

**EFFECT OF CREDIT ANALYSIS ON NON - PERFORMING LOANS OF  
COMMERCIAL BANKS IN KENYA**

**BY**

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**16/05921**

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REQUIREMENTS FOR THE AWARD OF MASTERS DEGREE IN  
COMMERCE- FINANCE & ACCOUNTING IN THE SCHOOL OF  
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## DECLARATION

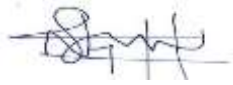
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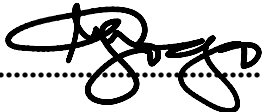
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## **ABSTRACT**

Credit analysis is carried out by commercial banks to analyze and assess the credit risk and credit worthiness of borrowers. Credit analysis is important since it helps lenders to secure their funds, mitigate credit risk and improve on the performance of loans. The aim of the study was to assess the effect of credit analysis on non-performing loans of commercial banks in Kenya. The specific objectives of this study are to assess the effect of credit history analysis, credit capacity analysis and credit repayment period analysis on the non-performing loans among the commercial banks in Kenya. Target population used for this study was 42 commercial banks which are operating in Kenya. The study was anchored on credit risk theory, Liquidity theory and Loan pricing theory. The study adopted a descriptive research design and the questionnaires were used to collect primary data from the 42 officers or heads of credit section in the head offices for all the 42 commercial banks in Kenya and the secondary data was collected from the bank websites and published reports. The coded data was analyzed using the multiple regression analysis with the help of SPSS software and Microsoft Excel spreadsheets. From the study findings it was found that the credit history analysis had no significant effect on non-performing loans while credit capacity analysis and credit repayment period analysis had a significant effect on the level of non-performing loans in Kenya's commercial banks. The study recommendations to commercial banks were: commercial banks should ensure that they conduct extensive research to come up with other credit analysis tools and techniques so that they can be able reduce the non-performing loans, Capacity analysis should include the analysis of expected cash flows, tangible assets, firm size and equity share. Extending loans to borrowers with good credit capacity leads to decrease in non-performing loans among the commercial banks in Kenya. Commercial banks should reevaluate the credit repayment periods so as to set optimal periods which borrower should be able to repay the loan on time but also research on other factors influencing the loan performance and level of non-performing loans. Finally, recommendations were made to interested parties and a suggestion for further research gaps to be researched by the upcoming researchers.

### **ACKNOWLEDGEMENT**

I take this opportunity to thank Almighty God for giving me strength to undertake this project. To my dissertation supervisor Dr. Njogo, I am grateful for the continued support and guidance you are giving me towards my project. Thank you so much. I can't forget my mentor Dr. Njuguna for the moral and academic advice on entire campus life. Also my sincere thanks go to my family for their love, financial and moral support during study period.

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## **DEDICATION**

I dedicate this dissertation report to my family and my mentor Dr. Njogo for his guidance, moral support and time we have share together since the initial stage of this project to this far.

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## **ABBREVIATIONS**

CBK- Central Bank of Kenya

CCA – Credit Capacity

CFI- Corporate Finance Institute

CHI - Credit History

CRB- Credit Reference Bureau

CRP - Credit repayment period

KCB- Kenya Commercial Bank

NPL – Non-performing loans

ROA- Return on Asset

ROE- Return on Equity

SMES- Small and Medium Enterprises

SPSS- Statistical Package of Social Sciences

LGD- Loss Given Default

## TERMS AND DEFINITIONS

**Non-performing loans** - Refer to the loans where the payments of both or either principal and interest is not paid and it is due for payment for a given portfolio over a given period of time.

**Credit analysis** - Is the process of finding the ability of a firm or an individual to repay back their loans and other obligations relating to debt facilities provided.

**Credit default** – This is a situation where the borrower stops or is unable to make the required payments on a debt as agreed.

**Credit capacity** – This refers to the ability to borrow or how much credit one is able to handle.

**Loss given default** – This refers to the amount of money that a financial institution can lose when a borrower or a client defaults on a loan and this is after taking measures of recovery.

**Credit Reference Bureau** – This is a company that its role is to collect data on loans issued by various lending institutions and prepares credit reports on a borrower's current and past loans which they have taken.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the study

Commercial banks consider credit analysis as being the major determinant of risk mitigation and offsetting foreseen uncertainties (Juma & Atheru, 2018). The problem facing the Kenyan banks is defaulting of their clients on settling their credit obligations (Temirov, 2019). Financing through commercial banks is a concept which is derived from the profit prospects and safety of the bank finances. Commercial bank loans are attached with interest rates which are intended to obtain benefits from the provision of the principal loan and for the survival of the business as a going concern. The banking business rely on the income from credit facilities more than other income sources (Chosyali & Sartono, 2019). Every bank requires proper credit management to ensure that it grows and at the same time it benefits the shareholders who are the entrepreneurs of the business. Credit management involve pro-active debtors giving back their loan and other obligation so the bank processes are not disrupted because of non-payment of the loan or credit obligations as agreed upon (Shamieh, 2022).

Commercial banks are the financial institutions whose main business is to advance credit to their clients, the inability of these clients to repay back the credit as per the agreed deadlines contribute to a financial crisis of these banks (CFI, 2021). At the moment the biggest challenge that is facing the commercial banks is the non-performing facilities which are increasing in number hence affecting the performance of these banks. A well-equipped banking industry should be able to act against negative economic shocks and ensure that it contribute to the financial sector stability and the country's economy (Campanella et al., 2020).

The lender will prefer to provide credit facilities to the business leaders in the industry, who are very competitive and in most cases they are the price setters in the market hence there is less risk of their credit facilities (Francis et al., 2022). The type of the industry in which the borrower is operating also can dictate the credit conditions for the credit facility and loans, since different industries tend to yield different returns. Some industries are doing well hence promising returns while others are doing badly in the industry hence seeming to lose the market and cease running into operation. Such individuals and firms who are not doing well in the industry are given harsh credit conditions to discourage them from taking credit facilities while those doing well are given favorable conditions to motivate them use credit facilities (Musau, et al., 2018).

In order to demonstrate the credit worthiness, the borrower should be able to demonstrate that there is a market for the business products undertaken and should provide a clear purpose and objective of the credit facility requested for. Currently there is some developments which have been put in place so as to improve the quality of bank assets. For instance, banks should analyze the potential borrowers credit repayment history, capacity of the potential borrower to repay the loan, credit collaterals for the loans borrowed, credit repayment periods and credit mix which suits the borrower abilities to access the bank assets (Mburu et al., 2020). The negative effect of non-performing loans is not a local problem in Kenya only but it is a problem which is facing even the regional banks and global banks even in developed countries (Adebisi & Matthew, 2015).

### **1.1.1 Non-performing Loans**

Non-performing loans refer to the loans where the payments of both or either principal and interest is not paid and it is due for payment for a given portfolio over a given period of time.

The proportion of the non-performing loans for a bank over the total loan assets is an indicator of the loan portfolio quality of a bank. The bank's loan portfolio affects the bank operations dictating its profitability ratio and liquidity problems. The quality of bank assets is determined by the level of performing loans. Commercial banks expect their portfolio assets to perform in the market so as to ensure they are in going concern business. Banking sector has a major function in the society in providing the loan facilities and in return they make their profits. However, there is a credit risk involved which is a main loss source generator for banks (Atoi, 2018).

To control non-performing loans, the bank can conduct the credit background check before approval so as to ensure that accurate credit decisions are taken in the process of determining the credit worthiness of the customer, this is challenged by the uncertain economic conditions and socio economic factors like the pandemics, interest rate shocks, change in the tax laws and other factors which leads to credit problems and non-performing loans effects (Gup & Kolari, 2015). The main reason why non-performing loans exist is usually associated with inadequate assessment, oversight and supervision of banks. Banks are also lacking the effective working resources, Weak legal system in the banking institution and lack of appropriate or effective strategies of debt collection (Phiri, 2019).

Non-performing loans mainly are closely related to failure of the bank due to decreasing bank assets and other problems relating to bank financial crisis hence reduction of the non-performing loans will help to improve the economic status and banking sector stability (Muriithi, 2013). Adebisi and Mathew (2015) study found out that there is no existing relationship between the non-performing loans and return on asset of commercial banks in Nigeria. However, they found out that there is a relationship between non-performing loans of commercial banks and rate of equity return (Adebisi & Mathew, 2015). The capital adequacy and the non-performing

loans rate are strongly correlated while the non-performing loans and liquid asset indicators showed a negative correlation; the banks should pay more attention and efforts towards non-performing loans since they are the largest influential problems of the bank liquidity and bank stability (Kozaric et al., 2015).

There are two categories of factors that describe non-performing loans development as time moves on. The events which are external in nature like the macro-economic factors in overall that are affecting the borrower`s creditworthiness while the second category is the movement of non-performing loans across different commercial banks and finally the non-performing loans levels as being dictated by the factors which are internally set by the individual bank (Rascoelan & Mangu, 2014). The increasing level of non-performing banks assets do affect the earning ability and profitability of these banks. The effect of non-performing assets of the bank on them, it does not only affect the performance factors like the Equity return and Asset return but will put together the efficiency factors which contribute to the profitability of the banks (Lelissa, 2020). The situation of the banking system in the banking industry do directly affect the country general economy, this is due to their core function in the funding provisions for employment creation and other work opportunities leading to overall economic growth. Bank loan portfolio problems may affect the bank negatively to the extent of reducing the market confidence, raising its reputational risk and sudden withdrawal by its customers who initially deposited their funds or may lead to systematic insolvency in the banking sector hence threatening not only the growth and development of the banking industry but the economy at large (Dreca, 2016).

The impact of high level of non-performing loans is increasing since it results to banking activities disruptions and deteriorating profit position (Jolevski, 2015). The non-performing loans

usually have a negative signaling impact on the bank profits through an increased provision and in the stock market hence lowering the share prices and market capitalization (Nyasaka, 2017). Most of the banking problems are brought by the credit risk which arises from the lending sources leading to leading to non-performing of which its effects are justified from various studies. To reduce the level of non-performing loans will help to improve the economic status of our country and will lead to stabilizing the banking industry (Phiri, 2019). Commercial banks are greatly affected by the level of non-performing loans and credit analysis tools are believed to reduce this level to minimum and manageable levels. Hence this paper aimed at investigating the effects of credit analysis on non-performing loans of the commercial banks in Kenya.

### **1.1.2 Credit Analysis**

Credit analysis refers to the process of finding the ability of a firm or an individual to repay back their loans and other obligations relating to debt facilities provided. It can also be termed as the process of finding the eligibility of a potential debtor or borrower and the credit risk involved or the risk of defaulting (Nzoli, 2021). According to CFI (2021), credit analysis is the evaluation method used by lenders to assess the financial ability of the potential client who is a borrower and the chance that they will be able to honor and meet their financial obligations. Credit analysis uses both the qualitative techniques and quantitative methods in the evaluation process. Qualitative techniques usually use judgment which is subjective to analyze borrower`s potential to repay the loan facilities and prospects which are based on non-quantifiable data (Gorgijevska & Trajkovska, 2017).

There are various factors which can be used in credit analysis in the process of quantitative analysis and these factors include: the capital utilization, cash flow, gross margin, costs, revenues and financial efficiency ratios like the return on equity, sales, assets and others.

Quantitative credit analysis involves the analysis of the bank's financial statements or the borrower and considering the financial indicators certainty (Gorgijevska & Trajkovska, 2017). The main objective of the credit analysis for the commercial banks is to analyze and assess the credit risk or the credit worthiness of the borrowers. Credit analysis is significant to commercial banks, the investors and other related parties because it helps to secure their funds and mitigate the credit risk and offset other uncertainties. The credit analysis can be used by commercial banks to find out customers' ability to repay back the lender loans which will influence the bank current and future financial stability (Nzoli, 2021).

Corporate loans credit analysis can be carried out basing their consideration on the five C's of credit (character, condition, capacity, collaterals and capital) which are used to find out the credit quality and risk. Character refer to the credit history of the borrower and the information on how the borrower has been managing the loans and debts in the past, Condition refers to the information which is provided so as to guide and assist the borrower to determine whether the terms of the credits are favorable or not, it may also include information on how to plan, use the loan and control the loan. Capacity refer to the borrower's ability to pay the loan acquired from the lender, the capacity of the borrower determines by how much one can be given the loan and at a manageable standard. Collaterals are the security assets which can be used to secure the loan in case the borrower default in paying back the loan for example the car log book or the land title deeds (Ouma et al., 2019).

The financial institutions like the micro finance institutions are affected by the characteristics of the nonperformance of the assets due to credit history analysis which can be based on the potential customer analysis, terms of credit terms to different borrowers without generalization and performance of loan repayment among the microfinance institutions clients.

The borrower`s personal credit report can be used by the lender to personally guarantee the loan through considering the nature and trend of the borrower when it comes to payment of borrowed assets and it can indicate how the borrower will manage the credit facility if the financial institution gives out the loan facilities , this will help the lender to learn earlier the risk involved in the client (Ssekiziyivu et al., 2018). In circumstances when the borrower is characterized by late loan repayment or nonpayment of the loans given from previous lenders, there is a possibility of the trend to continue in future with no change of the tendency of nonpayment of the borrower, hence this is a poor credit history which must be considered by the lenders so that they can avoid the increasing level of non-performing loans in the financial institutions and the lender may consider not to give the credit service to this borrowers for the safety of the lender company (Kawa et al., 2019).

Capital refers to the borrowers` savings, investment value or the company assets that the borrower is willing to put in place for the loan for example a down payment which is paid to buy a home or the cash held on hand or bank to qualify the borrower for a loan and indicate the level seriousness of the borrower. The individual loans credit analysis can be conducted using the credit scores, which usually include the history of payment, the owed amounts, the credit history length, the credit mix in a given loan portfolio and finally a new credit. The borrower history of payment refer to the past information of the borrower on the repayment schedule of the loan and frequency of repayment whether it was met or not, amount owed refers to the maximum amount of money that has been given to the borrower by other lender so as to estimate the optimal amount of loan to grant the borrower (Ouma et al., 2019). Length of the credit history is the time which is reasonable to the borrower to repay the loan and establish a good credit history, credit mix refers to the different types of credit accounts that the borrower has for loans,

mortgages, and credit cards and finally the new credit refers to the new means or ways of the borrower to access a quicker loan that they applied for and did not have access to it before (Ouma et al., 2019). Thus, the fundamental aspects of a borrower that are used to determine the credit score of a borrower are the history of payment, current credit, time allowed for the credit repayment, type of the credit facility and the interest payment.

The credit analysis is usually based on three elements. These include the financial circumstances, competition position and business environment. Financial circumstances refers to the revenues and cost elements of the company in the industry and its implications for example a company can be considered strong for the purposes of credit when its cost elements will help the company yield highest profit margins in all business stages or produce above average results when the company is suffering from financial distress due to business down or again when its fixed cost and total cost is within manageable limit or lower than its competitors (CFI, 2021). Competitive position in the market is also important since it involves the business strategy, position among others that look consistent with the market trends and customers can adapt the changes easily. Lastly is the business environment which is not direct to credit analysis but it provides a significant dimension when measuring credit analysis (CFI, 2021).

The credit analysis is guided by the general principles which are used to measure the risk involved on credit facilities and this includes the credit ratings, the traditional credit analysis, the models of credit scoring and other models of credit risk. The credit ratings refer to the opinion given formally by a company that is specializing in the default risk and exposure assessment (Kirimi et al., 2022). In Kenya we have the credit reference bureau (CRB) which is used to rate the borrowers and give their credit history alongside their comment on the credit standing. Traditional credit analysis involves the 4C's: capacity, collateral, character and conditions. On

conducting credit analysis and credit worthiness it follows the following key steps: Firstly, is to develop a common way of organizing the financial information so as to make easier for the analysis. Secondly one require a standard analysis for the key financial ratios and trends that are to be used in the credit analysis process, thirdly one need to consider all the requirements that directly link to actual and identified business needs and the projections of cash flows.

The lender need to consider the credit analysis tools so as to ensure that the loan assets are performing hence improving its value through reducing non-performing assets. Poor credit analysis has a significant impact on the loan defaulters as well as the borrower`s commitment to the loan repayment. The loan repayment periods should be reevaluated in the process of determining the potential borrower so as to ensure that the borrower will be able to repay the installment as scheduled. This can be done through ensuring optimal loan repayment period is scheduled in the process of carrying out credit analysis (Akehege, 2011).

Finally, one need to structure the credit facilities in a way to protect and secure the bank against key business and financial exposures that are likely to affect the company cash inflows and outflows. If these steps are keenly followed, they will help the bank offering credit facilities to reduce risk exposures. This will also help commercial banks to establish an appropriate credit facility and understand their customer`s credit worthiness through an accurate credit risk analysis (Gorgijevska & Trajkovska, 2017).

### **1.1.3 Commercial Banks**

Commercial banks refer to the financial institution undertaking the role of accepting the deposits from the public and issuing out loan facilities to their customers, for the purpose of investing and earning bank interests as a profit to the provision of the loan facilities. Commercial banks have a distinctive feature of borrowing and lending as they earn the lending rate (Investopedia, 2021).

We have 42 Commercial banks in Kenya of which 28 are domestic banks while 14 are foreign banks with branches and outlets within the country and outside the country's boundaries (CBK, 2021). According to CFI (2021) all banks are supervised by the central bank of Kenya in Kenya which is in charge of the monetary policy establishing and maintaining price stability.

In Kenya the top list of commercial banks is: ABSA Bank Kenya, Equity Group Holdings, Kenya Commercial Bank, Standard Chartered Bank Kenya, Cooperative Bank of Kenya, Diamond Trust Bank of Kenya, NCBA Bank, National Bank of Kenya and Stanbic Bank (CBK, 2021). The function of commercial bank is to accept deposits, give loans, discount bills of exchange, provide overdraft facilities, offer agency function of its customers for a commission, perform general utility function like locker facility and underwrite securities issued by the government. The deposits are accepted by bank in form of current, savings and fixed deposits (Macharia et al., 2021).

The current deposits are payable on demand and they can be withdrawn at any time by depositors and the bank does not pay any interest while the fixed deposit are the time deposits since they are only withdrawn upon maturity of the fixed specified period and finally the saving account deposits are only used for saving as the main motive behind it by individuals (Temirov, 2019). Loans and advances which are given by commercial are usually in form of cash credit, short term loans and demand loans which can be recalled on demand. Discounting bills of exchange involve a promise to pay a certain amount which is fixed at a specified time in future. Commercial banks need to determine the credit risk and ways to reduce it in order to manage their loan portfolio and increase their profits. Credit risks can be determined by credit analysis process, which is used to indicate the level of risks and any adjustment to be made (Temirov, 2019).

The commercial banks loan advances can be grouped into five classes; the normal advances, watch advances, substandard advances, doubtful debts advances and loss advances. Normal advances are credit facilities which are given to clients who are sound financially with no point of weakness while the watch advances are credit facilities which are given to clients who are financially sound but have some specific weakness which are calling for management attention (CBK, 2016). The substandard advances are credit facilities which have are in operation in spite having some credit risk components affecting the future outcome hence may be leading to losses unless supervision is done closely and corrective action has to be taken to improve the position, a good example is installments arrears for at least three months. The doubtful debts advances are the loan advances where there is high level of risk involved because of the existing of a major weakness while the loss advances are loan facilities with arrears outstanding which are considered uncollectable or the security may be sold off and proceeds may not cover the debt in totality hence balance remaining cannot be recovered. In conclusion the non-performing loans are categorized under the following classes: Substandard advances, doubtful advances and loss advances (Central Bank of Kenya, 2016).

The banking sector and the country`s economy closely relate to each other. The soundness of the commercial banks greatly depends on their financial performance. Usually the economy depends on the commercial banks for deposits, lending services, allocation of economic resources to investors (Ongore & Kusa, 2013).

## **1.2 Statement of the Problem**

Commercial banks are the backbone of the country`s economy since they offer important services to the citizens and also channel effective monetary policies of the central bank and government (Siddiqui & Shoaib, 2017). Over the years, commercial banks have been using

standard credit analysis tools to identify the most suitable borrower and deny credit facilities to customers with high risk of default. This enable banks to achieve a high level of performing loans and maximize their profits (Francis et al., 2022). Poor credit analysis can lead to increasing number of non-performing loans among the commercial banks (Lelissa, 2020). The main reason for carrying credit analysis in the commercial banks is to analyze and assess the credit risk and determine customers' ability to repay back the loans which influence the bank current and future financial stability (Nzoli, 2021).

Most commercial banks have put in place several techniques of managing credit risk for example, the credit analysis techniques and ensuring that the non-performing loans level are eliminated or reduced to a minimal manageable level. In spite of all these efforts, there is still a rise in the non-performing loans levels among the commercial banks in Kenya (Nugroho et al., 2021). When credit analysis tools are well implemented and practiced the quality of assets is believed to improve since the non-performing loans levels will decline. Commercial banks take into consideration borrower's characteristics, credit capacity, credit conditions and credit security when granting a loan. Banks do have a credit manual which helps in documenting and showing the credit management strategies and policies to be used in decision making and reduce non-performing loans (Nyasaka, 2017). Non-performing loans depend on various factors which include both microeconomic and bank specific factors which the bank manager must consider when carrying out credit risk analysis (Ristić & Jemović, 2021).

The banks non-performing loans are caused by the size of the bank, loans ratio to the total assets and the rate of growth since they were all found to be statistically significant to the banks performance (Phiri, 2019). Non-performing loans of commercial banks in Kenya are affected by the rate of inflation and interest rates. The rise of rate of inflation leads to rise in non-

performing loans while decrease in interest rate leads to decrease in non-performing loans (Muriithi, 2013).

Commercial banks are always vulnerable when there is an economic crisis because of the likelihood of non-performing loans (Khatun et al., 2021). The history of the borrower is useful since proper appraisal of the client before granting the credit facility will help to avoid credit risk hence improving the commercial banks performance (Ndero et al., 2019). According to the credit survey report in Kenya 2011- 2022, it has clearly indicated that the level of the non-performing loans over the past 12 years have been on increasing trend for example NPL ratio in 2011 was 3.8 while as at September 2022 was 12.5 indicating that it has actually tripled since then. The return on equity dropped from 30.7% in 2011 to 22% in the year 2022 while the return on assets has also dropped from 4.7% in 2012 to 3.79% in the year 2022. CBK report, (2022) shows that, the non-performing loans are on an increasing trend in various financial institutions. Kisengese (2014) found that non-performing loans levels in commercial banks in Kenya are wanting and on an upward raising trend. Ndero, et al., (2019) carried a study in Kenya and found that non-performing loans in commercial banks has been on a rising trend and performance of loan is declining. Therefore according to the current and previous studies and survey, they indicate that non-performing loans levels are on an increasing trend..

From a global perspective, Boateng and Oduro, (2018) found that the level of non-performing in Northern Ghana on microfinance institution is increasing over time which call for an immediate solution. Also (Ssekiziyivu et al., 2018) study in Uganda found that the non-performing loans among the micro finance institutions is in a decreasing overtime. Kılıç and Kartal (2021) in Turkey found that non-performing loans levels were also increasing compared to the previous levels. Prasanth et al., (2020) carried their in India and they indicated that the level of non-

performing loans has been increasing as time goes by hence they were finding the causes. Schuijling et al., (2019) also indicated that the level of non-performing loans have been raising overtime. Hence from the above studies both local, regional and global we may conclude that the levels of non-performing loans are wanting .

There are several research studies which have been researched on non-performing loans on commercial banks in Kenya, but little attention has been given on the connection between credit analysis and Non-performing loans of commercial banks in Kenya. This study aimed to address the existing contextual and knowledge gaps by establishing the effect of credit analysis on the non-performing loans of commercial banks in Kenya.

### **1.3 Objectives of the study**

#### **1.3.1 General objective**

To find out the effect of credit analysis on non-performing loans of commercial banks in Kenya.

#### **1.3.2 Specific Objectives**

- i) To investigate the effect of credit history analysis on Non-performing loans of commercial banks in Kenya.
- ii) To determine the effect of credit capacity analysis on Non-performing loans of commercial banks in Kenya.
- iii) To evaluate the effect of credit repayment period analysis on Non-performing loans of commercial banks in Kenya.

### **1.4 Research Hypotheses**

**H<sub>01</sub>:** *Credit history analysis has no significant effect on Non-performing loans of commercial banks in Kenya.*

**H<sub>02</sub>:** *Credit capacity analysis has no significant effect on Non-performing loans of commercial banks in Kenya.*

**H<sub>03</sub>:** *Credit repayment period analysis has no significant effect on Non-performing loans of commercial banks in Kenya.*

### **1.5 Significance of the study**

The study findings will benefit the government since it will be able to identify areas to improve on in the banking industry so as when it set its monetary policies and tools through the central bank, it can consider the factors which will directly affect the citizens in the process of obtaining and repaying loans. Proper credit analysis will help commercial banks to identify suitable credit customers, minimize the non-performing loans levels and earn promised returns in form of timely repayment of credit facilities and good customer relationships. This is because when a suitable customer is selected and given the loan hence high probability of meeting the loan targets and repayments.

The study results will help commercial banks manager appreciates the need of credit analysis in monitoring and controlling the non-performing loans in order to improve the bank's profit margins. The results will also motivate managers to participate in the process of policy formulation of uncollectable debts management. The findings of the study will also help the academicians to identify the knowledge gaps to be filled to the knowledge body as they solve the existing problems and advice different stakeholders.

### **1.6 Scope of the study**

This study focused on 42 Commercial banks operating in Kenya and the credit officers or heads of credit departments were the respondents of this study. This study focused on assessing the effect of credit analysis on the non-performing loan of commercial banks in Kenya.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presented a literature review. It was broken into two subsections that is; the theoretical concepts in the first subsection and empirical analysis in the second section. On top of this, a summary of the literature reviewed, the conceptual framework and operationalization of variables for the study is presented.

#### **2.2 Theoretical Review**

This study was anchored on the credit risk theory, loan pricing theory and liquidity theory. These are presented below.

##### **2.2.1 Credit Risk Theory**

This is a theory of default which was first introduced by Merton (1974). It presents a basis for the efforts to measure and manage a credit risk exposure. This theory view credit default as an embedded put options which exist to borrowers when the economic situation attracts the borrower to carry and exercise their default option. The credit default option and its theoretical framework can be evidenced by any type of the borrower and it is used as a foundation for default modeling. According to this theory the credit loss estimates are created on the basis of jointly bringing together the borrowers chances of default with the borrower loss given default, which is usually referred as LGD or the borrower's loss severity. The model of Merton default gives ways that conceptually determine the loss components (Tsesmelidakis & Merton, 2013).

This theory was expanded by Sy (2007) on his causal theory as he argued that causal theory of default is required so as to understand the bank lending risk in a systematic manner, measure it ultimately and manage the credit risk in order to ensure financial stability of the banking system. The theory further postulates that a credit default in an institution is caused by bought delinquency and the insolvency of the bank. Merton (1974) argued that there is a relationship between the credit risk and the capital structure of the borrower hence he developed a structural relationship existing between the default risk and assets of the borrower. He found that a borrower is considered to default if the value of assets is less than the outstanding amount of debt. In such cases the lender can recover the loan through the amount to be paid which is equivalent to the asset while the owner who is the borrower remains with nothing (Mrindoko et al., 2020).

Longstaff and Schwartz (1995) study found out that financial assets are mostly prone to credit risk over their life time and every stage of their maturity. They further showed that the credit risk theory links the function of bank management to manage operational risk and the financial assets of a company.

According to credit risk theory, the credit risk has a negative effect on the performance of loans in the bank and it can be applied by banks in the process of considering the ability of loan repayment by the potential borrowers before the bank give out the loan, hence this theory is of great importance to the study. It is in line with credit capacity risk analysis objective of this study since it explains how financial assets and operational risk are managed to reduce risk exposure. This study aimed to investigate the effect of credit analysis on non-performing loans of commercial banks in Kenya.

### **2.2.2 Loan Pricing Theory**

Ford and Sundmacher (2004) loan pricing theory argues that when commercial banks put high interest rate, it causes adverse selection challenges in the market since the borrowers who are already risky accept high interest rates without being forced but after they have received the loans and advances they start to develop moral hazard because they may be willing to take highly risky projects. From this aspect of reasoning we may conclude that it is obvious that in some instances the lending rates which are set by commercial banks may not prevent the borrowers from taking risky investment projects. Stiglitz and Weiss (1981) found that banks should take into consideration the moral and adverse selection problems if they want to maximize the lending income since it is assumed that in the market there is high information asymmetry in the lending market.

The loan pricing is the critical link between the commercial banks and other financial institutions which have led to conducting of unprecedented reforms on the lending rates in the market and constantly changing the interest rate in the floating space (Zhang et al., 2019). For a commercial bank to develop an advanced loan pricing model, it needs to create a reasonable assessment of the credit risk level and the credit base rate among other interest rate determinants (Liu, et al., 2017). The loan pricing model is of great importance since it identifies both supply and demand imbalances in the markets and help in pricing the risk within the loan agreements with the borrower this will yield an additional revenue but it will discourage borrowers from undertaking riskier investment activities (Summit 2016). The loan pricing model helps also in documenting the risk data, which can be used in carrying trend analysis within the loan portfolio that can be used to justify its subjective aspects.

Under loan pricing theory, the cost of the loan, the credit risk involved and the loan term are the main parameters in the commercial banking activities (Maonga, 2016). This theory helps researchers to understand how the credit risk can be attracted if a proper credit analysis is done to potential borrowers and the effect of the commercial bank lending rate movements. Therefore, this theory is relevant to the study as it tries to explain how the interest rates adjustment on loanable funds of the commercial banks do impact the price determination of loans to the public which also affect the borrowers loan uptake rate and the level of non-performing rate of the bank.

### **2.2.3 Liquidity Theory of Credit**

This theory was first introduced by Keynes (1989). This theory states that the premium which is demanded for the purpose of separating the cash that is created as the term of generating the cash reduces. It demonstrates that the rate of increasing the premium's total amount decreases its speed with the increase of the term of generating the cash. This theory can be expressed in the banking system as a forward rate to be more than the future spot rates (Tily, 2006).

Keynes (1989) ideology, the demand for liquidity can be drawn from following three motives: Transactional motive where individuals demand to hold cash for basic transactions. This is because their income is not continuously available for them, again it is noted that the higher the income to an individual the more money demanded for their spending (Moore 1991 and Tonye & Andabai, 2014). The precautionary motive which shows that individuals prefer to hold cash to use in social unexpected problems that occurs and requires unusual expenditure, the amount of precautionary motive held increases as income increases. Lastly is the speculative motive which shows that individuals hold cash for the speculative purposes or to use when an investment opportunity arises. It is realized that when the interest rate decreases individuals

demand more money from the banks in order to hold until interest rates are increased (Murage, 2014).

This theory explains the idea that the bank will demand a premium for its credit facilities with longer maturity periods which has a higher risk, this is because the bank will prefer to hold liquid assets like cash which has lesser risk. When an investment has more liquid assets it can quickly and easily sell for its full value (Oreiro et al., 2020). Keynes (1989) theory indicates that the interest rates increase is caused by the raise in demand for money while they decrease when the supply of money increases.

This theory was criticized by Accettato (2021) that this proposition does not hold under scrutiny test since his three motives only rises in demand related to transaction motive which does not necessary leads to increase of interest rates. This theory posits that a financial institution like a bank that its core business is to lend out credit it is likely to face liquidity problems when the borrowers are unable to pay back the loan on time as agreed with the lender. Hence this results to non-performance of loans which limit the bank to invest on other profitable projects which may have high returns in future (Calomiris et al. 2015).

In conclusion this theory advocates that a bank requires to hold more cash as a liquid asset within the bank so as to manage the level of credit risk by ensuring that the potential borrowers are credit worthy before they are granted the loan. This theory is more relevant to the study since it address the credit history analysis and the repayment period analysis which are my study objectives and gives the reasons why the financial institution may prefer to undertake profitable projects and avoid liquidity problems.

## **2.3 Empirical Review**

There are few empirical studies which are existing currently on this literature, they are closely discussing around the non-performing loans and commercial banks. The independent variable for this study are credit history analysis, credit capacity analysis, credit collateral analysis and repayment period analysis while the dependent variable is non-performing loans.

### **2.3.1 Credit History Analysis and Non-Performing Loans**

Credit history of the borrower is very important to the bank in the process of credit analysis since it indicates the probability of the borrower to repay back the loan. Credit history help is considered in line with the credit referencing bureau (CRB) which shows all the credit facilities acquired and the amount given together with the comment on the borrower credit standing. The credit history is usually summarized in files which are referred to as credit reports. The concept of credit referencing was introduced by central bank of Kenya in the year 2009 to provide information for credit assessment purposes and it aimed to reduce the loan default cases and share the credit information among the lenders hence reducing information asymmetry (CBK, 2019).

Otwori (2013) studied the connection between the credit referencing and the non-performing loans levels of commercial banks in Kenya, the hypothesis for the study was that the credit referencing help to eliminate information asymmetry hence reducing the loan default rates of the financial institutions. Descriptive research design was adopted by the study and correlation research design while it used a multiple linear regression analysis was used to analyze the data collected. The findings generated indicated that there is a negative relationship between the ratio on non-performing loans over total loans and advances with the rising numbers of the credit referencing reports generated from CRB. It also indicated that 33% of the variations in the non-

performing loans ratio over total loans and advances which can be explained from the credit referencing bureaus while 29% of the variations according to R-square in the non-performing loans over the total loans and advances which can be explained by the CRB. The finding of this study was in line with the research of Udell (2003), Pagano (2009), Brown (2007) and Mutangaili (2011).

Kisengese (2014) analyzed the effect of sharing the credit information on the non-performing loans levels of commercial banks in Kenya, with the main aim of determining the impact of introduction of CRB in commercial on non-performing loans. It adopted descriptive survey design with 43 financial institutions which are operating within Nairobi county, used questionnaires to collect the data and SPSS was used to analyze the data. From this study finding indicated that all banks had challenges of non-performing loans and all credit history from other credit suppliers raised the credit approval by commercial banks while a low default rate was realized. In conclusion the researchers recommended that banks should adopt fully the credit referencing concept.

Geletta (2012) From his study on the determinants of non-performing loans in Ethiopian banks. The main objective was to determine the major determinants of non-performing loans on both private and state owned banks in Ethiopia. The study used mixed research approach, structured review of documents and bank records. The study adopted a descriptive research statistics to collect and analysis the data. The findings indicated that poor credit history analysis, lenient credit terms and conditions, aggressive lending practices, compromised integrity, weak institutional capacity, unfair competition among banks, willful default by borrowers and the fund diversion from the intended use do contribute the increasing levels of non-performing loans. Therefore poor credit history analysis has a direct relationship with the non-performing loans

among the banks. The study failed to support the relationship between the firm size and interest rate charge which do exist in other studies. The study recommended that banks should ensure proper credit history analysis, careful customer selection and monitoring of credit customer so as to reduce the levels of non-performing loans.

Boateng and Oduro (2018) carried a study on the factors predicting microfinance credit default in Northern Ghana. The main objective of this study was to investigate the factors predicting microfinance credit default. They used a sample population of 409 microcredit beneficiaries found in Nsoatreman Rural Bank found in urban areas, semirural areas and rural areas. The study used Logistic regression to analyze the data. From their findings it was found that factors like the educational level, the number of dependents, the type of loan advanced, adequacy of the loan facility in the financial institution, the number of years in business, the cost of capital and the period within which the year the loan was advanced to the client, it was found to have significant effect on credit default. The researchers recommended that if the management wants to enhance the efficiency of microcredit they should develop policies supporting the adoption of the group loan policy as the main means of advancing micro loans to their borrowers or clients rather than individual loan policy. They also recommend that Micro Finance Institutions aim to increase financial literacy by teaming up with the Ministry of Education through the Non-Formal Education Division so as to organize the functional literacy workshops and public financial awareness campaigns for microcredit beneficiaries in order to make the public learn and improve their knowledge on business and usage of credit facilities in the processes of improving their credit worthiness and credit history through the credit repay on time.

Ssekiziyivu et al., (2018) study was on the characteristics of the potential customer, terms of credit terms and performance of loan repayment among the microfinance institutions clients. The study targeted 51MFIs in Uganda and it used questionnaire to collect its data and it used the regression model to analyze its data. The findings indicate that the borrower`s personal credit report can be used by the lender to personally guarantee the loan and indicate how the borrower will manage the credit facility provided. According to Kawa et al., (2019) researched on assessment of credit risk from the combined bank records under the federated learning system, found that if the borrower is characterized by late loan repayment or nonpayment of the loans given, there is a possibility of the trend to continue with no change in future hence this is a poor credit history which will be increasing the level of non-performing loans and the lender may consider not to give the credit service to this borrower.

Owino (2013) researched on the effect of the lending policies on the level of non-performing loans on commercial banks in Kenya. The major objective of this study was to find out the lending policies and their effect on the non-performing loans levels among the commercial banks in Kenya. This study used a descriptive survey and 43 commercial banks in Kenya were used to generate the required data. A questionnaire was used to collect the primary data and finally a descriptive statistics was used to in the process of summarizing the data and findings. From the study it was found that lending policies with regard to credit history of the borrowers and the non-performing loans had strong relationship hence the banks must lend in a prudent way so as to lower the credit risk level and reduce the levels of non-performing loans among the commercial banks.

Ndero et al., (2019) studied on the connection between the credit appraisal and the loan performance in the commercial banks, they targeted a population of 189 credit officers within 39

commercial banks and they used regression model to analyze the data. They found that the history of the borrower is useful since proper appraisal of the client before granting the credit facility will help to avoid credit risk hence improving the commercial banks performance. A corporate borrower who has a steady cash flows or incomes and a good credit history can obtain a loan with lower interest rate since the borrower is considered to be a lower risk borrower while a potential borrower with unstable cash flows and poor credit history can obtain the loan with higher interest rates because the borrower is considered to a high risk borrower hence discouraged from taking the loan facilities or they may directly reject the loan application so as mitigate the credit risks.

### **2.3.2 Credit Capacity Analysis and Non-Performing Loans**

Credit capacity can be described as the ability to repay the credit facility or loan applied for (Kawa et al., 2019). The borrower must demonstrate through the business plan that there are abilities to repay the credit. If the borrower does not show the abilities to repay the loan, the application is rejected since there is a risk of nonpayment. Usually the lenders do look at the revenues, expenses, cash flows, other incomes and the payments periods in the process of credit capacity determination (Debnath & Roy, 2018).

Nyasaka (2017) assessed the linkage between the practices in credit risk management and the non-performing loans in Kenya commercial bank, the study had the main aim of investigating the effect of Non-performing loans on financial performance of the KCB group. The study was using descriptive research method in the process of obtaining its data, the study targeted the 100 credit managers who were given questionnaires in the head offices and branches of KCB and the data was analyzed using SPSS to produce inferential statistic and the descriptive statistics. The study found that the bank do consider the credit capacity, characteristics of the

borrower, conditions and collaterals of the borrower when determining the credit scoring with regard to the loans, it further discovered that the bank in order to reduce the non-performing loans levels it uses a well-documented policy for credit management in the process of decision making. Also from this study it was found that the high the non-performing loans level affects the credit capacity of banks since it denies its access to capital markets and in return can lead to a situation of undercapitalized state leading to loss of employment of its employees. The study concluded that non-performing loans have negatively impacted a commercial banks credit provision capacity because of its continued reducing of core capital.

Kılıç and Kartal (2021) did research on the volume of non- performing loans prediction in Turkey and they used a model of multivariate adaptive regression splines to analyze their data. They used dataset from the Turkey central bank and the regulation agency of supervision. They found that providing credit capacity by banks will increase the non-performing loans levels. The study also indicated that the credits, USD exchange rates and the unemployment rate were discovered to be the most statistically significant factors that dictate the level of the non-performing loans volume.

Fitria and Sari (2012) assessed the effect of credit policies applied on non-performing loans of Banks in Indonesia. The main hypothesis for this study was suspected that the credit capacity and policies have significantly affected the non-performing loans in relation to the loan-to-deposit ratio. They used a secondary data with descriptive analysis to analyze credit policy and simple regression analysis. They found that the prudence lending policy principle in the company is the principle of the 5`C containing the credit capacity, credit capital, credit collateral, credit condition and credit character. The study showed that the credit capacity significantly affected the loan to deposit ratio.

Ikram et al., (2016) study was on the non-performing loans determinants in the SMEs sector which was conducted by the commercial banks with an empirical assessment of the bank-specific microeconomics factors. Stratified sampling technique with a well-structured questionnaire, they targeted 9 commercial banks with 42 branches which were in operation in Pakistan, for the year of 2014-2015. The hypothesis of the study was repayment capacity of firms and the value of non-performing loans are significantly related with each other. The found that the low per capita and high interest are evidenced on the low capacity of repaying by the borrowers hence leading to bad debts which lead to increased level of non-performing loans. According to this study the repayment capacity of small and medium size enterprises or borrowers was found to insignificantly relate to the non-performing loans since default may be willful and prevalence of the political intervention.

Prasanth et al., (2020) research was on the factors affecting non-performing loan in India. The study targeted two banks: Indian Bank and SBI, they used secondary data and multiple linear regression equation to analyze data through the SPSS software. The finding of this study reveals that poor credit risk evaluation and concentrating on collateral based lending are the main specific factors that cause non-performing loans.

Muhindi and Ngaba (2018) researched on effect of firm size on financial performance on banks in Kenya. The main objective of their study was to determine the impact of the firm size on financial performance of financial banks. They used a descriptive survey to carry their study and their study population was among the forty two registered commercial banks in Kenya. They used the secondary data to come up with their findings: Financial reports from 2012-2016. This panel data was analyzed by the use of the descriptive statistics and multiple linear regression

models. From their finding it was realized that the firm size had a significant relationship with the financial performance of banks operating in Kenya.

Ikram et al., (2016) studied on the non-performing loans determinants of SMEs sector borrowers in the commercial banks with an empirical assessment of the bank-specific microeconomics factors. The hypothesis of the study was the collateral nature was significantly influencing the value of non-performing loans. They used stratified sampling technique with a well-structured questionnaire; the targeted population was 9 commercial banks with 42 branches which were in operation in the district of Lahore (Pakistan), for the year of 2014-2015. The study findings indicated that collateral related factors they do not have a considerable impact on the level of non-performing loans of the bank but has a secondary importance to the non-performing loans. In conclusion they found that improper appraisal of the collateral will reduce the bank's recovery in case the borrower default.

Schuijling et al., (2019) sort to establish the relationship between Non- performing loans in Europe and the extrajudicial harmonization collateral which was enforcement across Europe. The study's main aim was to discuss the proposed regime in Europe together with the background of the regime. The findings of this discussion indicated that the amount of non-performing loans may decrease significantly even without harmonization of collateral enforcement for instance the European banks in 2015 were suspected having more than one trillion as a nominal value of the non-performing loans while in 2019, the first quarter its amount reduced by almost 45% to five hundred and eighty-six billion of the total outstanding loans. This is a positive development which calls for the banks to reconsider the manner, timing and scope of harmonization of extrajudicial collateral enforcement in Europe in the process of eliminating the non-performing loans.

### **2.3.3 Credit Repayment Period Analysis and Non-performing loans**

Nadham and Nahid (2015) research was on the non-Performing Loans determinants in the Tanzanian Commercial Banks, it was a Study case of National Bank of Commerce in Dodoma. The study aimed to ascertain the non-performing loans determinant. The study used a descriptive survey design. It targeted 152 respondents using the questionnaire to collect data and used the data mean and the standard deviation so as to analyze the data. The study findings suggested that the National bank should put in place the strong credit process that ensure proper selection of the customer is done with robust credit analysis and risk identification of the borrowers. Also the findings showed that credit repayment period suitability affect the non-performing loans of the banks since the borrowers' preference to repayment period may discourage them from acquiring the loans or take the loan with the defaulting plans hence contributing to increased level of non-performing loans.

Bilau, and St-Pierre (2018) investigated the microcredit repayment period in a European context, Portugal and non-performing loans. The main objective of this study is to examine the determinants of microcredit repayments in a previous unstudied context and investigate the differences between expansion and recession periods. They used a descriptive research design and the data was analysis for the conclusion reached. From the findings it was found that repayment period can increase the defaulting of borrowers since it indicates the loan periods for example when it is short for a medium and large loan facilities the possibility of defaulting is high compare to the long periods. Therefore it was found to have direct relationship between the poor credit repayment period formulation and non-performing loans. They recommended that proper loan repayment period analysis and formulation should be formulated before they are set

so to ensure the loans are performing and the level of non-performing loans are reduced among the microcredit institutions.

Nyasaka (2017) assessed the connection between the practices in the credit risk management and the non-performing loans of Kenya commercial bank (KCB), the study had the main objective of assessing the effect of Non-performing loans on KCB group financial performance. The study was using descriptive research method in the process of obtaining its data, the study targeted 100 credit managers who were given questionnaires to fill in the head offices and branches of KCB and later the data was analyzed using SPSS to produce inferential statistic and descriptive statistics. The study found that the non-performing loans results to shortened loan repayment periods hence leading to increasing interest rates so indirectly deny credit to individuals.

Ndambiri et al. (2017) studied on the Loan portfolio characteristics effects on the level of NPL for the Savings societies and Credit Co-operative Societies in Kenya. The main objective of the study was to determine the portfolio characteristics effect on non-performing loans for saving and credit co-operatives. The study adopted both the descriptive research design and the causal research design. It targeted 6 Deposit taking savings Sacco's and credit co-operatives; it used census method to collect the data and secondary data from published sources from 2011-2014 and finally it used multi linear regression model to analyze the data collected. The study findings found that Deposit taking savings and credit co-operatives should consider adjusting the loan repayment period appropriately so as to ensure that the loans are performing and business operate profitably.

Bialowolski and Weziak (2021). On their study they investigated the good credit and bad credit, in the differential role of the sources of debt in life satisfaction. The main aim of the study

was to evaluate the short term links between different forms of households' debts and life satisfactory. They used longitudinal dataset for the US population from the panel study of income Dynamics. From the findings indicated that the credit card debts and students loans negatively affected the life satisfaction in the short term to a period of up to 2 years while mortgages and external car financing according to the findings indicated to have an increasing life satisfaction. The findings also indicated that the impacts related to with the initial uptake of the loan and final repayment of a loan indicated to be symmetrical hence not associated with the life satisfaction. Finally they found that in situations of involuntary debts like the mortgage in arrears a negative impact which very significant on life satisfactory was realized in case challenges emerge while a positive impacts was noted in cased the debts are paid off.

Hermuningsih et al., (2020) studied the effect of 3<sup>rd</sup> party Funds, NPL on credit distribution with an intervening Variable as Profitability in Commercial Banks with the main objective for this study was to investigate the factors that influence the loan distribution in the bank. The study used a purposive sampling technique and the population for the study was the commercial banks from 2013-2017. It used the secondary data from the existing published financial statements of the bank and it used multi linear regression model to analyze the data collected. The finding shows that the 3<sup>rd</sup> party has a significant positive impact on the loan distribution. The agreement between the lender and the borrower on the repayment period does affect the loan performance since it attracts the interest charged. The study also found that rescheduling the repayment periods and installments amount will improve the credit quality hence reducing the level non-performing loans.

Boateng and Oduro (2018) On their study on the factors predicting microfinance credit default in Northern Ghana. The main objective of this study was to investigate the factors

predicting microfinance credit default. They used a sample population of 409 microcredit beneficiaries found in Nsoatreman Rural Bank found in urban areas, semirural areas and rural areas. The study used Logistic regression to analyze the data. The findings indicated that factors such as type of loan, adequacy of the loan facility, duration for repayment of loan and period within the year of the loan advancement to the client borrower was found to have a significant effect on the credit default contributing to the raise on the non-performing loans. The researchers recommended the Micro Finance Institutions to consider giving loans to their clients with repayment duration of at least one year (12 months) and at most two years (24 months) to ensure performance of loans.

Owino (2013) studied on the effect of the lending policies on the level of non-performing loans on commercial banks in Kenya. The major aim of this study was to investigate the lending policies and their effect on the non-performing loans levels among the commercial banks in Kenya. This study used a descriptive survey and 43 commercial banks in Kenya were used to generate the required data. A questionnaire was used to collect the primary data and finally a descriptive statistics was used to in the process of summarizing the data and findings. From the study it was found that lending policies on credit repayment period of the borrowers and the non-performing loans had strong relationship since the payback periods of lenders and debt collection policies strategies must be formulated with care to enable the banks lend in a prudent to avoid credit risk level and reduce the levels of non-performing loans.

Akehege (2011) study was on the determinants of non-performing loans among Kenya's commercial banks and the main aim of this study was to determine the linkage between the NPL and its determinants. The study adopted the descriptive research design and its population was all the commercial banks within the Nairobi County. The researcher used multi linear regression

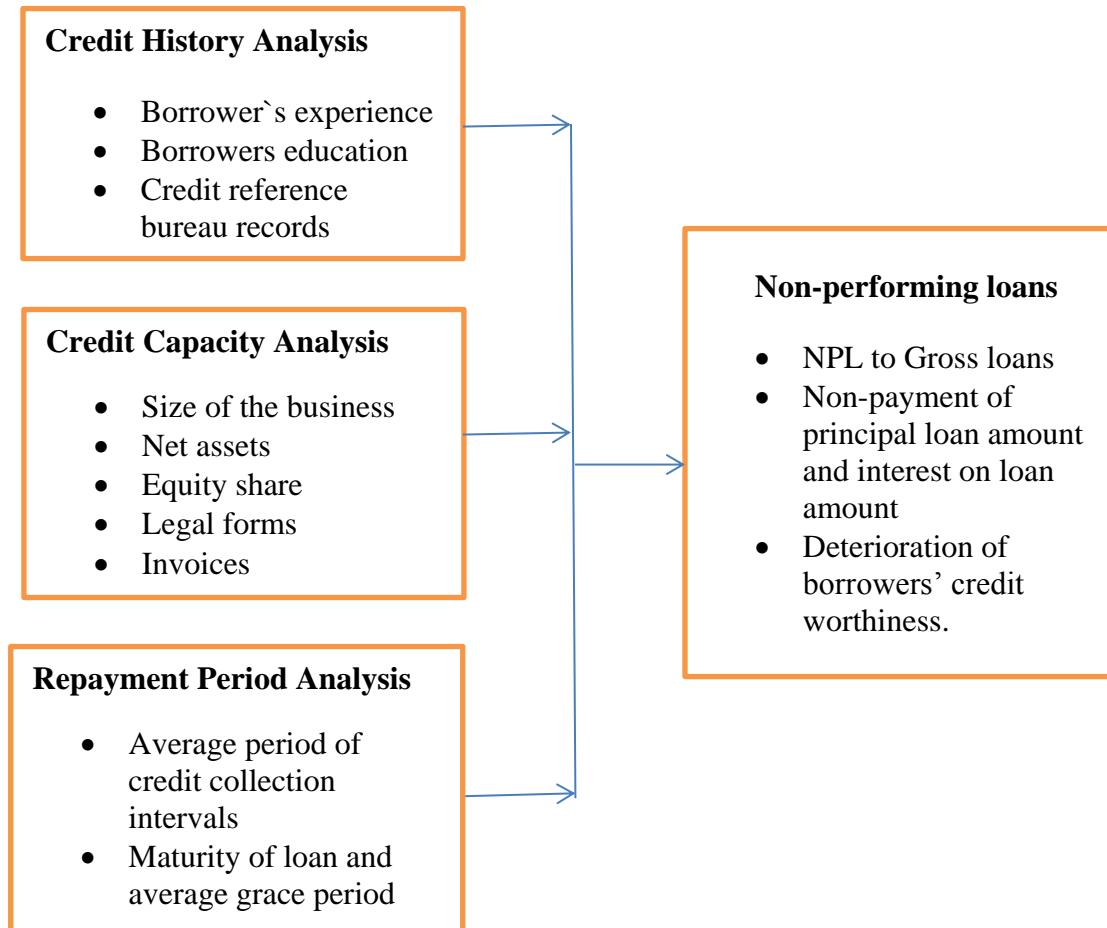
model to analyze the data. The findings of the study indicated that the poor credit analysis had a significant effect on the loan defaulters as well as the borrower`s commitment to the loan repayment. The study also found that the loan repayment periods should be reevaluated in the process of determining the potential borrower so as to ensure that the borrower will be able to repay the installment as scheduled.

## **2.4 Conceptual Framework**

The conceptual framework below demonstrates the envisaged relationship between the study`s independent variables which is the Credit Analysis and dependent variable is the Non-performing loans. The independent variables include the Credit history analysis, credit capacity analysis and credit repayment period analysis. Each variable has its indicators that were used to measure that variable in the questionnaire. This is depicted in figure 2.1 below.

## Independent Variables

## Dependent Variable



**Figure 2.1: (Author, 2022)**

## 2.5 Operationalization of Variables

This section is showing how each variable was operationalized under this study.

**Table 2.1 Operational framework**

<b>Variable</b>	<b>Orientation</b>	<b>Indicators</b>	<b>Measurement Scale</b>
Non-performing loans	Dependent Variable	Increase in bad debts NPL to Gross loans ratio Non-payment of principal loan amount and interest on loan amount Deterioration of borrowers' credit worthiness.	5 point Likert scale
Credit History Analysis	Independent Variable	Borrower's experience Credit reference bureau records	5 point Likert scale
Credit Capacity Analysis	Independent Variable	Size of the business Net assets and equity share Legal forms of assets and physical assets	5 point Likert scale
Repayment Period Analysis	Independent Variable	Increase in bad debts Non-payment of principal loan amount Non-payment of interest on loan amount Deterioration of borrowers' credit worthiness.	5 point Likert scale

**Source: (Author, 2022)**

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter discussed the methodology and the research design which was adopted and used to conduct the study. It starts by discussing the research design, target population, sampling and sampling technique. It also discusses the research instruments used, validity and reliability of these instruments to the study. It outlays the data collection procedure, data processing and data analysis to be used in this research.

#### **3.2 Research Design**

This research adopted a descriptive research design. Descriptive research design is used in a study when the objectives of the study have descriptive facts in nature and the characteristics of the population of interest are factual (Kothari, 2019). This research design is the most appropriate since the research is descriptive in nature. Research design is the overall strategy adopted by the researcher in order to bring various items of the research together and in a very systematic way so as to address the study problem (Kothari, 2019). Research design is important because it assist the researcher to make decisions in regard to what type of data to use, methods of collecting data and the data analyzing techniques in order to respond to the objectives of the study (Kothari, 2019).

#### **3.3 Target population**

The term target population refers to the total number of all the units to be analyzed under the study (Kothari, 2019). Currently we have 42 commercial banks in Kenya where 28 commercial

banks are domestic while 14 commercial banks are foreign with branches and outlets across the country and even abroad in foreign countries (Central Bank of Kenya, 2021). The target population was 42 commercial banks in Kenya.

### **3.4 Sample Size and Sampling Technique**

Sampling is the process of determining and choosing the sample size. The sample size is used to refer to the number of units chosen from the target population. This study used a judgmental sampling where the 42 commercial banks and one of the head of credit department personnel of each bank in Kenya were interviewed. This method is used when the researcher want to collect information for many subdivisions of the population and the target population is not very big (Vasileiou et al., 2018).

### **3.5 Data Collection Instrument**

The study used a structured questionnaire so as to collect primary data from the head of credit departments located in their head office from the 42 commercial banks in Kenya. The questionnaire questions were well-structured so as to make sure that all the relevant data is captured and collected. The questionnaire is structured in a way that the data to be collected is quantitative. The questionnaire had a 5 point Likert scale which was used to rate the perception and response of the 42 respondents. The questionnaire had two main sections: On the first part of the study questionnaire was the background information of the respondents while on the second part had questions relating to the research objectives. According to Sandakos (2005) the use of questionnaires is usually appropriate since they are stable, consistent and uniform in data collection. The secondary data was collected from published documented data, reports, publications and commercial banks' websites.

### 3.6 Validity of the data Collection Instrument

Validity of collection instrument refers to the situation where the instrument is able to give the expected results adequately. Validity is the extent to which the research findings drawn from the data analysis represents the hypothesis of the study (Gall & borg, 2007). To conduct this study, the researcher had to seek expert opinion on the validity of the questionnaire items in order to find out its adequacy. In case the questionnaire was not adequate, the necessary adjustments were made before the study.

### 3.7 Reliability of the Data Collection Instrument

The term reliability of data collection instrument is the ability of the instrument to give the same results when applied to a different place of study hence yielding consistence results after a repeated trial (Gall, 2007). Reliability of instruments in the study was influenced by addressing a true measurement of the study. Cronbach's alpha tool was used in the analysis to test whether the multiple-question Likert scale is reliable. Cronbach's alpha is computed as follows,

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N - 1) \cdot \bar{c}}$$

Where **N** is the number of items,

$\bar{c}$  is the average covariance between item-pairs,

$\bar{v}$  is the average variance.

An alpha score from the computation of more than **0.7** is usually okay and should be accepted.

(Source: Lee, 1951)

### Rule of Thumb for Results

<b>Cronbach's alpha</b>	<b>Internal consistency</b>
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Source ( Lee, 1951)

### **3.8 Data collection**

For the purpose of this study, both primary data and secondary data was collected. Primary data was gathered using questionnaires which were given to 42 head of credit departments of commercial banks in Kenya. One questionnaire was given to the head or one of the officers of credit section in each of the 42 commercial banks head offices. The questionnaires were delivered to the respondents using the drop and to be picked later method. Questionnaires once filled by the respondents were collected after two days. Secondary data was collected from the commercial banks websites, journal articles and library books. The secondary data was also collected from the published reports and other agency reports for example from world bank reports and other sources where the secondary data can be generated.

### **3.9 Data Analysis**

Data analysis can be described as the process of inspecting, cleansing, transforming and modeling data with the main aim of discovering the important information for the research and

making recommendations from the study (Saunders & Thornhill, 2009). Data which was collected from the field underwent sorting, coding and summarization in an excel worksheet. Coded data ready for analyzing was analyzed by descriptive statistics and the multiple regression analysis with the help of the Statistical Package of Social Sciences (SPSS). The multiple regression analysis model was specified as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + \epsilon$$

Where  $Y$ = Non- performing loans,  $a$  = intercept,  $X_1$ = Credit history analysis,  $X_2$  = Credit capacity analysis,  $X_3$  = Credit repayment period analysis,  $b$  is the coefficient of the independent variables and  $\epsilon$  = error term. The analyzed data was presented on the tables for easy data presentation and analysis.

### **3.10 Diagnostic Tests**

To test and validate the study findings, both pre diagnostic and post diagnostic test were carried out. For the purpose of pre-estimation tests, the research carried out unit root tests so as to ascertain whether the variables are constant or not. The post estimation tests included normality test and multi-collinearity test. The research used Jarque-Bera test for the normal distribution where the null hypothesis is known to have normally distributed residuals. The study hypothesis was only accepted if the p-value found is greater than 0.05. All these tests were of great importance to confirm if the residuals are normally distributed. Multi-collinearity test was done using correlation matrix. Variables with a correlation below 0.8 are not correlated and vice versa.

#### **3.10.1 Normality test**

These are the tests which help the research to know and verify if the data used in the study have a normal distribution hence suitable for statistical procedures to be used like the Correlation, regression, t-tests and Analysis of variance which demand to use normally distributed data. We

have various methods to test for normality like the Kolmogorov-Smirnov test, the Shapiro – Wilk test and Jarque-Bera test (Mishra, et al. (2019). This study used Jarque-Bera test.

Jarque –Bera test is most suitable when the researcher wants to know is the null hypothesis residuals are normally distributed. The research study was to only accept the hypothesis if the p-value is found to be greater than .05.

### **3.10.2 Multi-Collinearity Test**

Multi-collinearity can be found when the data collected has correlation between multiple independent variables in the multiple regression model. Existence of multi collinearity can negatively influence the regression results hence should be checked out for regression analysis purpose. Multicollinearity can make it hard for one to interpret the coefficients hence reducing the power of the model to identify independent variables that may be significant statistically. One can use correlation matrix and variance inflation factor to measure multi collinearity in a multiple linear regression equation (Mohammadi, 2022). The higher the value of Variance Inflation Factor the higher correlation which exist between the variables. Variables with a correlation below 0.8 are not correlated and variables with a correlation above 0.8 were correlated (Ullah et al., 2019).

### **3.10.3 Autocorrelation Test**

Autocorrelation is a statistical procedure that helps to determine the degree of similarity or relationship between a given variables in a data set. Auto correlation can be tested using Durbin-Watson test which finds out autocorrelation from a regression analysis model and it do gives a test number that is ranging from 0 to 4, where a value closer to zero is considered stronger and positive while at middle is considered as low while closer to four is considered negative. Also Ljung-Box Q test can be used to test for autocorrelation for the absence of serial autocorrelation

among the variables in a given data set, it also tests test for randomness and independence of the independent variables. Its results can be interpreted as, if the autocorrelation of the residuals are very small, the model is fine meaning that the model for the data does not exhibit a significant lack of fit (Islam and Erum, 2019).

## **CHAPTER FOUR**

### **DATA ANALYSIS, FINDINGS AND DISCUSSION**

#### **4.1 Introduction**

This chapter begins with the interpretation and discussions of the study findings. The main purpose for this study was to determine the effects of credit analysis on non-performing loans of commercial banks in Kenya.

#### **4.2 Response rate**

This study had a target population of 42 commercial banks which are operating in Kenya currently. All the 42 commercial banks' head or one of their credit officers were given copies of the questionnaires but only 40 copies of the questionnaires were filled or were complete for statistical purpose and returned for analysis, which represented a 95 % response rate. A response rate of 95% is sufficient for this type of study. According to Mugenda and Mugenda (2003), a response rate of 50% from a study is adequate for analysis and a response rate of 60% is good while the study response rate of 70% and above is very good.

#### **4.3 General Information**

The general information of this study comprised the demographic characteristics of the respondents like the gender and highest education level.

##### **4.3.1 Gender of the respondents**

The respondents of the questionnaires were requested to indicate their gender on the questionnaire and the result is presented in the table below.

**Table 1: *The Gender of respondents***

<b>Gender of the respondents</b>	<b>Frequency</b>	<b>Percentage</b>
Male	30	75%
Female	10	25%
Total	n=40	100%

From table 1 above and the pie chart it indicates that respondent information came from both male credit personnel (75%) and female credit personnel (25%). This shows that male gender is dominating in the credit offices department while women are also represented.

#### **4.3.2 Distribution of respondents by level of education**

**Table 2: *Education level of respondents***

<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Secondary level	0	0%
Tertiary level	10	25%
University level	25	62.5%
Postgraduate	5	12.5%
Total	n=40	100%

According to the study results presented in the table 4.2 above and the bar graph shows that, majority of the respondents (62.5 %) had their highest level of education as the university level

followed by the tertiary level (25%) and finally the postgraduate level (12.5%). Nobody was at the secondary level education. This indicates that the majority of the respondents were qualified to hold those offices with satisfactory education hence able to respond to the questionnaire appropriately.

#### **4.4 Effect of credit analysis on non-performing loans of commercial banks in Kenya**

The study sought the opinions from the head of credit personnel of the commercial banks in Kenya on the effect of the banks' credit analysis of credit history analysis, credit capacity analysis, credit collateral analysis and credit repayment period analysis on the non-performing loans among the commercial banks in Kenya and their feedback captured then finally analyzed in the tables shown below.

##### **4.4.1 Descriptive statistic on Credit history analysis**

The respondents were asked to indicate their opinion on the statements which were given on the extent of their agreement or disagreement on how credit history affects the non-performing loans level on their respective banks.

**Table 3: Credit history analysis**

<b>Statements on Credit history analysis</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Weighted Mean</b>	<b>Std Dev</b>
Q1. Credit history on borrowers experience is not used by our bank to demonstrate the responsibility of the borrower to repay debts.	21 (52.5%)	11 (27.5%)	7 (17.5)	1 (2.5%)	0 (0%)	0.7	0.9
Q2. Credit history provides an exact	5	2	9	17	7	3.0	1.0

analysis on the type and number of credit accounts being serviced by the borrower.	(12.5%)	(5%)	(22.5%)	(42.5%)	(17.5%)		
Q3. Borrowers with a good credit history are able to bargain and access loans without collaterals.	3 (7.5%)	6 (15%)	15 (37.5%)	8 (20%)	8 (20%)	3.0	1.0
Q4. Borrowers with poor educational background and bad credit history are denied loan access or given under certain conditions.	5 (12.5%)	7 (17.5%)	11 (27.5%)	12 (30%)	5 (12.5%)	3.0	1.0
5. Banks do not usually get credit report from CRB before giving out loans.	12 (30%)	12 (30%)	11 (27.5%)	3 (7.5%)	2 (5%)	2.0	1.0
<b>Composite Mean</b>						2.54	

**n=40**

This table represents the frequency of respondents and their percentage based on the responses given to each statement. The feedback indicated that 52.5% (n=21) of respondents who were the majority strongly disagreed that credit history on borrowers experience is not used by our bank to demonstrate the responsibility of the borrower to repay debts while 27.5% of respondents disagreed to this statement and 17.5% remained neutral and 2.5% of respondents agreed to the statement while none strongly agreed with the statement that the borrowers experience on credit history does not influence the credit repayment responsibility of the borrowers as indicate above. 17 respondents forming 42.5% of total respondents agreed to the statement that credit history reports gives an analysis on exact type and number of credit accounts being serviced by the borrower while 9 (22.5%) were neutral to this statement and 7 (17.5%) strongly agreed and 5

(12.5%) strongly disagreed and 2 (5%) disagreed to the statement. Majority of the respondents, 15 (37.5%) were neutral that borrowers with good credit history are able to bargain and access loans without collaterals while 8 respondents (20%) agree to this statement and again 8 respondents (7.5%) respondents strongly agreed while 6 respondents disagreed and 3 respondents strongly disagreed. Majority of the respondents, 12 (30%) agreed that borrowers with poor educational background and bad credit history are denied loan access or given under certain conditions while 27.5% remained neutral while 7 respondents disagreed and 5 respondents strongly disagreed and again 5 respondents strongly agreed. Most of the respondents, 30% strongly disagreed that bank do not usually get CRB reports before giving out loans and again 12 respondents, 30% disagreed while only 11 (27.5%) remained neutral and 3 respondents agreed while 2 respondents strongly agreed to that banks do not get credit respondents from CRB before giving out loans.

#### 4.4.2 Descriptive statistics on Credit repayment capacity

The respondents were asked to indicate their opinion on the statements which were given on the extent of their agreement or disagreement on how credit repayment capacity considerations affect the non-performing loans level on their respective banks.

**Table 4: Credit capacity analysis**

Statements on repayment capacity analysis	1	2	3	4	5	Wei . Mean	Std Dev
Q1. Our Bank does not lend the funds according to the value of the borrower net assets	30 (75%)	5 (12.5%)	1 (2.5%)	2 (5%)	2 (5%)	2.0	1.0

value.							
Q2. The bank does not considers the company cash flows, invoices and net incomes when granting the loan	2 (5%)	13 (32.5%)	10 (25%)	10 (25%)	5 (12.5%)	3.0	1.0
Q3. Credit capacity and the legal forms are a major indicator of the borrower`s credit risk.	0 (0%)	8 (20%)	16 (40%)	12 (30%)	4 (10%)	3.0	1.0
Q4. The bank usually looks at the borrowers` size of the business in the process of granting the credit.	1 (2.5%)	10 (25%)	14 (35%)	11 (27.5%)	4 (10%)	3.0	1.0
Q5. Before granting a loan, a bank look at the equity share and retained earnings on an investment of a business	1 (2.5%)	12 (7.5%)	16 (40%)	8 (20%)	3 (7.5%)	3.0	1.0
<b>Composite Mean</b>						2.8	

**N=40**

This table represents the frequency of respondents and their percentage based on the responses given to each statement. From the responses it was realized that majority of the banks who were 30 forming 75% strongly disagreed that banks do not lend funds according to the value of the borrowers net assets value while 5 respondents with 12.5% disagreed while one respondent remained neutral and 2 respondents agreed and again another 2 respondents strongly agreed with

the statement. Majority of respondents 13(32.5%) disagreed that the bank do not considers company cash flow and net incomes when granting the loan while 10 respondents remained neutral and again 10 respondents agreed to the statement and 5 respondents (12.5) strongly agreed while 2 respondent with 5% strongly disagreed. Majority of the respondents, 40% remained neutral that credit capacity and legal documents is a major indicator of the borrower’s credit risk while 30% agreed and 20% disagreed to the statement while only 10% strongly agreed and none strongly disagreed. Majority of respondents, 14 (35%) remained neutral that the bank do look at the borrower size of the business in the process of granting the credit while 11 (27.5%) agreed to this statement and 25% disagreed while 10% strongly agreed and 2.5% strongly disagreed. Majority of the respondents, 16 (40%) remained neural that before the bank grant a loan it looks at the equity share and the retained earnings on the investment of a business while 30% disagreed to it and 20% agreed to this statement and 7.5% strongly agreed while only one respondent strongly disagreed

#### **4.4.3 Descriptive statistics on Credit repayment period analysis**

The respondents were asked to indicate their opinion on the statements which were given on the extent of their agreement or disagreement on how borrower credit repayment period considerations affect the non-performing loans level on their respective banks.

**Table 5: *Credit repayment period analysis***

<b>Statement on borrower credit repayment period analysis</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Wei. Mean</b>	<b>Std Dev</b>

Q1. Repayment period analysis aims to give adequate the time of repaying the loan amount and the interest due.	0 (0%)	0 (0%)	3 (7.5%)	33 (82.5%)	4 (10%)	4.00	0.4
Q2. Borrower's repayment period is determined according to the risk involved on the Bank assets.	0 (0%)	0 (0%)	1 (2.5%)	3 (7.5%)	36 (90%)	4.90	0.4
Q3. Low risk borrowers are able to negotiate for longer repayment period.	0 (0%)	2 (5%)	28 (70%)	8 (10%)	2 (5%)	3.30	0.6
Q4. Borrowers with capacity to borrow big amount of loan request for longer repayment period.	0 (0%)	0 (0%)	0 (0%)	8 (20%)	32 (80%)	4.80	0.4
Q5. Borrowers prefer long repayment period compared to short repayment period	0 (0%)	0 (0%)	2 (5%)	3 (7.5%)	35 (87.5%)	4.83	0.5
<b>Composite Mean</b>						4.366	

**N=40**

From the above table it is noted that majority of the respondents, 82.5% agreed that repayment period given by their respective banks provide adequate time to allow borrowers pay the loan amount and interest due while 10% strongly agreed and 7.5% remained neutral while none disagreed to this statement. 90% of the respondents strongly agreed through indicating that repayment period is determined according to the risk involved on the bank assets and 7.5% agreed with the statement while 2.5% disagreed with this statement. 70% of the respondents remained neutral that low risk borrowers are able to negotiate for longer repayment period while 10% agreed and 5% strongly agreed while another 5% disagreed with the statement. 80% strongly agreed that borrowers with capacity to borrow huge amount of loan request for longer repayment period and 20% just agreed with the statement. 87.5% of respondents strongly agreed

that borrowers prefer long repayment period compared to a short repayment period while 7.5% just agreed with the statement 5% remained neutral.

#### 4.4.4 Descriptive statistics on Non-performing loans

The respondents were asked to indicate their level of agreement on non-performing loans statement of their respective banks.

**Table 6: Non-performing loans analysis**

<b>Statement on non-performing loans</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>W eig · M ea n</b>	<b>Std Dev</b>
Q1. The level of non-performing loans continues to concern the management	0 (0%)	8 (20%)	6 (15%)	14 (35%)	12 (30%)	4	1.1
Q2. The proportion of NPL to Gross Loans has been on the rise to unmanageable levels.	1(2.5%)	10 (25%)	15 (37.5%)	10 (25%)	4 (10%)	3.1 50	1.0
Q3. The majority of borrowers usually don't pay their interest before 90days.	12 (30%)	8 (20%)	9 (22.5%)	7 (17.5%)	4 (10%)	2.6 0	1.4
Q4. There is customer deterioration on the creditworthiness overtime	2 (0%)	9 (22.5%)	13 (32.5%)	12 (30%)	6 (15%)	3.3 8	1.0
Q5. Highly geared borrowers borrowing from commercial	2 (5%)	0	19 (47.5%)	12 (30%)	7 (17.5%)	3.5 5	0.9 6

banks usually default.		(0%)	(%)	)	5%)		
<b>Composite Mean</b>						3.296	

**N=40**

From the above table it indicates that majority of 35% of the respondents agreed that the level of non-performing loans continues to concern the management and 30% strongly agreed that the level of non-performing loans continues to concern the management, 20% of respondents disagreed to the statement and 15% of the respondents remained neutral to the statement and none strongly disagreed that the level of non-performing loans continues to concern the management. 37.5% of the respondents opted to remain neutral that the proportion of NPL to Gross Loans has been on the rise to unmanageable levels while 25% of the respondents agreed to the statement and again 25% of the respondents disagreed to the that proportion of NPL to Gross Loans has been on the rise to unmanageable levels and 10% strongly agreed that the proportion of NPL to Gross Loans has been on the rise to unmanageable levels while 2.5% of the respondents strongly disagreed that the proportion of NPL to Gross Loans has been on the rise to unmanageable levels. 30% of the respondents strongly disagreed that borrowers who make their payment of interest before 90days has no influence on the levels non-performing loans while 22.5% of respondents remained neutral on this statement and 20% disagreed while 17.5% of respondents agreed to the statement and 10% strongly agreed that majority of borrowers usually don't pay their interest before 90days. 32.5% of the respondents remained neutral that there is customer deterioration on the creditworthiness overtime while 30% of respondents agreed to this statement and 15% of respondents strongly agreed while none strongly disagreed to this statement. Majority of 47.5% of the respondents remained neutral that highly geared borrowers borrowing from commercial banks usually default while 30% of respondents agreed to this

statement and 17.5% strongly agreed to this statement while 5% of respondents strongly disagreed while none of the respondents disagreed to the statement that highly geared borrowers borrowing from commercial banks usually default.

According to World Bank report (2022) Non-performing loans as a percent for all banks loans in Kenya It was found that non-performing loans are on an increasing trend as shown below in the table data and bar graph chart below.

**Table 6: *Non-performing loans to Gross loans Ratio***

<b>YEAR</b>	<b>NPL TO GROSS LOANS RATIO</b>
2022	13.7
2021	13
2020	14.1
2019	12
2018	12
2017	9.9
2016	8.6
2015	6
2014	5.5
2013	5
2012	4.6
2011	4.4

**Source: World Bank report 2022**

The table above shows the increasing trend of NPL since 2011 to 2022 according to the World Bank report which was published.

#### 4.5 Diagnostic Tests

The study findings used both pre diagnostic and post diagnostic test to test and validate data. The Skewness coefficient was first computed to check the presence of outliers and if detected the mean values will be replaced by extreme values for the outlier variables so as to avoid missing data points. The study tested for normality and multi-collinearity tests.

##### 4.5.1 Normality Test

Normality test help in knowing the shape of the data curve as to whether is negatively, positively, or normally distributed in reflection of the data analyzed and also to indicate whether the sample data which is used in the study was obtained from a normally data distribution. Test for normality was conducted using Jarque-Bera test, data was considered to be normally distributed where the P-value < 0.05, which indicated the rejecting of the null hypothesis because the p-value was lesser than the alpha level. The results are presented in table below.

**Table 7: Normality test**

##### Tests of Normality

	<b>NPL (Y)</b>	<b>CH (X1)</b>	<b>CCA (X2)</b>	<b>CRP (x3)</b>
<b>Mean</b>	3.28	2.775	2.815	4.355
<b>Median</b>	4.400	4.167	3.917	4.500
<b>minimum</b>	4.000	3.667	3.167	3.667
<b>Maximum</b>	4.800	4.833	4.500	4.833
<b>Standard Deviation</b>	0.602	0.598	0.728	0.215
<b>Skewness</b>	0.590	-0.207	0.319	0.083
<b>Excess</b>	-0.032	-0.363	-0.806	-0.532

<b>Kurtosis</b>				
<b>Observations</b>	40	40	40	40
<b>Jarque Bera</b>	2.325	0.504	1.763	0.517
<b>P-Value (CHISQ, 2)</b>	0.313	0.777	0.414	0.772

*Source: Researchers 2022*

$$\text{Jarque Bera} = n(S^2/6 + (K^2)/24)$$

$$\text{Jarque Bera} = n/6(S^2 + (K^2)/4)$$

**Source: Jarque and Bera (1951)**

The research used Jarque-Bera test for testing the normal distribution as shown above where the null hypothesis was known to have normally distributed residuals hence it was not different from normal. The study hypothesis was only to be accepted if the p-value found is greater than 0.05. From the table above it reveals that the non-performing loans analysis p value is 0.312 which is above 0.05 hence we fail to reject the null hypothesis and conclude that the data is not statistically different from normal, credit history analysis data was related with the P value of 0.777 which greater than 0.05 while the credit capacity analysis had 0.414 again greater than 0.05 and credit repayment period had 0.772 which is greater than 0.05 hence we fail reject the null hypothesis and conclude that the residuals are not statistically different from the normal.

#### **4.5.2 Multi-collinearity Test**

Multi-collinearity test was used to indicate that if the independent variables were the true independent variable and if not then we could have violated the linear regression rule or assumptions. This test was carried out using correlation matrix.

**Table 8: Correlation Matrix**

**Correlations**

		NPL	CH	CCO	CRP
Pearson Correlation	NPL	1.000	.476	.664	.354
	CH	.476	1.000	.479	-.001
	CCO	.664	.479	1.000	-.068
	CRP	.354	-.001	-.068	1.000

**4.6 Model Fitting**

The study aimed to test the hypothesis which claimed that there was no relationship between the independent variable and the dependent variable under the study. To make sure this test was achieved the regression analysis was conducted and the following presents the model fitting discussion and regression coefficient.

**4.6.1 Model Summary**

The research determined the coefficient of determination which explained the change in dependent variable as a result of the changes in the study independent variable. It is represented by R square in the linear regression analysis as shown in the table below.

**Table 9: Model Summary**

<b>Model Summary</b>									
R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin Watson
				R Square Change	F Change	df1	df2	Sig. F-Change	
.792 <sup>a</sup>	.628	.597	.382	.628	20.235	3	36	.000	2.671

a. Predictors: (Constant), CRP, CH, CCO  
 b. Dependent Variable: NPL

The R square is 0.628 which indicated that the independent variables in the model were able to explain 62.8% of the changes in the non-performing loans which is dependent variable while the balance of 37.2% was not covered by the model but influenced by other factors not included in the model.

#### 4.6. 2 Analysis of variance

To find the overall goodness of fit of the model analysis of variance was carried out. It was found that F-statistic was 20.235 with a p-value of 0.000. From this result we conclude that F computed is more than F critical of 2.61 and the P-value is less than 0.05. Hence the model is statistically significant to predict the non-performing loans of commercial banks in Kenya as presented below.

*Table 10: Analysis of Variance*

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.879	3	2.960	20.235	.000 <sup>b</sup>
	Residual	5.265	36	.146		
	Total	14.144	39			

a. Dependent Variable: NPL

b. Predictors: (Constant), CRP, CH, CCO

#### 4.6.3 Regression Coefficients

The regression coefficients indicated the effect of the independent variables on the dependent variable when one variable unit changes and the intercept coefficient of the regression equation.

**Table 11: Regression coefficients**

Coefficients <sup>a</sup>								
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics
	B	Std. Error	Beta			Lower Bound	Upper Bound	VIF
(Constant)	-3.462	1.293		-2.678	.011	-6.084	-.840	
CH	.190	.117	.188	1.626	.113	-.047	.427	1.300
CCO	.497	.096	.600	5.166	.000	.302	.691	1.306
CRP	1.106	.286	.395	3.868	.000	.526	1.686	1.006

The model was:  $Y = a + b_1X_1 + b_2X_2 + b_3X_3 + \varepsilon$  where  $Y$ = non- performing loans,  $a$  = intercept,  $X_1$ = Credit history analysis,  $X_2$  = Credit capacity analysis and  $X_3$ = Credit repayment period analysis,  $b_1$ ,  $b_2$  &  $b_3$  = coefficients of the independent variables. The regression model was fitted as follows:  $Y = -3.462 + 0.19X_1 + 0.497X_2 + 1.106X_3$ . The fitted model was then interpreted. Assuming all variables are held constant, the dependent variable which is non-performing loans from the linear equation above will always intercept on y-axis at point -3.462 which is a constant and will always remain the same. The negative intercept has no economic interpretation. A unit increase in credit history analysis lead to 0.19 units increase in non-performing loans, while a unit increase in credit analysis leads to 0.497 units increase in non-performing loans. Finally, a unit increase in credit repayment period analysis leads to 1.106 units increase in non-performing loans.

#### 4.7 Hypotheses Tests

**4.7.1  $H_{01}$ : Credit history analysis has no significant effect on non-performing loans of commercial banks in Kenya.**

The study sought to test the hypothesis above and it found a P-value of 0.112 which is greater than 0.05 and the coefficient of the independent variable is 0.19. Since the p-value is greater than

0.05, we fail to reject the null hypothesis and conclude that credit history analysis has no significant effect on the non-performing loans of commercial banks in Kenya. Kisengese (2014) study noted that when carrying out the study on the effect of sharing the credit information on the non-performing loans levels of commercial banks in Kenya, all banks had challenges of non-performing loans and all credit history from other credit suppliers raised the credit approval by commercial banks while a low default rate was realized.

**4.7.2 H<sub>02</sub>: Credit capacity analysis has no significant effect on non-performing loans of commercial banks in Kenya.**

The study sought to test the hypothesis above and it found a P-value of 0.000 which is less than 0.05. Since the P-value is less than 0.05, we reject the null hypothesis and conclude that credit capacity analysis has a significant effect on non-performing loans of commercial banks in Kenya. Poor credit capacity analysis leads to increase in non-performing loans while a good credit capacity analysis leads to decrease in non-performing loans among the commercial banks in Kenya. This study was in agreement with the study conducted by Fitria and Sari (2012) on the effect of credit policies applied on non-performing loans of Banks in Indonesia which found that the credit capacity significantly affected the loan to deposit ratio.

This was also in agreement with Ikram et al. (2016) on their study on the non-performing loans determinants in the SMEs sector which was conducted by the commercial banks, they found that repayment capacity of small and medium size enterprises or borrowers was insignificantly related to the non-performing loans since default may be willful and prevalence of the political intervention. Nyasaka (2017) opposed the researcher on study of the linkage between the practices in the credit risk management and the non-performing loans in Kenya

commercial bank (KCB) from the findings found, concluded that collateralized loans do work better in the process of managing the loan defaulting cases.

**4.7.3 H<sub>04</sub>: *Credit repayment period analysis has no significant effect on non-performing loans of commercial banks in Kenya.***

The research study sought to test the hypothesis above and found a P-value of 0.000442 is less than 0.05. Hence we reject the null hypothesis and conclude that credit repayment period analysis has a significant effect on the non-performing loans of commercial banks in Kenya. Credit repayment period analysis leads to increase in non-performing loans while a good credit repayment period analysis leads to a significant decrease in non-performing loans among the commercial banks in Kenya. The study was in line with the research carried by Hermuningsih et al. (2020) on the effect of 3<sup>rd</sup> party Funds, NPL on credit distribution with an intervening Variable as Profitability in Commercial Banks, they found that repayment period has significant effect on the loan performance since it attracts the interest charged and rescheduling the repayment periods and installments amount will improve the credit quality hence reducing the level non-performing loans. Akehege (2011) study on the determinants of non-performing loans among Kenya`s commercial banks also found that loan repayment period has a significant effect on non-performing loans.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents the summary of the research findings, recommendations and recommendations for future research.

#### 5.2 Summary of the findings

From the study findings based on the effects of credit analysis on non-performing loans of commercial banks in Kenya. The successful field research which was obtained from a response rate of 95%, found that majority of banks has male gender in the credit department and the majority of respondents had the university degree. credit capacity analysis and credit repayment period had a significant positive effect on non-performing loans of commercial banks in Kenya.

##### 5.2.1 Credit history analysis and Non-performing loans

On evaluating the effect of credit history analysis on non-performing loans of commercial banks in Kenya, it was found out that majority of the respondents carried credit history analysis using reports from credit reference bureaus. The respondents agreed that borrowers with poor education background and bad credit history are denied loan access since they are likely to default leading to increase in non-performing loans. Most of the respondents agreed that the banks acquire the credit reports from the CRB before giving out the loans. All respondents strongly agreed that giving loans to customers with good credit history helps to reduce non-performing loans in their respective banks.

Regression results show that there is an insignificant positive relationship between credit history analysis and non-performing loans among the commercial banks in Kenya. A further

analysis on credit history should be done since the results of this study on credit history are not conclusive.

### **5.2.2 Credit Capacity analysis and Non-performing loans**

In analyzing the effect of credit repayment capacity on non-performing loans of commercial banks in Kenya, most of the respondents agreed that the bank usually looks at the borrower's size of the business in the process of granting the credit. Majority of the respondents agreed that before granting a loan, a bank look at the equity share and retained earnings on an investment of a business. Credit repayment capacity analysis has a significant positive influence on the level of non- performing loans of commercial banks in Kenya. The respondents agreed that borrowers with poor credit capacity are likely to default leading to increase in non-performing loans while borrowers with good credit capacity are likely to service their loans leading to increase in performing loans.

The regression analysis results indicate that credit capacity analysis has a significant positive effect on non- performing loans among the commercial banks in Kenya. To reduce on non-performing loans among commercial banks in Kenya, borrowers with good credit capacity should be given priority while extending loan facilities.

### **5.2.4 Credit repayment period analysis and Non-performing loans**

On analyzing the effect of credit repayment period on non-performing loans of commercial banks in Kenya, study found that most of the respondents agreed that most banks give adequate repayment period to low risk borrowers. Majority of the respondents said that borrowers with high risk are given a shorter repayment period and this sometimes leads to increase in non-performing loans. Respondents strongly agreed that borrowers with high capacity to borrow huge amount of loans request for longer repayment periods.

The regression analysis results indicate that credit repayment period analysis has a significant positive effect on non-performing loans among the commercial banks in Kenya. To reduce on non-performing loans among commercial banks in Kenya, borrowers should be given adequate repayment period.

### **5.3 Conclusions**

From the study findings the following conclusion can be drawn: credit history analysis has no significant effect on the level of non-performing loans of commercial banks in Kenya while credit capacity and credit repayment period have a significant positive effect on the non-performing loans of commercial banks in Kenya. This implies that credit capacity analysis and credit repayment period analysis leads to a significant increase in non-performing loans among commercial banks in Kenya.

### **5.4 Recommendations**

From the above findings and conclusion, the researcher made the following policy recommendations: The commercial banks should conduct extensive research to come up with other credit analysis tools and techniques so that they can be able reduce the non-performing loans of commercial banks in Kenya. Commercial banks should have a thorough capacity analysis of the borrowers to repay loans before extending loan facilities. Capacity analysis should include the analysis of expected cash flows, tangible assets, firm size and equity share. This is because extending loans to borrowers with good credit capacity leads to decrease in non-performing loans among the commercial banks in Kenya.

Commercial banks should reevaluate the credit repayment periods so as to set optimal periods which borrowers should be able to repay the loan on time but also research on other factors influencing the loan performance and level of non-performing loans. A shorter credit

repayment period could lead to increase in non-performing loans among the commercial banks in Kenya.

### **5.5 Limitations of the Study**

The study was challenged in various ways but the major challenges are listed below:

i) Time constraints- some of the respondents were requesting for more and more time which the researcher was unable to allow them further due to research time limits, this influenced our data collection periods and data analysis up to two months from the two weeks as expected but we thank all the respondents who took their time and gave attention to fill out questionnaires. I could recommend the future researchers to prepare earlier in advance and allocate more time for data collection, and try to motivate the respondents to fill the questionnaire.

ii) Research sample selection- This study aimed to collect data only from the senior credit department personnel. When administering the questionnaires other credit department staff felt like to be given one but they realized they were left out and the intended respondents seemed to be busier to attend to our questionnaire. I will like to recommend future scholars to select large samples to give more respondents an opportunity to give their inputs.

### **5.6 Recommendations for Future Research**

The following areas and ideas are recommended for the future research:

- i) Since the study was not conclusive on credit history analysis, a further detailed study should be done to establish the factors affecting credit history.
- ii) Given the adverse effect of COVID-19 on the credit servicing among borrowers, a study could be done on the impact of COVID 19 on non-performing loans among commercial banks in Kenya.

- iii) A further study could also be done relating to the effect of credit mix on non-performing loans of commercial banks in Kenya.

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## APPENDICES

### Appendix I: QUESTIONNAIRE

**Dear Respondent,**

I am Elijah Nyakundi, a master of commerce student at KCA University. My research dissertation is titled “Effect of credit analysis on non-performing loans of commercial banks in Kenya” and you have been selected as a respondent in this study. Kindly fill the questionnaire below as honestly as possible. The information obtained will be confidential and will only be used for this study.

**Mark with a tick [√] where appropriate in the following:**

**1. Kindly mark your gender below.**

Male. [ ]

Female. [ ]

Intersex [ ]

**2. What is your highest education level already completed?**

Secondary level [ ]

Tertiary level [ ]

University level [ ]

]

3. Please indicate your level of agreement on the following statements on the credit history analysis of your bank using a scale of 1 to 5 where; 5= Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree and 1= Strongly Disagree.

<b>Statements on Credit history analysis</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Credit history analysis on borrowers experience is not used by our bank to demonstrate the responsibility of the borrower to repay debts.					
Credit history reports provide an exact analysis on the type and number of credit accounts being serviced by the borrower.					
Borrowers with a good credit history are able to bargain and access loans without collaterals.					
Borrowers with poor educational background and bad credit history are denied loan access or given under certain conditions.					
Banks do not usually get credit report from CRB before giving out loans.					

4. Indicate your level of agreement on the following statements on repayment capacity analysis of your bank using a scale of 1 to 5 where; 5= Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree and 1= Strongly Disagree.

<b>Statements on repayment capacity analysis</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Our Bank does not lend funds according to the value of the borrower net assets value.					
The bank does not considers the company cash flow, invoices and net incomes when granting the loan					
Credit capacity and the legal forms are a major indicator of the borrower`s credit risk					
The bank usually looks at the borrowers` size of the business in the process of granting the credit.					
The bank before granting a loan, a bank look at the equity share and retained earnings on an investment of a business					

6. Indicate your level of agreement on the following statements on borrower credit repayment period analysis of your bank using a scale of 1 to 5 where; 5= Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree and 1= Strongly Disagree.

<b>Statement on borrower credit repayment period analysis</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Repayment period analysis aims to give the time of repaying the loan amount and the interest due.					
Borrower's repayment period is determined according to the risk involved on					

the bank assets.					
Low risk borrowers are able to negotiate for longer repayment period					
Borrowers with capacity to borrow big amount of loan request for longer repayment period.					
Borrowers prefer long repayment period compared to short repayment period					

7. Indicate your level of agreement on the following statements on non-performing loan of your bank using a scale of 1 to 5 where; 5= Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree and 1= Strongly Disagree.

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
The level of non-performing loans continues to concern the management					
The proportion of NPL to Gross Loans has been on the rise.					
The majority of borrowers usually don't pay their interest before 90days					
There is customer deterioration of the creditworthiness overtime					

Highly geared borrowers borrowing from commercial banks usually default					
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**THANK YOU VERY MUCH**

## Appendix II: List of the 42 Commercial Banks in Kenya

ABSA Bank Kenya	Guardian Bank Limited
Access Bank Kenya	Gulf African Bank Limited
African Banking Corporation Limited (ABC Bank)	Habib Bank A.G Zurich
African Development Bank	Imperial Bank
African Investment Bank	I&M Bank Limited
Equity Bank Kenya	Kingdom Bank Limited
Bank of Africa Kenya Limited	KCB Bank Kenya Limited
Bank of Baroda Kenya limited	Mayfair CIB Bank Limited
Bank of India	Middle East Bank Kenya Limited
Citibank N.A Kenya	M-Oriental Bank Limited
Consolidated Bank of Kenya	National Bank of Kenya Limited
Co-operative Bank of Kenya	NCBA Bank Kenya PLC
Commercial Bank of Africa	Paramount Bank Limited
Credit Bank Limited	Prime Bank Limited
Development Bank of Kenya Limited	SBM Bank Kenya Limited
Diamond Trust Bank Kenya limited	Sidian Bank limited
DIB Bank Kenya Limited	Spire Bank Limited
Eco bank Kenya Limited	Stanbic Bank Limited
Family Bank Limited	Standard Chartered Bank Limited

· First community Bank Limited	· UBA Kenya Bank Limited
· Guaranty Trust Bank Limited	· Victoria Commercial Bank Limited

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