the credit scoring models in credit risk assessment and the records from the CRB's.

It is also recommended that Kenyan commercial banks should enhance their capacity in credit analysis, appraisal and loan disbursements. Bank Management and the credit departments should lay down Clear credit policies and lending guidelines which should be followed by all the credit officers. Management should also make sure that the terms and conditions are adhered to in loans approval. The study noted that credit risk significantly affects the financial performance, it may not be the significant factor that affects the determinants of the Kenyan bank's financial performance.

The researcher recommends the banks to revise their credit risk policies, and maintain high liquidity, have stringent monetary policies, utilization of collateral, background checks on applicants, regular market analysis, collaboration with other players and using skilled personnel as opposed to the traditional observation of bank risks.

6.5. Areas for Further Research

The study has investigated credit risk and the financial performance of commercial banks in Kenya. There is a need to answer the question of whether the findings of this research can be made universal across time. Commercial banks have been serving since pre-independence to date. However, this study used data for five years; This reduces the power of applying the results universally across time. Longitudinal research can be conducted to reveal whether there is a relationship between credit risk and bank performance with a focus on each bank and for a more extendedperiod.

There are very many commercial bank markets in the world. Some are in the developed world while others are in the developing world. These markets face different types of risks that vary in degree. The responses to the various risks vary from bank to bank and from market to market. This study covered the Kenyan market only. Research can be conducted to determine the situation in other types of banking markets of the world.

There is need to determine whether the relation between credit risk and return in an environment like Kenya where banks seem to be showing similar approaches to credit risk management. Thisis given that due to credit referencing, banks have information on borrowers. This information is used to separate risky borrowers from safe borrowers. This seems to diminish the effect of credit risk on performance. Further research could be done on commercial banks using a different measure of financial performance to assess whether the results would be the same.

This study can be repeated with a broader population of study across all countries in East Africa. The formation of the East African Community is a current issue affecting the horn of Africa region. Such a study conducted in this region will provide handy and current input for decision making concerning effects of fraud on the performance of commercial banks in the region.

The study also suggests that a similar study should be carried out in MFI and SACCOS in Kenya. Further studies should be done and focus on the factors independently to cover more ground for example effects of bad debts written off on the financial performance of commercial banks in Kenya. A study on other factors that affect the financial performance on commercial banks should be carried out like the effect of bad governance on the financial performance of commercial banks, effects of political interference on the financial performance of commercial banks in Kenya. In future research work, it would be useful to understand some of the impacts on the effectiveness of the monetary policies implemented by the CBK since money supply affects the financial performance of commercial banks. Further research needs to be carried out on other bank risks and factors.

Further studies should be conducted to find out whether the development of Credit Reference Bureau (CRB) in Kenya will go hand in hand in reducing the credit risk posed by lending to investigate the reduction in insurance costs associated with loans and cutbacks in profitability of the firms. Based on the recommendations above, it is advised to conduct a study on the best methods to project credit risks in the banking industry so that the banks can use these methods in projecting the future risks other than detecting the risks after they have occurred. How bad governance affects the financial performance of commercial banks in Kenya and exposure to Credit risk.

7. Reference

i. A., H. L. (1998). Measuring Loss on Latin American Defaulted Bank Loans, a 27-year study of 27 countries. The journal of lending and Credit Risk Management, 41-46.
ii. A., H. L. (1998). Measuring Loss on Latin American Defaulted Bank Loans, A 27-Year study of 27 countries. The Journal of Lending and Credit Risk Management.
iii. Abiola, a. O. (2013). The Impact of Credit Risk Management on the Commercial Banks Performance in Nigeria. International Journal of management and sustainability.
iv. Aburime, T. U. (2008). Determinants of Bank Profitability: Macroeconomic evidence From Nigeria. SSRN 1231064.
v. Akerlof, G. A. (1970). The Market for "Lemons": Quality Uncertainty and the market mechanism. The quarterly journal of economics, 488-500.
vi. Albertazzi, U. &. (2009). Bank Profitability and the Business Cycle. Journal of Financial Stability, 393-409.
vii. Altman, E. (2008). Managing Credit Risk: Challange for the new Millenium. New York: University Press.
viii. Atemnkeng, J. &. (2006). Market structure and profitability performance in the banking industry CFA Countries: The case of commercial Banks in Cameroon.
ix. Auronen, L. (2003). Asymmetric Information: Theory and applications. In Seminar in strategy and International Business.
x. Azeem, A. &. (2013). Impact of Profitability on the quantum of non-performing loans, The Virtual University of Pakistan.
xi. Baral, K. (2005). Health Check-up of Commercial Banks in the Framework of CAMEL: A case study of joint venture Banks in Nepal. The Journal of Nepalese Business Studies, 14-35.
xii. Basurto, M. (2006). Default, Credit Growth, and asset prices, IMF Working Paper.
xiii. Batra, S. (2003). Developing the Asian Markets for Non-performing Assets - Developments in India. In the 3rd Forum on Asian Insolvency Reform (FAIR), Seoul, Korea, 10-11.
xiv. Bengt, H. (1979). Moral Hazard and Observability. Bell Journal of Economics.
xv. Bengt, J. T. (1997). Financial Intermediation, Loanable Funds, and the Real Sector, Quarterly Journal of Economics.
xvi. Berger, A. &. (1997). Problem Loans and Cost efficiency in commercial banks, Journal of Banking and Finance.
xvii. Bharath, S. (2005). Forecasting Default to the KVM-Merton Model, Working Paper, Michigan University.
xviii. BIS. (2005). Stress Testing at Major Financial Institutions. Basel BIS.
xix. Bofondi, M. &. (2003). Bad Loans and entry into local credit markets, Bancad'Italia, Mimeo .
xx. Borio, C. &. (2009). Assesing the risk of banking crises. BIS Quarterly Review, 29-46.
xxi. Boudriga Abdelkader, B. T. (2009). Bank Specific, Business, and Institutional, Environment Determinants of Nonperforming Loans: Evidence from MENA Countries. Journal of Financial Economic Policy.
xxii. Brown, L. (2011). Regression MOdel Development for Credit Card Exposure at Default (EAD) Using SAS/STAT and SAS Enterprise Miner. SAS Global Forum 2011, University of South Hamptom., 9-11.
xxiii. Chiorazzo, V. M. (2006). Income Diversification and Bank Performance: Evidence from Italian Banks. Journal of Financial Services Research, 181-203.
xxiv. Choi, S. &. (2006). Diversification, Bank Risk, and Performance: A Cross-Country Comparison.
xxv. Cole, N. L. (2017, March 02). An Overview of the Method and Its Applications. Retrieved October 15, 2017, from Understanding Purposive Sampling: https://www.thoughtco.com/purposive-sampling-3026727
xxvi. Crossman, A. (2017, March 02). ThoughtCo. Retrieved October 20, 2017, from Understanding Purposive Sampling: https://www.thoughtco.com/purposive-sampling-3026727
xxvii. Dudovskiy, J. (2017). Research Methodology. Retrieved October 12, 2017, from Research Methodology: https://research-methodology.net/sampling-in-primary-data-collection/purposive-sampling/
xxviii. Dullmann, K. (2004). Systematic Risk in Recovery rates. Deutsche Bundesbank Discussion Paper.
xxix. Dutta, A. &. (2006). A tale of tails: an empirical analysis of loss distribution models for estimating operational risk capital. Federal Reserve Bank of Boston, 6-13.
xxx. Elul. (2006). Residential Mortgage Default. Business Review.
xxxi. Elyor, S. (2009). Factors affecting the performance of foreign banks in Malaysia. Master of Science (Banking), College of Business, University of Utara Malaysia.
xxxii. Fan, L. a. (2014). The Impact of credit risk management on the profitability of commercial banks. Journal of Business and Management.

xxxiii. Ferrier, G. &. (2003). Measuring cost efficiency in Banking: econometric & linear programming evidence. Journal of Econometrics, 229-2245.

xxxiv. Glen. J, a. M.-V. (2011). Business Cycle Effects on Commercial Bank Loan Portfolio Performance in Developing Economies. International Finance Corporation, World Bank Group.

xxxv. Heffernan, S. (2002). Modern Banking in Theory & Practice. New York: Wiley.

xxxvi. Helbling, T. (2005). Housing Prices Bubble. BIS Working Paper.

xxxvii. Hempel, G. S. (1994). Bank Management: Text and Cases.4th Edition. John Wiley & Sons Inc.

xxxviii. Hennie, V. (2003). Analyzing and Managing Banking Risk: A Framework for Assessing Corporate Governance and Financial Risk, 2nd Edition. Washington DC: World Bank Publications.

xxxix. Hoggarth, G. e. (2003). Marco Stress Test of UK Banks, BIS Working Paper.

xl. Hou, Y. D. (2007). The Non-Performing Loans: Some Bank-Level Evidence. 4th International Conference on Applied Financial Economics. Samos Island, Greece.

xli. IMF. (2015). A strategy for resolving Europe's problem loans. IMF.

xlii. Jones, S. (2007). How to write a great research paper. Microsoft research.

xliii. K., E. (2003). Moody's Loan Default Database as of December 2003. Moody's Investors Service.

xliv. Kaaya, I. P. (2013). Credit Risk and Commercial Banks Performance in Tanzania: A Panel Data Analysis. Research Journal of Finance and Accounting, 55-62.

xlv. Kamau, A. (2009). Efficiency in the Banking Sector: An Empirical Investigation of Commercial Banks in Kenya. A Thesis Submitted in Partial Fulfillment of the requirements of Nairobi University for the Degree of Doctor of Philosophy.

xlvi. Kangethe, K. (2017, August 1). Imperial Bank receivership extended by one year to shortlist investors. Retrieved October 15, 2017, from Capital Business: https://www.capitalfm.co.ke/business/2017/08/imperial-bank-receivership-extended-by-one-year-to-shortlist-investors/

xlvii. Kargi, H. (2010). Credit Risk and the performance of Nigerian Banks. The University of Ahmadubello.

xlviii. Kealhofer. (2003). Quantifying Credit risk. Financial Analyst Journal, 30-92.

xlix. Kenya, C. B. (2009, 2010, 2011, 2012, 2013, & 2014). Annual Supervisory report.

l. Kithinji, M. A. (2011). Credit Risk Management and Profitability of Banks in Kenya. Alabama Conference. Nairobi, Kenya.

li. Kosmidou, K. (2008). The Determinants of Banks Profits in Greece during the period of EU financial Integration. Managerial Finance.

lii. Krakah, A. K. (2010). The determinants of banks profitability in Ghana: The Case of Merchant Bank Ghana Limited (MBG) and Ghana Commercial Bank (GCB). A Master's Thesis in Business Administration, MBA Programme. Accra, Ghana.

liii. Lastra, B. (2004). Risk-Based capital requirements and their impact on the Banking Industry. Journal of Financial Regulation and Compliance, 225-239.

liv. Lawrence Palinkas, S. H. (2016, September 1). HHS Author Manuscripts. Retrieved October 15, 2017, from National Institutes of Health: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4012002/

lv. Lund Research LTD. (2012). Purposive Sampling. Retrieved October 16, 2017, from Laerd Dissertation: http://dissertation.laerd.com/purposive-sampling.php

lvi. Macharia, J. (2012). The Relationship Between the Level of Non-Performing Loans and the Financial Performance of Commercial Banks in Kenya. An MBA Project Submitted to the University of Nairobi.

lvii. Markowitz, H. (1952). Portfolio Selection. The Journal of Finance.

lviii. Mausya, W. (2009). The Impact of NOn-Performing Loans on the Performance of the Banking Sector in Kenya. An MBA Project Submitted to the University of Nairobi.

lix. Messai, A. a. (2013). Micro and Macro determinants of nonperforming loans. International Journal of economics and financial issues, 852-860.

lx. Michira, M. (2015, November 11). Central Bank of Kenya: Sh1.3b unclaimed at collapsed Dubai Bank. Retrieved November 16, 2017, from Standard Digital: https://www.standardmedia.co.ke/business/article/2000182201/central-bank-of-kenya-sh1-3b-unclaimed-at-collapsed-dubai-bank

lxi. Mirrlees, J. .. (1997). Information and Incentives: The Economics of Carrots and Sticks. The Economic Journal, 1311-1329.

lxii. Ndwiga, J. (2015). The relationship between Credit Risk Management Practices by commercial Banks in Kenya. Unpublished MBA dissertation, University of Nairobi.

lxiii. Ngigi, G. (2015, October 14). Sh58bn deposits locked in Imperial Bank shut down. Retrieved September 15, 2017, from Business Daily Africa: http://www.businessdailyafrica.com/Sh58bn-deposits-locked-in-Imperial-Bank-shutdown/539552-2912296-10ig39/index.html

lxiv. Nkusu, M. (2011). Nonperforming Loans and Microfinancial Vulnerabilities in Advanced Economies. IMF Working Paper, 11/161.

lxv. Nworji, I. (2011). Corporate Governance and Bank Failure in Nigeria: Issues, Challenges, and Opportunities. Research Journal of Finance & Accounting.
lxvi. Olweny, T. &. (2011). Effects of Banking Sectoral Factors on the Profitability of Commercial Banks in Kenya. Economics and Finance Review.
lxvii. Ongore, V. (2011). The Relationship Between Ownership Structure and Firm Performance: Empirical Analysis of Listed Companies in Kenya. African Journal of Business Management, 2120-2128.
lxviii. Pagano, M. (2004). Using an alternative estimation method to perform comprehensive empirical tests: an application to interest rate risk management.
lxix. Pagaon, M. &. (1993). Information Sharing in Credit Markets. The Journal of Finance.
lxx. Ramos, S. (2000). Financial Risk Management: Inter-American Development Bank.
lxxi. Riaga, O. (2016, April 8). The Banking woes in Kenya that were common during Moi era are back. Retrieved May 9, 2017, from Kenya Tech News: http://www.kachwanya.com/2016/04/08/the-banking-woes-in-kenya-that-were-common-during-moi-era-are-back/
lxxii. Schnure, C. (2005). Boom-bust Cycles in Housing. The changing role of Financial Structure.
lxxiii. Sorge, M. (2004). Stress-Testing Financial Systems. BIS Working Paper.
lxxiv. T., S. (2004). What do we know about Loss Given Default? New York Federal Reserve Bank of New York.
lxxv. Tarashev, N. (2005). An Empirical Evaluation of Structural Credit Risk Models. BIS Working paper.
lxxvi. Tirole, H. B. (1997). Financial Intermediation, Loanable Funds, and the Real Sector. Quarterly Journal of Economics, 663-691.
lxxvii. Tobin, J. (1958). Liquidity Preference as Behavior Towards Risk. Review of Economic Studies.
lxxviii. Tomak, S. (2013). Determinants of Commercial bank lending behavior: evidence from Turkey. Asian Journal of Empirical Research, 933-943.
lxxix. Uzhegova, O. (2010). The Relative Importance of Bank-Specific Factors for Bank Profitability in Developing Economies.
lxxx. Verde, M. (2003). Recovery Rates Return to Historical Norms. Fitch Ratings.
lxxxi. Wallace, N. (2005). Innovations in MOrtgage Modelling . an Introduction to Real Estate Economics, 587-593.
lxxxii. Wenner, M. e. (2007). Managing Credit Risk in Rural Financial Institutions in Latin America. Inter-American Development Bank.
lxxxiii. William. (2006, October 20). Ethics in Research. Retrieved March 12, 2017, from Research Methods, Knowledge Base: https://www.socialresearchmethods.net/kb/ethics.php
lxxxiv. Yam, J. (2003). The Link: Mathematics of Speculative Price, SIAM Review.
lxxxv. Yunus. (2006). The Nobel Peace Prize 2006 Lecture. The Nobel Peace Prize, 2006. Oslo.

Appendix: Commercial Banks in Kenya

1. ABC Bank Kenya
2. Bank of Africa
3. Bank of Baroda
4. Bank of India
5. Barclays Bank of Kenya
6. CFC Stanbic Holdings
7. Chase Bank Kenya (In Receivership)
8. Citibank
9. Commercial Bank of Africa
10. Consolidated Bank of Kenya
11. Cooperative Bank of Kenya
12. Credit Bank
13. Development Bank of Kenya
14. Diamond Trust Bank
15. Ecobank Kenya
16. Equity Bank
17. Family Bank
18. Fidelity Commercial Bank Limited
19. First Community Bank
20. Giro Commercial Bank
21. Guaranty Trust Bank Kenya

22. Guardian Bank
23. Gulf African Bank
24. Habib Bank
25. Habib Bank AG Zurich
26. Housing Finance Company of Kenya
27. I & M Bank
28. Imperial Bank Kenya
29. Jamii Bora Bank
30. Kenya Commercial Bank
31. Middle East Bank Kenya
32. National Bank of Kenya
33. NIC Bank
34. Oriental Commercial Bank
35. Paramount Universal Bank
36. Prime Bank
37. Sidian Bank
38. Spire Bank
39. Standard Chartered Kenya
40. Trans-National Bank Kenya
41. United Bank for Africa
42. Victoria Commercial Bank