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**CREDIT RISK MANAGEMENT AND LOAN PORTFOLIO QUALITY IN
COMMERCIAL BANKS IN UGANDA**

CASE STUDY: CENTENARY BANK

A dissertation presented to

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DEDICATION

I dedicate this research work to my dear wife Angela Ssengooba Owora, my great sons Gabriel Geno Owora, Lukas Michael Owora, my dear parents Mr. and Mrs. Claudius Mary Olweny, my parents in law Mr. and Mrs. Andrew Ben Ssengooba as well as my brother Joseph and sisters Carol, Jackline, Josephine and Geraldine.

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ABSTRACT

The study examined the effect of credit risk management on Loan portfolio quality in commercial banks in Uganda and examined three research objectives namely; to examine the effect of risk identification on loan portfolio quality at Centenary bank; to examine the effect of risk assessment on loan portfolio quality at Centenary Bank and to examine the effect of risk monitoring and control on loan portfolio quality.

The study adopted a cross – sectional research design which blended both qualitative and quantitative research approaches on a sample of 201 drawn from a population of 420 employees who were all employees of Centenary bank in credit risk associated sections/departments. By collecting the data through questionnaires and interviews coupled with adaptation of SPSS for processing, the results were summarized in tables and graphs and in a threefold with univariate level considering only mean and a standard deviation, bivariate level analysis paying attention to correlations while multiple regression was performed at multivariate.

With a response rate of 80.6%, the study results revealed that all the examined measures of credit risk management were positively and significantly correlated with loan portfolio quality. Risk identification had a correlation value of $r = 0.565$; $p < 0.01$, risk assessment had a correlation value of $r = 0.225$; $p < 0.01$ while risk monitoring and control has a correlation value of $r = 0.197$; $p < 0.05$. Similarly, regression analysis revealed that both risk identification and risk assessment positively affect loan portfolio quality while risk monitoring and control negatively affect loan portfolio quality with $\beta = 0.803$; $\beta = 0.162$ and $\beta = -0.360$ respectively.

Relatedly, a value of R- Square of 0.419 implies that all the examined measures of credit risk management explain 41.9% of the variation in loan portfolio quality at Centenary.

The researcher concludes that much all the measures of credit risk management are positively and significantly associated with loan portfolio quality, risk identification and risk assessment positively affect loan portfolio quality while risk monitoring and control negatively affects loan portfolio quality.

The researcher recommends that the management of the bank should optimize risk identification practices particularly through authenticating the information generated from clients, identifying the risks associated with repayment ability, collateral, loan tenure and total debt exposure among others aimed at harnessing loan portfolio quality. With regard to risk monitoring and control, management of the bank should focus maximum efforts to activities that lead to granting a loan. This is because a loan usually goes bad at appraisal stage and hence monitoring may hardly change what is messed up during the preamble to reaching a loan a decision.

CHAPTER ONE

GENERAL INTRODUCTION

1.0 Introduction

The facilitation of capital formulation for private investment purposes mainly require the availability of domestic savings on one hand and lending on to the qualifying borrowers on the other hand which functions are best performed by commercial banks as they equally inform the overall bank performance (Wambari, 2017). However, in the quest for success, the banks get exposed to two major risks namely; credit risk and interest rate risk. Hence credit risk management is considered to be one of the road maps for soundness and safety of the sector through prudent actions as well as monitoring and performance (Chijoriga, 2011). Consequently, it is believed that prudent credit risk management results into satisfactory portfolio quality and hence high levels of performance by the respective commercial banks.

This study therefore investigated the effect of Credit Risk Management on loan portfolio quality in Commercial Banks in Uganda using a case of Centenary Bank. Credit risk management (independent variable) was conceptualized to mean risk identification, risk assessment, risk monitoring control. Loan portfolio quality on the other hand constituted the dependent variable of the study and was looked at in terms of repayment rates, net interest income, and volume of written off loans and proportion of Nonperforming loans to the gross loans of the bank.

1.1 Background to the Study

Banking is an economic activity that deals with the intermediation of funds between the surplus units and the deficit units of an economy as well as channeling of such resources to profitable investments, (Ogunbiyi & Ihejirika, 2014 cited in Wambari, 2017). Consequently, Credit Risk

Management (CRM) practices and poor credit quality continue to be a dominant cause of bank failures and the banking crisis worldwide, (Mmega, 2009 as cited in Wanjugu&Omagwa, 2017). Further, the extent to which banks manage their credit risk has an impact on the entire loan portfolio quality and ultimately their survival, (Wanjugu & Omagwa, 2017). On the other hand, credit creation largely remains the main income generating activity of commercial banks globally and as a compensation, the banks charge interest on any loans made to borrowers while at the same time paying out interest to depositors (Khan & Sattar, 2014). It is worth mentioning that interest rates influence the overall level of economic activity, the flow of goods and services and financial assets within the economy (Eric, 2015; Wambari, 2017).

Usually, the interest rates in an economy are a function of the monetary policy and as such, the respective central banks of various economies are mandated to manipulate the monetary policy to guide the achievement of macro-economic activity. Further, in coming up with particular interest rates, the central bank analyses the expected rate of inflation, the level of government borrowing and the efficiency of the banking sector (Wambari, 2017).Conversely, the profits of commercial banks and hence their performance are perceived to increase with increasing interest rates.

The NPLs volumes in Europe alone shot up to over €1 trillion by December 2016, (IMF, 2017). Consequently, commercial banks across the world still face loan performance challenges with bank failures reported across all continents while the number of loss making banks is also surging year after year.

In Africa, the banking industry has continuously gone through a number of transformations driven by technology (Mwega, 2009). The industry is however facing stiff competition partly from within the industry and external competition on the other hand. Bank financial performance

has been characterized by huge profits that have been largely influenced by the interest rates charged on loans (Ogunbiyi and Ihejirika, 2014). However, there are notable cases of struggling banks some of which have been closed down by the respective central banks or even forced into mergers due to insolvency problems, (Wanjugu and Omagwa).

In Uganda, Risk management in financial institutions became prominent following the failures of Banks in the late 1990s, (Bagyenda, 2011). This prompted Bank of Uganda to embark on comprehensive review of legal, regulatory and statutory frameworks to fulfill its mandate of fostering sound financial system that guarantee safety of depositors funds. The Financial Institutions Act, 2004 stipulated for the establishment of the Credit Reference Bureau (CRB) to address the problem of credit risk. For years up to 2016, Loan quality deteriorated with the level of non-performing loans (NPLs) to total gross loans rising from 5.3 percent to 10.5percent between December 2015 and December 2016, (Bank of Uganda, 2016).

The collapse of Crane Bank was on the backdrop of high Non-Performing Loans (NPLs) that increased by 122.9% to Shs142.3bn in 2015, up from Shs19.36bn in 2014. This saw the once profitable bank post a whopping loss of Shs3.1bn in 2015, down from a net profit of Shs50.6bn in 2014. From the above background, it is important to look at banks with largest NPLs as of 2016. This was derived from the financial results released by Uganda's 24 commercial banks in the last few months. Noteworthy, Citibank did not report any NPLs while Stanbic Bank said its NPLs increased by 14% in 2016. Total industry NPLs (excluding Stanbic) increased to Shs557.8bn in 2016, up from Shs515.6bn in 2015.

Standard Chartered Bank (StanChart) tops banks with largest NPLs, having recorded Shs112.1bn in 2016, slightly down from Shs113.9bn in 2015. This accounts for 19.9% industry market share

followed by Bank of Baroda whose NPLs increased to Shs77.6bn in 2016, up from Shs7.06bn in 2015. This implies that its NPLs increased by 999.1% and represents 13.8% of the industry market share. Barclays occupies the third place considering the fact that its NPLs reduced by 26.28% to Shs70.48bn in 2016, down from Shs95.6bn in 2015. It is followed by DFCU that saw its NPLs reduce to Shs58.38bn in 2016, down from Shs71.1bn. Tropical Bank's NPLs increased by 156.8% to Shs38.27bn in 2016, up from Shs14.9bn. This could explain why it recorded a net loss of Shs13.4bn in 2016, up from a profit of Shs1.9bn in 2015.

Centenary Bank comes 6th with its NPLs increasing to Shs35.6bn in 2016; up from Shs27.4bn in 2015. Equity bank that saw its NPLs jump to Shs31.1bn in 2016, up follows it from Shs18.5bn recorded in 2015 while Housing Finance Bank comes 8th with its NPLs increasing by 84.8% to Shs30.5bn in 2016, up from Shs16.5bn in 2015. Diamond Trust Bank (DTB) that recorded Shs28.3bn in 2016, up closely follows it from Shs69.2bn in 2015. Exim Bank that acquired Imperial Bank completes the top 10 banks in Uganda with largest NPLs. Its NPLs increased to Shs22.3bn in 2016, up from Shs5.35bn in 201, (Bank of Uganda Supervision report 2016).

Uganda's banking industry has continued to register strides in growth, geographical coverage and product range and to date, the country boasts of 24 commercial banks (Bank of Uganda, 2017). However, much as majority of Ugandan banks have remained profitable, several banks in the country continue to make losses (BoU, 2016). Consequently, Greenland bank and corporative bank collapsed in the late 1990s while National bank of commerce, Global trust bank and Crane bank took the same route in recent years. Further, Nile bank and Fina bank were forced into mergers and buyouts. On the other hand, commercial banks largely profit through loans to the public which eventually forms the biggest asset of these institutions. However, the lending

activity comes along with huge risks that the banks must be prepared to manage appropriately. This study therefore investigated the effect of credit risk management on loan portfolio quality in commercial banks in Uganda using a case of Centenary Bank

1.2 Statement of the Problem

Credit risk management is done with the intention of improving loan performance and consequently to reduce the non-performing Assets. This is emphasized and applied in all Commercial Banks including Centenary Bank. To manage this risk, Centenary bank engages into credit risk assessment, credit risk monitoring and review as well as credit risk control aimed at achieving satisfactory loan performance through favorable repayment rates, sufficient net interest income, low volume of written off loans and a smaller proportion of Nonperforming loans to the gross loans, (Centenary Bank, 2018) .

However, despite such efforts, the bank is still affected by decline in loan portfolio quality. Despite centenary bank having full-fledged Risk management department aimed at identifying and managing material risks at the strategic, business and functional levels , the bank's annual profits to total assets have stagnated or grown at declining rate. For example the annual profits as a percentage of total assets has been 10.1%, 8.63%, 8.58%, 8.46% and 8.38% for the years 2012, 2013, 2014, 2015 and 2016 respectively. Equally, the annual profits to the total loans portfolio have also taken the same trend with the bank recording; 4.99%, 4.0%, 4.51%, 5.15% and 4.75% over the same period respectively (Centenary Bank Annual Report, 2017). Also the NPLs of Centenary bank have been on an incremental trend in a manner that these loans grew from 27.4 billion in 2015 to 35.6 billion in 2016 and eventually to 62.2billion in 2017, (Ssenyonyi, 2018; Bank of Uganda, 2018).

This could be probably be attributed directly to laxity in credit standards for borrowers and counter parties, poor risk management and lack of attention to rapid changes in economic, social and political circumstances that can lead to deterioration in the credit portfolio performance in commercial banks. If the problem is not addressed, increasing NPLs would worsen the profitability of the bank and limit its capacity to create more credit that would consequently result into limited funding for the most of the Small and Medium Enterprises (SMEs) in Uganda since Centenary bank the leading microfinance bank in Uganda. This would in turn worsen the already challenged financing alternatives avail to SMEs and affect their ability to expand employment to a large section of Ugandans who derive sustainability from SMEs. It was against this background that the researcher wished to investigate the effect of credit risk management on loan portfolio quality using a case of Centenary Bank.

1.3 Objectives of the Study

1.3.1 General Objective

To investigate the effect of credit risk management on loan portfolio quality of commercial banks in Uganda

1.3.2 Specific Objectives

- i. To examine the effect of credit risk identification and loan portfolio quality at Centenary Bank
- ii. To examine the effect of credit risk assessment on loan portfolio quality at Centenary Bank.
- iii. To assess the effect of credit risk monitoring and control on loan portfolio quality at Centenary Bank.

1.4 Research Questions

- a) What is the effect of credit risk identification and loan portfolio quality at Centenary Bank?
- b) What is the effect of credit risk assessment on loan portfolio quality at Centenary Bank?
- c) What is the effect credit risk monitoring and control on loan portfolio quality at Centenary Bank?

1.5 Scope of the Study

In terms of content, the study oriented itself to credit risk management with particular focus on credit risk assessment, risk identification as well as risk monitoring and control that are enshrined in the credit function of lending institutions. Geographically, the study was carried out at Centenary Bank and particularly selected 17 branches within its network. These branches are located in Central and Western Uganda and were chosen based on the high level of lending activity they harbor making them more exposed to credit risk. The time scope of study was a five year period from 2015 to 2019. Within this period, the banking sector in Uganda was hit by a huge bank losses, Non – Performing loans as well as bank failures increased

1.6 Justification of the study

Loans form the greatest source of revenue to commercial banks and yet there is a very big problem of default by borrowers. This has further led to the closure of some banks because of running out of liquidity for instance Crane Bank in 2016 due to the high rates none performing Loans. Also the NPLs volume of Centenary bank increases every year hence a need to execute a study on effect of credit risk management on loan performance to devise applicable solutions to this problems that threatens the future of the bank.

1.7 Significance of the study

The study might be of value to a number of stakeholders as explained below

To Bankers, the study might help bankers in understanding clearly the interaction between credit risk management and the loan performance of their respective banks. This in turn might guide bankers in making the right choices of lending requirements for different products while observing the related risk aspects.

To Researchers/Academicians, the study might be of tangible benefits to researchers and academicians in supplementing their knowledge in the field of banking and finance and also serve as reference for further research into this field.

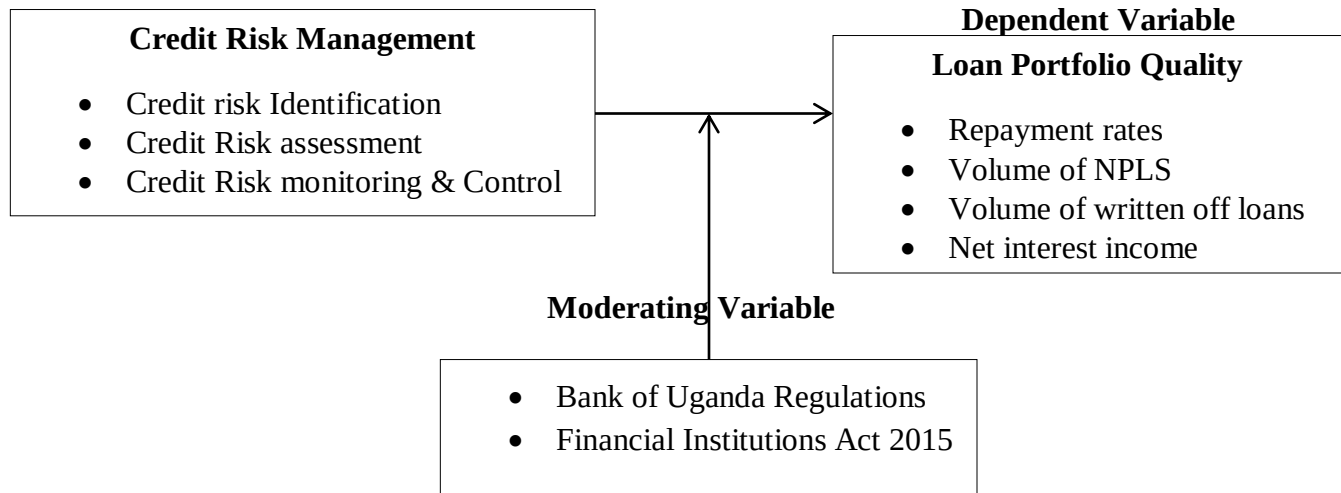
To Policy makers and Regulators, the study might be of sound policy implications especially to Ministry of Finance and the line departments and agencies like Bank of Uganda regarding regulation of the lending function in commercial banks so as improve on the level of bank failures and its associated shortcomings.

1.8 Conceptual framework

This is the diagrammatical relationship between the study variables. The study's independent variable is credit risk management and was conceptualized to mean risk identification, risk assessment as well as risk monitoring and control. On the other hand, the dependent variable was Loan portfolio quality looked at in terms of repayment rates, net interest income, and volume of written off loans and Volume of Nonperforming loans. The moderating variable of the study was guiding laws such as the Financial Institutions Act of 2015 as well Bank of Uganda lending guidelines for commercial banks in Uganda as presented in figure 1 below.

Figure 1: Conceptual Framework

Independent Variable



Source: Adopted from Fan & Zou (2014) and modified by the researcher.

Based on the conceptual framework above, it is assumed that with prudent credit risk management through an informed risk assessment process, proper control of the risks as well routine monitoring, the quality of loans given out by the bank to the public will turn out to be of good quality. Under risk assessment, the officers of the bank engage into establishing the creditworthiness of the borrowers by performing the credit appraisal process while during risk control, several mitigating factors are sought including securitization of the disbursed loans. Monitoring of the risks rotates around routine visits to clients premises to gauge the degree of business continuity as well as ascertain the possibility of recovering the loan funds within the prescribed time period. However, the entire activities enshrined in the credit risk management process are moderated by both the central bank regulations as well as the Financial Institutions Act of 2015.

1.9 Definition of key terms and concepts

Credit risk management

Nikolaïdou & Vogiazas (2014) define credit risk management as the combination of coordinated tasks and activities for controlling and directing risks confronted by an organization through the incorporation of key risk management tactics in relation to the organization's objectives.

Credit Risk Identification

This relates to the methods by firms evaluate potential losses and take actions to reduce or eliminate such threats. It includes documenting and communicating the risk concerns for better planning and management.

Credit Risk Assessment

Risk assessment is the determination of quantitative or qualitative estimate of risk related to a well-defined situation and a recognized threat or hazard. Quantitative risk assessment requires calculations of two components of risk; the magnitude of the potential loss (L), and the probability (p) that the loss will occur.

Credit risk Monitoring and control

This refers to a range of techniques whereby a lender can partially protect himself against counterparty default through by taking guarantees or collateral, or buying a hedging instrument (Nikolaïdou & Vogiazas, 2014).

Loan portfolio

Loan portfolio is the total of all loans held by a bank or finance company. It can also be defined as the loans that a lender is owed, and is usually listed as an asset on the lender's balance sheet.

Loan portfolio quality

This refers to the portfolio's ability to register both quantity and quality growth at the least cost by the lender. The value of a loan portfolio depends not only on the interest rates earned on the loans, but also on the quality or likelihood that interest and principal will be paid.

Bad loans: These are assets of the bank that remain outstanding in both principle and interest for a period longer than the terms and conditions specified in the loan contract, (Nkuah, 2015). Conversely, these loans are classified as NPLs since they contravene the loan contract terms.

Net Interest Income: It is the compensation a lender charges to borrowers for the funds advanced to them. As compensation, the banks charge interest on any loans made to borrowers while at the same time paying out interest to depositors (Khan and Sattar, 2014).

1.10 Conclusion

The chapter has provided an insight on the background of the study by: stating the problem statement, the purpose of the study, the objectives of the study as well as the research questions. The chapter has also presented the scope of the study and the conceptual framework which identifies the dependent as well as the independent variable and thus the chapter provides grounds for reviewing existing literature in regard to the study objectives.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter offers an account of the existing facts related to the study. It presents the theoretical review in line with the problem being investigated, conceptual review regarding the study variables, empirical evidence as well as a summary of the reviewed literature for the study.

2.1 Theoretical Review

This subsection presents the relevant theories backing up the study with intent to explain the interrelationships between the study variables. These include the Modern Portfolio Theory and the Agency Theory as well. Below is a detailed account of the theories.

2.1.1 Modern Portfolio Theory

Propounded by Markowitz in 1951, the modern portfolio theory attempts to guide highly risk - averse investors on the best tactics of building profitable portfolios that are capable of maximizing returns in a defined market at given level of risk. Consequently, banks while driving the lending function increasingly attempt to address the inability of the asset-by-asset approach to measure unexpected losses sufficiently by pursuing a portfolio approach. According to Essendi (2013), the portfolio has a basic assumption that investors often want to maximize returns from their investments for a given level of risk and provides a framework for specifying and measuring investment risk and to develop relationships between risk and expected returns. One weakness with the asset-by-asset approach is that it has difficulty identifying and measuring concentration. Concentration risk refers to additional portfolio risk resulting from increased exposure to a borrower, or to a group of correlated borrowers.

On the other hand, the traditional portfolio approach uses two methods, namely the expert method and the credit scoring models in the expert system; the credit decision is left in the hands of the branch lending officer. His expertise, judgment, and weighting of certain factors are the most important determinants in the decision to grant loans. The traditional approach to the assessment of credit proposition of borrowers is based on the heuristics or intuition of the loan officer. Heuristic decision making is, however, not necessary arbitrary or irrational because it is based on years of experience that enable individuals to identify solution quickly without going through an analytical process (Rosli, 2000).

The 5Cs of credit are always used by banks to assess the creditworthiness of the potential borrower. The 5Cs of credit refer to Character, Capacity, Conditions, Collateral and Capital (Dev, 2009). Character assessment is performed to determine the willingness and desire of borrowers to repay debt. Capacity is described as the borrower's capacity to borrow and also his repayment capacity. Economic conditions will also affect the borrower's ability to repay the loan. A bank will normally ask for collateral as security against the loan. Capital requirement of the business indicates the financial net worth of the borrower. The loan officer can examine as many points as possible but must include these five Cs in addition to interest rate.

In order to estimate default probability credit scoring models use statistical and mathematical methods (Togtokh, 2012). Some writers note that the reason for this increased use of the scoring methods is that the methods are relatively cheap, bases on historical data and simple compared to modern approaches. For example, Mester cited in Togtokh (2012) revealed widespread use of credit scoring models showing that 97 percent of the banks use credit scoring to approve credit card application, whereas 70 percent of the banks use credit scoring in their small business lending.

2.1.2 The Agency Theory

This was propounded in 1976 by Jensen and Meckling and defines the relationship between the principal and the agent. According to the theory, the principal is the investor (shareholder) in a company while the agent is the manager who is appointed to perform the stewardship role on behalf of the investor. The theory thrives on the assumption that both parties (principal and agent) are driven by self – interests and thus the agent is to perform duties that optimize the objectives and interests of the principal. Agency theory analyses the relationship between two parties: investors and managers. The agent (manager) undertakes to perform certain duties for the principal (investors) and the principal undertakes to reward the agent.

The theory was thus deemed relevant for the study as it helps in describing the relationship between the principal and the agent. In here, the investors of Centenary bank are primarily interested in registering a return on their investment and the confidence that their investment remains a going concern in the near seeable future. On the other hand, the managers of Centenary bank must ensure that business is operated in a health manner to guarantee continuity and therefore, the agency theory stands in to bridge this gap hence its adaptation for the study.

2.2 Credit Risk Management

Nikolaïdou and Vogiazas (2014) define credit risk management as the combination of coordinated tasks and activities for controlling and directing risks confronted by an organization through the incorporation of key risk management tactics and processes in relation to the organization's objectives. Garcia et al., (2013) on the other hand, note that effective credit risk management practices have never been successful to eliminate the human element in making

decisions about controlling risk. Credit risk is basically the risk faced by investor to lose money from borrower who fails to make payments. Credit risk is most critical and expensive risk associated with financial institutions. Its impact is quite significant compared to any other risk associated to the banking sector as it is direct threat to solvency of the institution (Chijoriga, 2011).

Consequently, Credit Risk Management (CRM) practices and poor credit quality continue to be a dominant cause of bank failures and the banking crisis worldwide (Wanjugu and Omagwa, 2017). Further, the extent to which banks manage their credit risk has an impact on the entire financial performance and ultimately their survival, (Wanjugu and Omagwa, 2017). On the other hand, credit creation largely remains the main income generating activity of commercial banks globally and as a compensation, the banks charge interest on any loans made to borrowers while at the same time paying out interest to depositors (Khan & Sattar, 2014). It is worth mentioning that interest rates influence the overall level of economic activity, the flow of goods and services and financial assets within the economy (Wambari, 2017).

The aspect of credit risk management is furthered by Basel II framework which is an international banking standard, written by the Basel Committee on Banking Supervision's. Basel's standards apply for any active bank which operates internationally. The first Capital Accord, or Basel I, was established in 1988 after a series of declines in financial performance and the ability to control credit risk of large banks between the 1970s and 1980. Until now, Basel II and III were published and applied in many countries with additional developments compared to the first edition. The main objectives of this framework are to strengthen the international banking system by reinforcing risk management in three main risk areas: credit risk, market risk

and operational risk. These areas also structure three pillars of Basel II (Basel Committee on Banking Supervision, 2004; Gup, 2011)

The first pillar is Minimum capital requirements; - the standards of minimum capital that banks need to have in order to overcome credit risk, market risk and operational risk. This regulation requires banks to maintain at least 80% of minimum capital ratio. The following formula is applied to compute this ratio:

$$\frac{\text{Total Capital}}{\text{Total Capital Credit risk} + \text{Market risk} + \text{Operational risk}} \geq 80\%$$

The framework of Basel II also provides detail instructions on how to calculate total capital and risk-weighted assets.

The second pillar which is Supervisory review process gives principles of how banks should evaluate their capitals regarding their risk profiles, review their internal capital assessments and make appropriate changes. Relatedly, the third pillar which is Market discipline discusses the disclosure requirements.

Basel II covers three risk areas, however, within this study's scope; we will focus only on credit risk and not go deeply into two other areas. Regarding credit risk, according to Docherty and Viort (2014), Basel II presents two methods to set up an internal credit rating system: Foundation Internal Rating Based (FIRB) and Advanced Internal Rating Based (AIRB). These two rating systems form different ways to determine assets' risk weights and minimum capital requirement. AIRB is allowed only if banks manage to proof that they have sufficient historical data and accountable risk assessing models. When using AIRB, banks are responsible for calculating risk-weighted assets, five risk components and the minimum capital requirement for credit risk, based on their own internal evaluation. Alternatively, banks that adopt FIRB are only required to compute default probability, other inputs are provided by bank supervisors.

2.2.2 Credit Risk Assessment

Credit terms constitute the conditions under which organizations deliver finance or credit to customers (Moti et al., 2012). According to Ross et al., (2008) credit terms may include specific time period, rate of interest and other conditions under which credit is advanced by financial institutions. Several previous studies have noted that the time period for which credit is advanced is affected by credit risk, collateral value, competition in the market and size of client's account (Ross et al., 2008). Abedi (2000) contends that in order to evaluate a customer as a potential borrower, microfinance institutions employ the 5Cs model due to its role in increasing LP once they get to know their customers better. These 5Cs include: character, capacity, collateral, capital and condition. As to the factors that influence a client, Ouma (1996) categorize them into personal, cultural, social and economic factors. Credit risk or default risk is basically the risk faced by investor to lose money from borrower who fails to make payments (Moti et al., 2012).

Investors may lose interest and principal as a consequence of credit risk which further leads to increased cost of collection and decreased cash flows. There can be multiple aspects and arrangements by which an organization can set specific policies for collecting money from borrowers (Moti et al., 2012) keeping into focus that a few clients are moderate payers while some are non-payers. The accumulation exertion ought to, subsequently go for quickening accumulations from moderate payers and lessening awful obligation misfortunes (Loona and Zhong, 2014).

2.2.2.1 Credit analysis

Credit analysis, as it is expressed in the term, is necessary analysis of credit files that bank officers conduct in an attempt to evaluate the ability to pay back the loan of existing or new

debtors. Compton (1985, in Koch & MacDonald, 2010) listed down three questions that credit analysts need to answer:

- What are the risks presenting in the borrower's business?
- What has the borrower done so far in order to control those risks? Have the borrowers succeeded or failed, and why?
- What can the bank do, within its organization, to limit potential losses when providing credit?

In response to the three questions, credit analysts evaluate credit risk levels through both subjective and objective analysis. For subjective evaluation, banks can utilize the **5Cs** of good credit, described by Apostolik et al., (2009), as key features when assessing borrowers.

Character indicates the debtor's willingness to repay, the reputation of the debtor in his industry and in relationships with other lending institutions. Bank officers will look at the customer's historic transactions to detect any events that are relating to credit lending. For example, if a firm has always repaid its interests on time in the past, it is more likely that, for a new loan, the firm will continue to retain its reputation and full fill its loan's obligations.

- **Capital** refers to the capital structure of the borrower. Credit analysts study the level of leverage of the target firm by evaluating the weight of debt and equity that are used as sources of finance.
- **Conditions** refer to external factors that might affect the borrower's financial situation and his ability to repay. These external factors come from the economic environment and related industry. For instance, tobacco business reacts strongly to changes in the market. When the economy grows, people have more income and demand for tobacco,

however, in hard time when people needs to save their money, the demand for this product can be very low.

- **Capacity:** When analyzing this, banks focus on cash flow reports of customers. Banks always want to lend out money to firms that have predictable, stable cash flow and alternative sources of credit to pay back loans.
- **Collateral** refers to assets of the borrower which are used to securitize loans. In case the client failed to make payment, the lending bank can sell these assets to compensate for part or all of the loss.

Apostolik et al. (2009) describes credit analysis through 6 categories of analyses and 3 areas of risks. The six analyses are macroeconomics, microeconomics, management, financial analyses, type of borrower and type of borrowing. In Apostolik's credit assessment tool, these are conducted under 3 risk areas: business risks, financial risks and structural risks. Some risk areas share the same type of analysis due to the close relation of the analysis to both areas. For instance, both business risks and financial risks require management analysis. We can also see the existence of objective and subjective factors in this theory. In terms of financial risks, bank officers need to carry out financial analysis, which is an objective evaluation. On the other hand, in the field of business risks, it comprises macroeconomics analysis and microeconomics analysis, which are subjective evaluations, and management analysis. In the last area, structural risks, credit analysts are required to identify types of borrower and types of borrowing so that banks can apply appropriate lending policies.

An important purpose of accomplishing the analysis mentioned is to measure customers' credit quality. Typically within banks, these risk assessments are integrated into an internal credit rating framework in order to segment borrowers into appropriate rating classes, based on their

probability of default. The reason why banks must classify clients is because treating all borrowers the same, regardless their levels of risks, causes ineffective risk control. Thus, financial institutions always need trustable internal rating systems linked closely to loan policies as the foundation of credit risk management. In practice, banks establish their own credit rating systems, though they can have different criteria and input variables so to meet the specific needs of the target bank, they are somewhat similar.

This can be explained by the fact that lending policies are affected by international banking standards or local regulations as well as other players in the banking industry. To illustrate a credit rating scale, we will use models of the most well-known rating agencies, Moody's, Standard & Poor's and Fitch as examples. For Standard & Poor's model, there are 10 different classes which start from AAA, the highest credit quality, then followed by AA, A, BBB, BB and so on until class D, default class. Moody's also has 10 categories equivalent to 10 levels of credit quality but expressed through different symbols than Standard & Poor, (Karsone, 2010).

2.2.3 Credit risk Identification

This relates to the methods by firms evaluate potential losses and take actions to reduce or eliminate such threats. Securitizing loans can be a simple method, which is using collateral as one of five Cs of good credit. Collateralization is when borrowers pledge their assets as guarantees for banks to issue new loans or to enhance existing credit limit. If debtors cannot afford to repay the loans, banks can seize these assets and resell them. Collaterals could be cash, account receivables, guarantees, properties and equipment.

However, even though collateral is an important secondary source of repayment, reselling these types of collateral is more difficult to do than say and it could be costly. Moreover, Brigo et al.,

(2013) find that under the time value of money theory, the value of collateral can change dramatically during the loan period, so it is not always easy to evaluate the fair value of the asset. In case if the value of collaterals decreased, especially in real estate market, selling assets might be very time consuming.

Relatedly, liquidation of collaterals on the market can be troublesome but nowadays, with the development of electronic trading, banks now can have a faster way to securitize loan, which is asset-backed security (ABS). Rose and Hudgins (2010) describe the securitization process starts when a lending organization chooses a group of assets that are hard to convert to cash and have similar features, such as a group of loans, mortgages, receivables. Then the organization uses these assets as guarantees to liquid securities that can be easily traded on the market, for example, bonds and notes. The originator (the lender) sells relative securities to an issuer, a special purpose entity (SPE). After that, SPE will resell again these asset-based securities on capital market and convert them to cash.

According to Fabozzi and Kothari (2008), there are three types of securitization. The first type is mortgage-backed securities, the second type is asset-backed securities and the last one is securities backed by operating revenues. Mortgage-backed securities use mortgage loans as collaterals and ABSs consist of collaterals from other types of loans. For securities backed by revenues, it is used mainly in procurement.

The main advantages of ABSs can be summarized as following namely;

- ABSs reduce credit risk in lending activities because when banks sell these kinds of securities, the credit risk passes from banks to new holders of these securities, which could be special purpose entity or investors who buy the securities.

- ABSs free bank's capital and allow the bank to issue more loans or invest in other business.
- It is a fast way to transfer illiquid assets to cash, (Economy Watch, 2010).

2.2.4 Credit Risk Monitoring and control

Credit risk control does not stop after the preliminary of credit analysis when borrowers apply for new loans but it happens along the life of loans. This mean bank needs to conduct credit analysis regularly during loan period. Besides that, it is necessary that bank officers supervise and monitor borrower's activities according to loan policies and provisions of the bank. Adams (2008) explains three major activities in credit supervision of a client:

- Performing re-analysis of the customer's credit profile to evaluate the ability to re-pay and detect changes in credit quality from time to time. Based on the current credit rating of the loan, the lending bank should apply suitable supervising methods. For example, doubtful loans need to be re -assessed more regularly than standard loans.
- Examine the use of loan according to loan agreement and loan covenants since borrower can spend the credit for wrong purposes.
- Supervising the operating of the debtor's business to project future cash flow.

In making loan agreements, banks can utilize some covenants in an attempt to monitor and supervise the performance of the customer's business. For instance, a loan agreement indicates that the borrower of the loan must present reports of any changes in the value of his collateral quarterly. Later on, in a credit re-assessment process, a loan review specialist will examine whether this covenant is full fill. The monitoring activities can be affected by bank size. In small banks, monitoring and supervising process might be centralized in one department. However, for

larger banks which operate internationally and have many transaction centers, this process could be decentralized to branches or regions. (Apostolik et al., 2009)

One of the main parts in credit monitoring and supervising activities is loan review process (Gup, 2011). According to Hempel and Simonson (1999), the five factors that make a good loan review are:

- Fundamental financial statement analysis of the debtor and the ability to repay.
- The thoroughness of documentation.
- The performance of the borrower's business in compliance with the written loan policy and regulation.
- The status and value of collaterals.
- The level of profitability of the loan.

2.3 Credit Risk Identification and Loan Portfolio Quality

As banks always know that it is impossible to collect all loans due to the existence of counterparty risk, they apply many tools and methods to reduce loan losses. Some of the methods are mentioned in the previous chapters: lending policy, credit analyzing and rating, securitizing loans. However, at some degree, losses will still incur and reduce equity capital of banks. This requires lenders to consider potential loan losses in their financial forecast as business expenses.

According to Golin&Delhaise (2013), loan loss provision is “a noncash charge against operating income made to account for expected or unexpected loan losses.” and can be general provision or specific provision;

- General provision covers all loan losses which are not yet determined but banks consider those loans to have a high risk of default.
- Specific provision term, on the other hand, is used for loans that are already identified as having troubles to pay back.

Based on business experiences, banks estimate potential loan losses that might happen and determine loan loss provisions. Using the provisions, they create credit loss reserves in balance sheets by saving proportions of their incomes from the previous financial periods. Credit loss reserve can impact the value of banks in investors' evaluation because this account can reduce bank profits. Nevertheless, provision for credit losses is still a popular method to mitigate credit risk. The benefits of this approach are not very visible if there are only few unrelated losses. However, if there are many losses occur in a short time due to systematic risk such as financial crisis or recession, loan loss reserve can minimize the actual impact of the losses by using the money that is saved into this account. The losses will first diminish the loan loss reserve before they affect the bank earnings and thus, the income statement will not record these losses. (Apostolik& al. 2009)

Hosna et al., (2009) examined the relationship between Credit risk management and bank performance. The results indicate that NPLs indicators affect ROE more than capital adequacy. Relatedly, Aruwa& Musa (2012) found a strong positive relationship between risk components and banks' financial performance although the direction of the effect is not specified. Further, Boachene et al., (2012) submitted that there is a strong positive relationship between credit assessment and bank profitability. Therefore since the loan portfolio ranks as the biggest earning asset of the respective commercial banks, any efforts towards managing the credit risk directly influences the quality of the portfolio and ultimately the overall performance of the bank.

Chaplinska (2012) analyzed Latvian commercial in the wake of the global financial crisis and observed that both the quality and quantity of the loan portfolio greatly decreased due to insufficient management of the credit risks in the selected banks. This she further submits that inadequate credit risk management jeopardizes activity growth within commercial banks by affecting loan disbursements and hence affects profits in the long run.

Mileris (2012) observed that the rise in default rates resulted largely from both macroeconomic factors and bank specific factors. He identifies inflation, GDP and government policies among others as the key contributors to high default rates. On the other hand, inadequate credit risk assessment, poor credit risk monitoring and control are the major bank specific factors responsible for the high default rates. Therefore, the management of the respective banks should endeavor to carryout effective credit risk management so as to harness the quality of the loan portfolio.

Erdinc and Gurov (2016) proved several benefits of better management of NPLs. They argue that efficient credit risk management is a significant factor in avoiding distress among commercial banks and that with a healthy financial position; management can focus its work on other operations of the bank rather than concentrating on solving financial distress. They therefore conclude that effect management of credit risks through proper risk identification, assessment, control, monitoring and review positively influences portfolio quality and hence overall profitability.

Kosmidou et al., (2005) cited in Hurka (2017) examined the impact of credit risk management on bank performance together with the key determinants of bank profitability. They concluded that

while capital strength affects the banks' profits positively, management efficiency and bank size produce a negative impact on profitability. Further, they submit that loan loss reserve ratio positively affects net interest margins. Therefore, credit risk management ought to be given the required attention so as to minimize the loan losses provisions and consequently improve quality and profitability.

2.4 Risk assessment and Loan Portfolio Quality

In making lending decisions, banks consider a number of issues related to: Personality of the loan applicant, Viability of the business and the industry and Level of preparation in planning the details of the loan. The personality of the loan applicant is the personality as perceived from the bank officer's perspective. Personality of applicant (Irwin, 2010) summarizes a host of literature that has long examined a bank's loan approval relationship with the applicant. On viability of the business, aside from the higher perceived risks arising from information asymmetry problems inherent in dealing with borrower in general, the viability of the business and the industry in which the applicant operates in is important consideration. The level of preparation in planning the details of the loan is critical and will determine whether the applicant has a chance of a loan being approved by a bank's lending officer.

Djan et al., (2015) examined reasons for poor quality portfolio covering default rate, cost per loan assets and capital adequacy ratio. It was found that all these parameters have an inverse impact on banks' performance. However, the default rate is the most predictor of bank financial performance. Relatedly, Kombo et al. (2010) argues that strategic risk, credit risk and liquidity risk are the most frequent risks faced by MFIs in Kenya. He further says that, whereas reputation and subsidy dependence risks occur at a very low incidence for Micro Finance Institutions (MFIs) in Kenya, this does little to influence negatively the profitability of these institutions. He

further points out that to tone down these risks, the Micro Finance Institutions (MFIs) employ various management strategies, which include risk avoidance, transferring of risk and mitigating risks and also regard mitigation of risks as the most effective risk management strategy.

Mokoro et al. (2010) in an investigation of the various challenges facing the transition of informal MFIs into formal MFIs recognize the existence of risks emanating from both the external and internal stakeholders. Further, according to Diamantini (2010) MFIs are particularly vulnerable to foreign exchange rate risk, since they operate in developing countries where the risk of currency depreciation is high. This is true because currency depreciation tends to be highly correlated with a general deterioration of local economic conditions, which can cause higher loan delinquencies and a reduction in profitability of financial activities. He goes further to give a remedy to this that hedging can mitigate this risk and contributes greatly to an MFI's success and sustainability. Through an appropriate hedging policy, the MFI can reduce or even eliminate the uncertainty of mismatches between local currency receivables and foreign currency repayments.

Hudon (2010) analyzed the relationship between financial performance of MFIs and their management mechanisms based on three financial indicators ROA, AROA and FSS and four management dimensions like decision making, board governance competencies, Accounting and control, planning budgeting and reporting competences like competencies of the top managers and competencies of HR management. The results of Hudon (2010)'s analysis show that management ratings influence drastically the MFI financial performances. According to him, however, except for the cooperatives where the management variable (specifically HR human resources management) has a negative impact on the ROA, no organizational structure exhibits

better results for the three financial indicators. He underscored that regulated MFIs have significantly better management ratings than non-regulated ones.

Allan and Olomi (2003) cited in Onango (2017) findings indicated that all CBs were trained of how to appraise, monitor and supervise borrowers. Allan and Olomi (2003) however, concluded that banks have capacity constraints in credit and risk management. Allan and Olomi (2003) concluded that maybe the trainings obtained were not satisfactory or probably the number of staff does not tally with the number of borrower to monitor and supervise. In a related study, Beck, Jakubik and Pilo (2013) in a study on Non-Performing Loans (NPLs) in 75 countries argue that over the past decade, the credit quality of loan portfolios across most countries in the world remained relatively stable until the financial crises hit the global economy in 2007-2008. Since then, average bank asset quality deteriorated sharply due to the global economic recession. Yet the deterioration of loan performance was very uneven across countries. Beck et al., (2013) were interested in explaining these differences in bank asset quality across countries and over time. In their findings they found no the direct impact of share prices on NPLs and posited that the impact was less obvious. They further argued that to the extent that share prices are correlated with house prices they supposed that their findings could reflect the notion that a drop in the value of collateral for housing loans could negatively affect the loan quality of consumer loans.

Macharia (2012) in his study on the Relationship between the Level of Non-Performing Loans (NPLs) and the Financial Performance of Commercial Banks in Kenya found an inverse relationship between the level of Non-Performing Loans and Bank Performance as measured by ROA. Relatedly, Muasya (2000) studied the impact of non-performing loans on the banking

sector performance in Kenya and that NPLs negatively affected banking sector profitability as measured by forecasted GPD growth factor. Shrestha (www.academia.edu) found a negative relationship between the amount of non-performing loans and stock price using data from Nepali commercial banks in India.

Erdoğan and Gurov (2016) also examined a rather large market, more specifically European Union. Their study found positive effect of credit risk management not only on profitability but also on solvency of banks. In a similar study, Kithinji (2010) conducted a research on Kenyan banks and determined a neutral effect of CRM on bank performance meaning profits were not affected by the increase in credit risk. In contrary, completely different result was provided by Noman et al., (2015) who in their study examined commercial banks in Bangladesh. Their results showed a negative and significant association between CAR and ROE.

2.5 Credit risk Monitoring and control and Loan Portfolio Quality

As earlier stated, commercial banks always know that it is impossible to collect all loans. It is because even high-rated loans have the risk of unable to maintain their performing status and turn into non-performing loans (NPLs). These loans are viewed by lending institutions as high-risk assets which can cause financial damages. The question here is “What should banks do with loans that are marked non-performing?” Golin and Delhaise (2013) stated that there are four probable results for non-performing loans: write-off, foreclosure, bad bank and restructure troubled loans.

- Write-off refers to an action of deducting an amount of non-performing loans from bank assets in the balance sheet. When a bank exercises write-off, an equal amount must be

modified on the liability side of the balance sheet. Write-off will normally affect the profit and loss statement and bank profits, however, under different laws and regulations, banks can sometimes credit the write-off amount directly from equity.

- When banks carry out a foreclosure, they consider not only write-off but also the recovery rate of NPLs, which comes from collaterals used to secure the loans. NPLs with re-course mean banks will require debtors to add more collateral to their loans since the current value of collaterals is not enough to cover potential losses in case of default. Conversely, NPLs without recourse are loans which have sufficient amount of collaterals.
- Bad bank or Asset Management Company is another solution for NPLs. This type of companies buys weak assets or NPLs from lending institutions and then resells them to other investors under the form of bonds. In this case, those NPLs still exist but they are re-moved from the original balance sheet. Practically, many big Asset Management Companies that are founded and funded by governments act as a temporary solution for bad debts and NPLs in the commercial banking sector.
- In addition to the three previous approaches, banks have the option to restructure troubled loans. According to Laurin and Majnoni (2003), restructuring process happens when banks modify initial terms in the loan agreements of NPLs so that these loans have more chances to be repaid. With a loan in non-performing status, before recognizing it as bad debt, bank officers will reanalyze the loan and its lending agreement. During the reassessment, if credit analysts concluded that there are opportunities for this NPL to recover in the future, they might consider replacing terms in the lending agreement with more suitable ones to support the debtor. For example, changing repayment schedule of a

loan or reducing the current interest rate. Nevertheless, the recovery of these rescheduled loans may not happen as expected and the bank still bears credit risk. Even though many banks implement restructuring method on NPLs, most of G-10 countries' regulations do not provide any definition of restructured loans and guidance to classify them

Naceur and Kandil (2009) studied actions taken by the Central Bank of Egypt to regulate the banking sector. More concretely, the specific aim of the paper was to establish a relationship between capital regulations and banks' performance. In essence, this study confirmed the results of Berge's (1995) research in the way that higher CAR positively affects ROA and ROE through a higher cost of intermediation. Several other aspects were evaluated to give more specific answers behind this relationship. First of all, the bank specific variables such as efficiency of the management, bank size or higher intermediary costs cause bank's profitability to go down. From the macro perspective, inflation and output growth are among the most influential factors of banks stability. The post regulation period also shows certain factors being very positive for banks success, such as increased management efficiency or stricter capital requirements. As a result, this study claims a positive effect of regulations in the banking sector.

Sufi & Malik (2015) evaluated the influence of credit risk management and loan performance basing on evidence from microfinance banks of Pakistan. Employing a cross sectional research design and making use of multiple regressions, the results indicated that risk monitoring greatly influences quality of the loan portfolio especially if attention is given to credit terms, policies and credit appraisals. Relatedly, Onango (2017) investigated the effect of credit risk management on the performance of commercial banks in Kenya which are listed on the Nairobi Securities Exchange. Using purposive sampling and employing a longitudinal research design coupled with

a random effects model, the results indicated that there exists a significant positive relationship between credit risk assessment and the quality of the portfolio. Thus proper risk monitoring through holistic credit appraisal and information management process can a long way in influencing the quality of the loan portfolio.

2.6 Review of the moderating variable

The researcher believes that the relationship between credit risk management and loan portfolio quality is moderated by the regulations set by the central bank to guide the banking industry. For example much as the bank appraises a customer, it cannot exceed the maximum allowed loan amount by the central bank to a single borrower and at the same time the central bank guidelines on loan collateralization may influence the amount granted. Similarly, the regulatory requirements may affect the extent of loan recoveries and hence affect the portfolio at risk, the loan loss provisions.

In here, the researcher was of the view that the central bank's policy on interest rates guided by the Central Bank Rate has an impact on the interest rates charged by Centenary bank which in turn influences the quality of its Loan portfolio by influencing both quality and quantity of the loan book. Similarly, the central bank has policy guidelines on collateral that may be accepted by banks as a shield against the risk of loan loss due to default. Therefore, Centenary bank would always draw its attention to such guidelines concerning collateral during the design of its collateral policies which in turn affects the performance of its loan book both in terms of quality and volume of the portfolio.

In the same way, the credit limit guidelines by the central bank would have a direct impact on the operations of Centenary bank regarding how much credit it can extend to a single client. For

example according to Bank of Uganda, a lending institution may not extend more than 1% of its core capital to single borrower. This therefore affects the size of the portfolio that Centenary Bank attempts to achieve.

2.7 Summary of Literature

Loans form the greatest source of revenue to commercial banks and yet there is a very big problem of default by borrowers. This has further led to the closure of some banks because of running out of liquidity for instance Crane Bank in 2016 due to the high rates none performing Loans. However, whereas prominent scholars such as Onango (2017); Sufi & Malik (2015); Golin and Delhaise (2013); Gup (2011); Irwin (2010) as well as Djan et al., (2015) among others intimate to that an informed credit risk management system is prime in enhancing quality of the loan portfolio, little account is given in regard to the peculiar behavior of portfolio quality of commercial banks that employ such practices to subdue the risk. It is therefore deemed ripe for execution of a study about the effect of credit risk management on loan portfolio quality to devise applicable solutions to this problem that threatens the future of the banks.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter describes the research design that was adopted by the researcher, the population of the study, sample size and selection, the study area and the methods that were used in collecting data that was deemed pertinent in answering the research questions. Also it gives an account of the approaches that were used in analyzing the data collected for the purposes of forming a conclusion relevant to the objectives of the study, reliability and validity of the research instruments, Ethical Considerations as well as the limitations to the study.

3.1 Research design

The researcher used a cross-sectional research design in the study. Cross –sectional studies report summary data such as measures of central tendency including the mean, median, mode, variance from the mean, variation, percentage, and correlation between variables (Donald, 2006). Relatedly, Mugenda and Mugenda (2003) describe cross sectional research design as a systematic, empirical inquiring into which the researcher does not have a direct control of independent variable as their manifestation has already occurred or because they inherently cannot be manipulated. Labaree (2014) submits that the benefits of cross sectional survey are that it allows the researcher to compare many variables at the same time. Also, since cross sectional designs are used to gather various data, they are relatively inexpensive and take up little time to conduct (Labaree, 2014).

3.2 Study area

The study was carried out at Centenary Bank situated on Plot 44 – 46 Kampala Road and plot 2 Burton Street. P.O.BOX 1892 Kampala Uganda. Relatedly, the bank has a network of 69 branches Country wide. Thus in light of the aforementioned locations, the study also included 16 more branches of the bank within the network. These were Bwera, Kasese, Bundibugyo, Fort Portal, Mubende, Mityana, Namirembe Road, Wakiso, Nansana, Bwaise, Ntinda, Kireka, Kamwenge, Kabalagala, Najjanankumbi, Kawempe as well as Entebbe Road Branch.

3.3 Study Population

The study population was limited to Centenary bank branches of Bwera(18 staff),Kasese(30),Bundibugyo(13), Fort Portal(31),Mubende(25),Mityana(28),Namirembe Road(33),Wakiso(32),Nansana(23),Bwaise(33),Ntinda(22),Kireka(27), Kamwenge (12), Kabalagala (16), Najjanankumbi (17), Kawempe (16) and Entebbe Road(44).

The target study population was 420 members. The staff at these branches is believed to be well-versed with operational credit risks in the banking industry and such staff participates greatly in designing the policies that drive bank lending.

3.4 Sample size

The study utilized a few centenary bank branches in Kampala, Wakiso and along Kampala Fort portal road up to Bwera for convenience in collecting the data. The researcher used stratified sampling and these constituted the elements of first sampling stage. With an average staff size of 28 members per branch, the researcher utilized simple random sampling to draw 201 respondents from Credit officers, Credit Administrators, Branch managers, and credit analysts as well credit

managers. This sample size was based on Morgan & Krejcie (1970) tables of sample size determination. Purposive sampling was on the other hand applied to credit product managers as well as heads of departments that are associated with credit risk in the bank.

Table 3.1: Sample size

S/N	Category of Staff	Sample	Sampling Method
1	Credit Officers	144	Random Sampling
2	Branch Managers	17	Random Sampling
3	Credit Analysts	07	Purposive Sampling
4	Risk Managers	07	Purposive Sampling
5	Credit Managers	13	Purposive Sampling
6	Credit Administrator	23	Random Sampling
7	Others	07	Purposive sampling
	Total	201	

Source: Human Resource Report, Centenary Bank (2019)

3.5 Sampling Techniques

Simple random sampling was applied to the various branches to choose the individual staff who participated in the study as the primary units of inquiry while purposive sampling applied to the respective heads of departments that manage credit risk to help in obtaining a more informed view of credit risk management at the bank.

3.6 Data collection methods and instruments

The researcher collected primary data by means of administering a specially designed questionnaire and an interview guide. The questionnaires consisted of structured questions which

were distributed to the respondents in the selected branches of the bank to complete. After allowing the respondents reasonable time to fill, the researcher went back to the respondents' offices to pick the filled questionnaires for analysis. The questionnaires were chosen because they offered the researcher the ability to collect a large volume of data from a relatively large sample in short time. On the other hand, an interview guide was used to collect data qualitative data from the departmental heads for purposes of attaching detailed meaning to the data collected using questionnaires. Relatedly, secondary data was collected from various documents. These documents obtained for the purposes of obtaining secondary data included company policy documents, brochures, journals, newsletters, Library searches and annual financial statements.

3.7 Reliability and Validity of the instruments

3.7.1 Reliability

The reliability of the data was ensured through testing the data collection instrument for the reliability of values (Alpha values) as recommended by (Cronbach, 1946). Sekaran (2001) adds that for the data collection tools to be judged as reliable, at least the individual statements measuring each variable should be 70% as the minimum. Based on this recommendation, the researcher conducted a pretest at Equity bank Uganda after which reliability was processed. At the end of the process, the results contained in table 3.2 were obtained which formed the basis for adopting the tool to conduct the study at Centenary Bank.

Table 3.1 Reliability Statistics

S/N	Variable	Number of Items	Cronbach Alpha(α)
1	Risk identification	10	0.756
2	Risk Assessment	08	0.711
3	Risk Monitoring and Control	08	0.725
4	Loan Portfolio Quality	12	0.837

Source: Field data (2019)

3.7.2 Validity

Validity refers to the appropriateness of an instrument (Amin, 2005). In order to ensure validity of the instrument the drafted questionnaires were given to the supervisors and colleagues for critical assessment of each item. The researcher adopted the amendments following the guidance on which items were judged as relevant and those left out after which a content validity index was computed using the formula below;

$$C.V.I = \frac{\text{Total number of corrected items}}{\text{Total no. of items in the instrument}}$$

Thus CVI = $33/38 = 0.868$

According to Amin (2005), a CVI value of at least 0.7 is acceptable as valid. Thus based on the results, the tools were accepted as valid and adopted for the study.

3.8 Measurement of Variables

The study variables were measure using a likert scale of 1 – 5 where respondents rated their onions. In here, 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree and 5 = Strongly Agree.

3.9 Data Management and Processing

Upon retrieval, each questionnaire returned was checked for completeness. Each questionnaire was then be assigned an identification number to track the respondents' views during data entry.

3.10 Data entry, analysis and presentation of findings

The collected data was entered and processed using SPSS software. Microsoft Excel was used to generate graphs and clear charts using data imported from SPSS. The findings were presented in frequency tables, graphs and charts in the subsequent chapter. Spearman's correlation coefficient was run for establishment of the relationship between the independent and dependent variables

while linear regression was employed in determining the effect and predictability of loan portfolio quality from credit risk management.

3.11 Ethical Considerations

The researcher sought clearance and a letter of introduction from Uganda Martyrs University and the consent of the respondents prior to the research. Issues to do with secrecy about the information and identities of respondents as well as their social and psychological wellbeing were strictly observed. Further, questionnaires were designed in such a way that they don't have any mention of the respondent's name.

Further still, the researcher ensured that the data collected is only used for the study purposes of concluding an MBA program and furthering understanding of academic research. Equally, all citations and information sources used were acknowledged and fully referenced while at the same time an official permission was sought and granted by Centenary Bank Uganda to allow the data collection process.

3.12 Limitations of the study

Due to busy work schedules some respondents lacked adequate time to participate in the study. However, the researcher made appointments with respondents in order to arrange for the appropriate time for them to participate in the study and provide responses to the questionnaire. Some respondents were occasionally hesitant to reveal the required information for fear that their jobs could be threatened. The researcher however assured the participants maximum confidentiality with regards to their responses and also informing them that the data was only sought for academic purposes.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.0 Introduction

This chapter provides the presentation of the study findings alongside their interpretation and discussion. The study employed a total of 201 respondents who were employees of Centenary bank in all departments associated with credit risk management. At the end of the data collection process, 162 questionnaires were returned resulting a response rate of 80.6%. This response rate was considered sufficient enough to address the set study objectives according to Mugenda & Mugenda (2003). The subsequent sections of the chapter present demographic characteristics of the respondents, the descriptive statistics on each study objective as well as both the correlations and regressions amongst the study objectives.

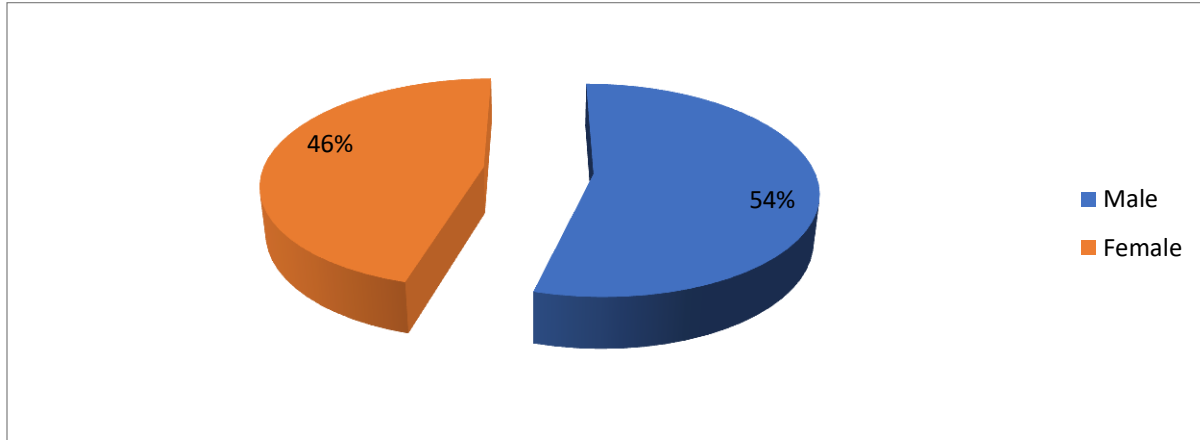
4.1 Demographic characteristics

The respondents were examined on various background characteristics such as gender, age, educational background, position held and the working experience at the bank. This was aimed at linking such characteristics to the study objectives as presented below.

4.1.1 Gender of respondents

Regarding the gender of respondents, 54% were males while 46% were females. Precisely, more men were employed than women. However on the overall, there was a fair representation of both genders amongst the bank employees and hence fairly balanced lending decision decisions aimed at propelling profitable loan portfolio quality at the bank. Figure 2 presents the gender of respondents.

Figure 2: Gender of the respondents

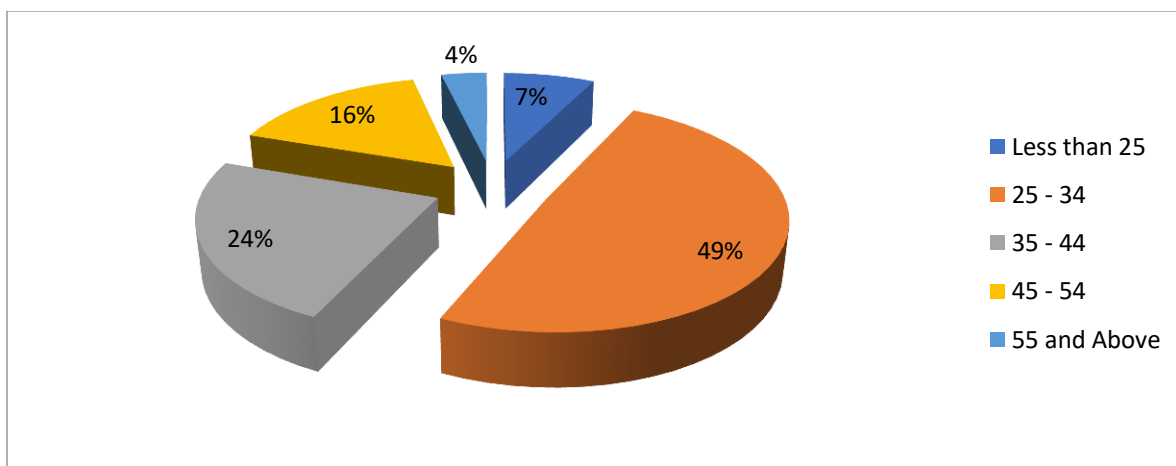


Source: Field data (2019)

4.1.2 Age of respondents

The results indicate that majority of the respondents (49%) were aged between 25 and 34 years followed 24% who were aged between 35 and 44 years, 16% who were aged between 45 and 54 years. Others were 7 % who were aged below 25 years and 4% who were aged 55 years and above. The results intimate to the fact the bank employees a relatively mature to reflect on both credit risk management and loan portfolio of the bank

Figure 3: Age of the respondents

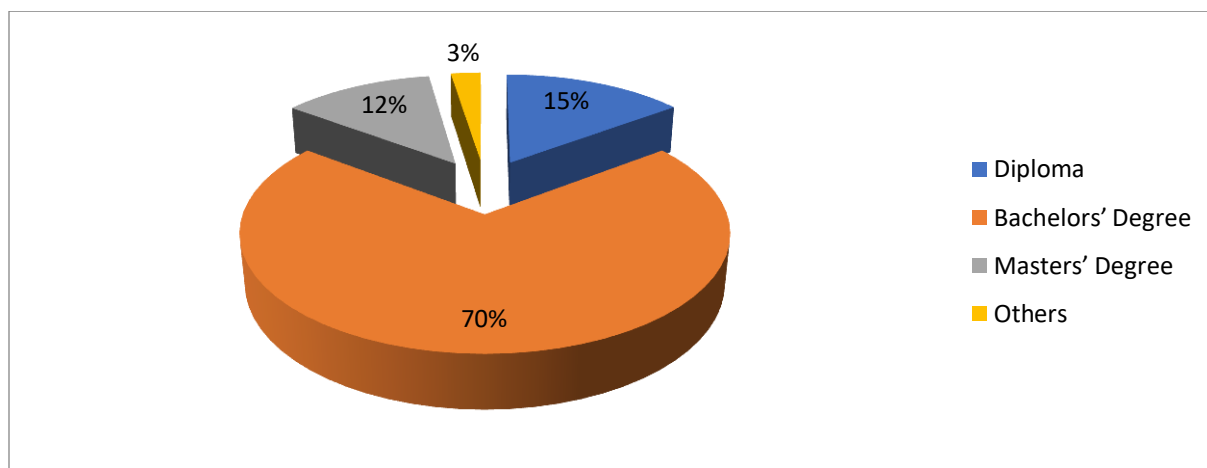


Source: Field data (2019)

4.1.3 Academic Qualifications of respondents

As per figure 4, majority of the respondents (82%) had attained a bachelors' degree of whom 12% had also added a masters' degree. 15% had a Diploma while 3% had other qualifications such as CPA among others. The results probably imply that the respondents had the required knowledge to provide sufficient response to the questionnaires and equally had basic understanding of both credit risk management and loan portfolio quality at the bank.

Figure 4: Academic qualifications of respondents

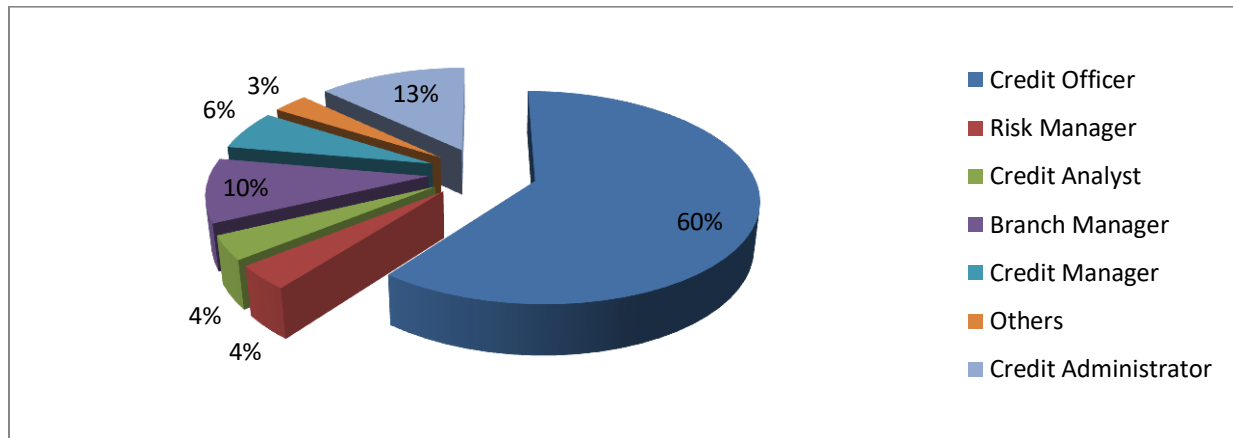


Source: Field data (2019)

4.1.4 Position of the respondent at the bank

Majority of the respondents were credit officers (60%) followed by credit administrators(13%) and Branch Managers(10%). 6% were credit managers while credit analysts and risk managers accounted for 4% of the respondents each. 3% were others and in particular a review of the questionnaires revealed these were all members of the internal audit team. This probably implies that the respondents had sufficient knowledge about the credit risk management function of the bank and hence gave credible responses to the data collection tool. Figure 5 presents the findings in a more a summarized form to aid visual basic interpretations.

Figure 5: Position held by the respondent at the bank

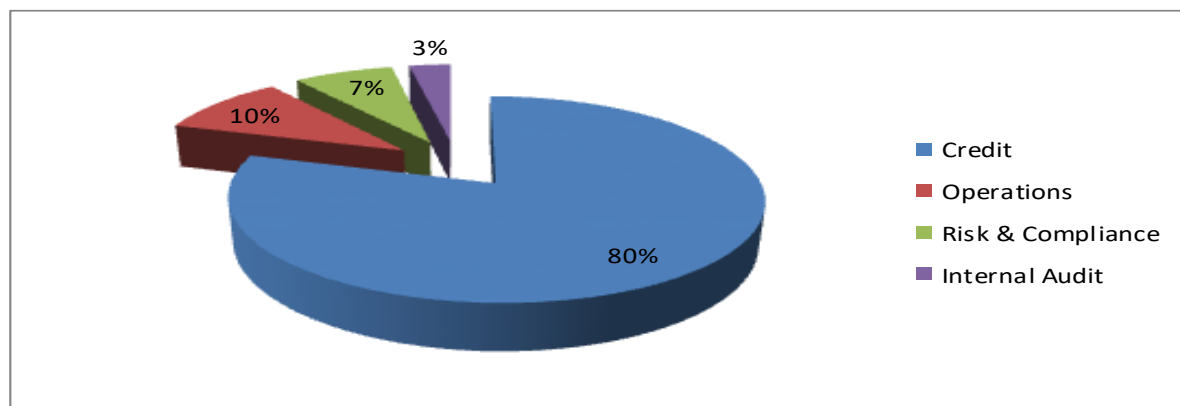


Source: Field data (2019)

4.1.5 Department occupied by the respondent

Results indicate that majority of the respondents (80%) belonged to the credit department followed by 10% who were from operations and 7% who were from risk and compliance. 3% of the respondents were members of the internal audit department. This results probably imply that the department that are directly associated with credit risk management activities of the bank were represented in the study.

Figure 6: Department of the respondent at the bank

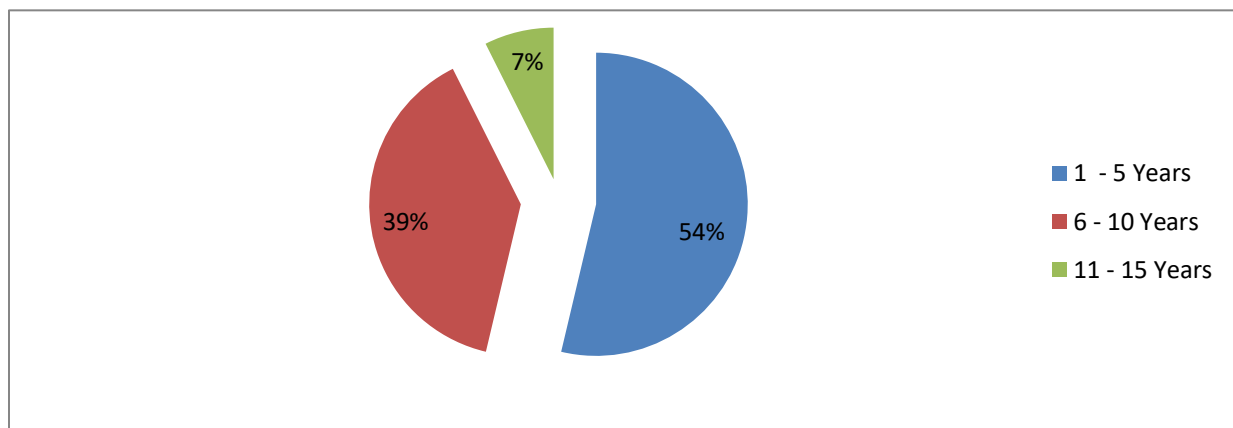


Source: Field data (2019)

4.1.6 Working Experience of the respondents at the bank

The results indicate that majority if the respondents (54%) had worked with bank for 5 years and below followed by 39% who had stayed at the bank for 6 to 10 years while 7% had worked at the bank for more than 10 years. This probably implies that the respondents had stayed at the bank long enough to orient themselves with the core performance objectives of the bank, the associated dynamics and hence could always make the best decisions regarding credit risk management practices for improved loan portfolio quality.

Figure 7: Working experience of respondents at the bank



Source: Field data (2019)

4.2 Descriptive Statistics on the study variables

In order to generate responses that would aid in measuring research objectives, the researcher formulated statements on all the examined measures of credit risk management and sought opinions from respondents on a scale of 1 to 5. The subsequent subsections under descriptive statistics present feedback on the various statements under each variable.

4.2.1 Descriptive statistics on Risk Identification at Centenary Bank

The first objective of the study was to examine the effect of risk identification on loan portfolio quality at Centenary bank. The researcher formulated several statements under this objective and sought opinions of respondents on each statement feedback to which is presented in table 4.1 below.

Table 4.1: Descriptive Statistics on Risk Identification at Centenary Bank

	Min	Max	Mean	Std. Dev.
The bank has a framework for credit risk identification	3	5	3.98	.445
The bank trains staff to effectively identify the potential risks that surround its operations	1	5	4.03	.615
Risk identification is the initial stage the bank employs in managing credit risk	1	4	3.35	.962
The bank identifies risks associated with collateral choices	2	5	4.15	.744
The bank identifies risks associated with the loan tenure	1	4	2.34	.913
The bank identifies the risks associated with total debt exposure to customers	3	5	4.46	.570
During risk identification, the bank pays great attention to the quality of information gathered from customers	1	5	3.97	.717
The bank identifies the risks associated with the ability to pay	1	4	3.24	1.038
The bank pays attention to risks posed by the business environment	1	4	3.06	1.061
The bank pays attention to risks posed by the political environment	1	4	2.25	1.148
Average mean and Standard deviation			3.48	0.82

Source: Field data (2019)

Regarding whether, “the Bank has a framework for credit risk identification”, respondents agreed with a mean of 3.98 and a standard deviation of 0.445. This may attributed to established guidelines within the bank that guide management and staff on the basis of identifying the potential risks threatening the core business of the bank which in turn might have a bearing on its loan portfolio quality. The results are in agreement with Tamimi and Mazrooei (2007) asserting

that banks define various frameworks for risk management and that risk identification is the initial stage of risk management adding that for the implementation of risk management in an organization, the first step is to study risks and their impact on management practices. Similarly, Lagat et al., (2017) submitted existence of positive relationship between risk identification and performance of financial institutions and that the more risk identification the higher the performance of financial institutions. Triangulating quantitative data with feedback from the interviews seemed to cement this observation as the participants submitted that,

“...credit Risk Management is a risk management framework designed by financial institutions to mitigate, avoid, accept or transfer risk that would arise leading to default on the entire principle or a portion of the loan/credit by a borrower. This framework may include identification of the possible risks, classification of risks, assessment of the sensitivity of risk, risk mitigation as well as evaluation plan...”

Asked whether, “the bank trains staff to effectively identify the potential risks that surround its operations”, the respondents agreed with a mean of 4.03 and a standard deviation of 0.615. This could be linked to the routine trainings that the bank organizes or procures for staff tailored to effective risk identification and management at the bank. It may also attributed to the key skills exhibited by bank staff in identifying the potential risks that threaten the bank’s core business and also defining appropriate tactics in addressing such risk. The results are supported by Wanjohi (2012) asserting that designing execution of training courses tailored to the needs of banking personnel in risk identification is vital for improved risk management adding that practicing sound credit risk management has a positive correlation with the financial performance of commercial banks.

Asked whether, “Risk identification is the initial step the bank employs in managing credit risk”, the respondents agreed with a mean of 3.35 and a standard deviation of 0.992. This may be attributed to the fact the bank can only manage credit risk when it clearly knows the various risks that make credit risk. These may include information asymmetry, default risk, fraud, conspiracies and multiple borrowing by the customers among others. The results are in agreement with Tamimi and Mazrooei (2007) submitting that sound risk identification is the initial stage of risk management and that for the implementation of risk management in an organization, the first step is to study risks and their impact on management practices. Similarly, Tchankova (2002) opines observing that risk identification is a very important step which spearheads the risk management function.

On whether, “the bank identifies risks associated with collateral choices”, respondents agreed with a mean of 4.15 and a standard deviation of 0.774. This may attributed may be attributed to the bank paying particular attention to collateral as one of the requirements for borrowing. This way, the bank may conduct searches to ascertain ownership and any encumbrances thereon. The findings agree with Kinyua (2010) Who observed that within the credit analysis or assessment process, analysts also consider possible recovery in the case of default and evaluate the support collateral and other credit support tools that bear on the bank's final decision to develop a creditor relationship adding that the banking industry routinely develops numerous methods to help structure the credit process and improve financial results and profitability.

Asked whether “the bank identifies risks associated with the loan tenure”, respondents were generally in disagreement with a mean of 2.34 and a standard deviation of 0.913. This may be attributed to the bank not taking all the steps necessary to subdue loan losses. For example there

might be absence of clear guidelines on the duration of particular loan products the customers. The study findings are contradicting Siba (2012) who showed that all banks had formal risk identification and assessment systems in place and that all the banks had a relatively similar risk management environment, policies and procedures.

Regarding whether, “The bank identifies the risks associated with total debt exposure to customers”, respondents were agreed with a mean of 4.46 and a standard deviation of 0.570. This may be attributed to limited capacity of the bank to identify the instances of multiple borrowing save for those that are capture on the credit reference bureau system. Thus the only debt exposure the bank can track is limited to debts in the formal system and as such debts from the informal system can hardly be traced. There is however a moderate variation with regards to the opinions of the respondents about the statement which might moderately impact on the reliability of the data. The findings are supported by Lagat et al., (2017) who wrote that the first task in risk identification is to select the information relevant to the decision under consideration from the total information contained in the financial statements. This is followed by arranging the information in a way to highlight significant relationships and then make interpretation and drawing of inferences and conclusions.

On whether, “During risk identification, the bank pays great attention to the quality of information gathered from customers”, respondents agreed with a mean of 3.97 and a standard deviation of 0.717. This may be associated with a well-established framework that sieves and cleans information from customers for permitting informed loan decision making. Thus the banks might be engaged into authenticating information about incomes, collateral, and character

of the borrower for reaching the lending decisions. The result agree with Lagat et al., (2017) who wrote that the first task in risk identification is to select the information relevant to the decision under consideration from the total information contained in the financial statements. This is followed by arranging the information in a way to highlight significant relationships and then make interpretation and drawing of inferences and conclusions.

Regarding the statement, “The bank identifies the risks associated with the ability to pay”, respondents were in generally in neutral with a mean of 3.24 and a standard deviation of 1.038. This may be attributed to the fact that assessing the ability to pay coupled with a positive character of the borrower is a cheaper alternative of shielding against default risk than planning to sell off mortgaged collateral. It also goes a long way in influencing objective decisions and subsequently promotes a positive image of the bank. The results are supported by Kinyua (2010) who asserts that credit risk identification entails assessing the risk as measured by a borrower's ability to repay the loan adding that within the credit analysis process, analysts also consider possible recovery in the case of default and evaluate the supporting collateral and other credit support tools that bear on the bank's final decision to develop a creditor relationship.

Asked whether, “The bank pays attention to risks posed by the business environment” the respondents were neutral with a neutral of 3.06 and a standard deviation of 1.061. This may attributed to the bank at times appreciating that it doesn't operate in a vacuum and those much it might to be so conscious about credit risk, the forces from the business environment such competition, interest rates and inflation among others might also be responsible a reasonable portion of the extent to which the bank performs. The results agree with Muriuki et al., (2013)

who wrote that a change in interest rate by the central bank directly affects the commercial banks asset quality as it has a bearing on the key activities defining core operations of the banks. For instance, if the commercial bank had given a loan at 7% per annum and in between that period, the central bank changes the interest rate to 4%; this affects the profitability of the commercial bank since they have already projected the profit on that particular client.

Asked whether, “the bank pays attention to risks posed by the political environment”, the respondents disagreed with a mean of 2.25 and a standard deviation of 1.148. This may be attributed to any incidences where the bank fails to project the probable consequences of the probable political environment in directing its lending activities for tolerable credit risk. The results are supported by Muriuki et al., (2013) who observed that the political environment in a country can spark off changes in interest rate, the exchange rate as well increase in inflation which directly affects the commercial banks asset quality as these have a bearing on the key activities defining their core operations.

4.2.2 Descriptive Statistics on Risk Assessment

The second objective of the study was to examine the effect of risk assessment on loan portfolio quality at Centenary bank. To measure the objective, the researcher formulated several statements and sought opinions from respondents as presented in table 4.2 below.

Table 4.2: Descriptive Statistics on Risk Assessment at Centenary Bank

	Min	Max	Mean	Std. Dev.
The bank has a framework for credit risk assessment	2	5	3.62	.568
The framework guides the bank on the assessment of the various credit risks	1	5	2.60	1.171
The bank assesses credit risk by appraising the character of the prospective borrowers to pay	1	5	2.91	.931
The bank assesses the capacity of the prospective borrower to pay.	1	4	2.72	.975
The bank evaluates the collateral presented by the borrower	1	5	3.17	.950
The bank assesses the underlying economic environment for guiding a loan decision	2	5	3.01	.815
The bank goes ahead to appraise the guarantors presented by the borrower	1	5	2.76	.847
The bank pays attention to the past repayment history of the borrower.	2	5	3.03	.815
Average Mean and Standard deviation			2.978	0.884

Source: Field data (2019)

Regarding the statement, “the bank has a framework for credit risk assessment”, the respondents agreed with a mean of 3.62 and a standard deviation of 0.568. This may be attributed to an established set of guidelines that drive the risk assessment function of the bank for improved loan portfolio quality. This way, the bank staffs probably know the particular areas of concern that ought to be given the desired attention so as to avert the risk from occurring. The results opine with Mara (2016) submitting that banks institute risk assessment frameworks aimed at determining quantitative and qualitative estimate of risk related to a well-defined situation and a recognized threat or hazard adding that quantitative risk assessment requires calculations of two components of risk (R) - the magnitude of the potential loss (L), and the probability (P) that the loss will occur. Maria further observes that an acceptable risk is a risk that is understood and tolerated usually because the cost or difficulty of implementing an effective countermeasure for the associated vulnerability exceeds the expectation of loss. Thus, credit risk assessment involves

the Identification of personnel involved; and clear formal communication and coordination among a bank's credit administration function, financial reporting staff, internal auditors, senior management, board of directors and others who are involved in the credit risk assessment and measurement process as applicable.

Regarding whether, “The framework guides the bank on the assessment of the various credit risks”, respondents were neutral with a mean of 2.60 and standard deviation of 1.171. This may be linked to the various activities performed by the bank regarding credit risk assessment that do not entirely stem from the established bank guidelines on risk assessment. For example, client screening, business analysis, information analyses as well as collateral valuation among others are usually routine activities of the credit risk assessment function in a bank. The results agree with Luo & Chen (2017) submitting that Credit Risk Assessment involves the use of risk assessment tools to manage a borrower’s account from the time of pre-screening a potential application through to the management of the account during its life and possible write-off and that this practice extends to the factors such as demographic characteristics, income, occupation which are believed to have a significant influence on individual micro credit risk. The research also conducted interviews on the question, what are the salient credit risks faced by the bank? In response, participants submitted that,

“...risk of default, Human resource risks (knowledge gaps, recklessness and inexperience, Environmental risks affecting the entire economy which may lead to business failure and hence increasing the probability of loans going bad as well as Political scenario such as Kenya setting interest caps were key risks that the bank faced and have an effect on the portfolio quality and eventually the overall financial performance...”.

When asked whether “the bank assesses credit risk by appraising the character to pay of the prospective borrowers”, the respondents were neutral with a mean of 2.91 and a standard

deviation of 0.931. This may attributed to the fact that the prevailing level of competition for customers within the banking industry most of the times forces banks to lend without close observation to the basic pillars such as character of the borrower that would form the basis for making the best lending decisions. The results however contradict Siba (2012) who asserted that credit risk assessment rotates around the process of assessing risk as measured by a borrower's willingness and ability to repay the loan. Siba adds that within the credit analysis or assessment process, analysts also consider possible recovery in the case of default and evaluate the support collateral and other credit support tools that bear on the bank's final decision to develop a creditor relationship.

On the statement, “the bank assesses the capacity to pay of the prospective borrower”, respondents were neutral with a mean of 2.72 and standard deviation of 0.975. This could probably be attributed to complacency of the bank staff in understanding that the bank's ability to profit from credit business derives from credit turnover matched with adequate recovery rates from the loan clients. This way, capacity to pay is judged on capital invested and the level of cash flows of the prospective borrowers in relation to the proposed loan installment. The results agree with Luo & Chen (2017) submitting that Credit Risk Assessment involves the use of risk assessment tools to manage a borrower's account from the time of pre-screening a potential application through to the management of the account during its life and possible write-off and that this practice extends to the factors such as customer's gender, educational background, age, income, occupation which are believed to have a significant influence on individual credit risk.

Asked whether, “the bank evaluates the collateral presented by the borrower”, the respondents generally agreed with a mean of 3.17 and standard deviation of 0.950. This may attributed to the

bank taking collateral as shield against the risk of default with reasoning that in the event that the customer defaults on the loan granted, the bank is at liberty to seize the collateral and liquidate it to recover the outstanding amount. The results agree with Kinyua (2010) submitting that within the credit analysis or assessment process, analysts also consider possible recovery in the case of default and evaluate the support collateral and other credit support tools that bear on the bank's final decision to develop a creditor relationship. Kinyua adds that credit assessment is not an exact science, and no one factor, ratio, or other indicator alone determines if a particular loan is a suitable risk. The banking industry has developed numerous methods to help structure the credit process and improve financial results and profitability.

On the statement, “the bank assesses the underlying economic environment for guiding a loan decision”, the respondents were generally neutral with a mean of 3.01 and standard deviation of 0.815. This may be attributed to a mixed attention the bank gives to the evaluation of economic environment within which it operates. For example, the bank continuously sets very high performance targets for credit officers irrespective of the general economic conditions in the country such as interest rates, inflation and the exchange rate yet this directly affects portfolio performance and overall financial performance. The results agree with Muriuki et al., (2013) who wrote that a change in interest rate by the central bank directly affects the commercial banks credit business and hence may affect the quality of the loan portfolio. For instance, if the commercial bank had given a loan at 7% per annum and in between that period, the central bank changes the interest rate to 4%; this affects the profitability of the commercial bank since they have already projected the profit on that particular client.

Asked whether, “the bank goes ahead to appraise the guarantors presented by the borrower”, the respondents were neutral with a mean of 2.76 and standard deviation of 0.847. This may be attributed to the bank staff charged with executing credit appraisal giving little attention to third party guarantors with regard to the loan obligation of the prospective borrowers since in most cases it ends up as personal liability. The findings are supported by Luo & Chen (2017) submitting that Credit Risk Assessment involves the use of risk assessment tools to manage a borrower’s account from the time of pre-screening a potential application through to the management of the account during its life and possible write-off and that this practice extends to the factors such as customer's gender, educational background, age, income, occupation which are believed to have a significant influence on individual credit risk.

On the statements, “the bank pays attention to the past repayment history of the borrower”, respondents were generally neutral with a mean of 3.03 and standard deviation of 0.815. This may be attributed to inappropriate adherence to established guidelines by the bank that ask the respective staff to among other things pay reasonable attention to the credit history of the prospective borrower including the repayment history so as to form the basis of the loan amount, the monthly installment and the loan tenure among others. The results agree with Greenidge & Grosvenor (2010) submitting that effective provision of credit risk management depends on the lenders assessment of the risk of default of the borrowers. Relatedly, Higgins (2009) observes that for SACCOS’ this is typically based on the borrower’s incomes, employment and the credit history at the time of loan application.

4.2.3 Descriptive Statistics on Risk Monitoring & Control

The researcher formulated several statements under risk and sought the views of respondents. A summary of the opinions gathered is presented in table 4.3 below.

Table 4.3: Descriptive Statistics on Risk monitoring & Control at Centenary Bank

	Min	Max	Mean	Std. Dev.
The bank has a framework on credit risk mitigation	1	4	2.34	.913
The framework guides the bank on how to mitigate various risks that threaten the credit function	3	5	4.46	.570
The bank charges collateral as a shield against the risk of default	1	5	3.97	.717
The bank defines acceptable levels of portfolio at risk (PAR)	1	4	3.24	1.038
The bank registers mortgages and caveats on the collateral it accepts.	2	5	4.14	.784
The bank insures certain collateral choices comprehensively	1	4	3.06	1.061
The bank insures all borrowers under the life insurance scheme	2	5	3.09	.901
The bank engages into rigorous loan monitoring	1	5	2.88	1.071
Average Mean and Standard deviation			3.40	0.88

Source: Field data (2019)

Regarding the statement, “the bank has a framework on credit risk control”, respondents were neutral with a mean of 2.34 and a standard deviation of 0.913. This may be attributed to respondents’ lack of information about the existence of such a policy aimed at driving the risk mitigation activities of the bank with intent of reducing the default risk and harness loan portfolio quality of the bank. For example the bank may be taking up loan insurance policies to guard against default in the event that business of the borrower collapses. It may also be undertaking life insurance policies for aiding recovery in the event that a borrower dies during the course of the loan. The results deviate from findings by Fioderlisi (2011) observing that commercial banks define credit risk mitigation guidelines through which they employ various methods to reduce the risks associated with the lending function. Nocco & Stulz (2006) further assert that the methods can include risk based pricing, or adjusting the cost of credit according to

the credit strength of the borrower; credit tightening, or reducing the amount of credit available to higher risk applicants; diversification, or increasing the portfolio mix of borrowers and purchasing credit insurance.

On whether, “the framework guides the bank on how to mitigate various risks that threaten the credit function”, respondents were in agreement with a mean of 4.46 and a standard deviation of 0.57. This may be attributed to the picking on whatever tool it considers fit for mitigating credit risk especially the ones highlighted in the risk mitigation framework. Thus to the respondents, on top of the guidelines for mitigating credit risk being present at the bank, their effective employment by the bank to manage credit risk is something that is well practiced. The results agree with the position of Fioderlisi (2011) observing that commercial banks define credit risk mitigation guidelines through which they employ various methods to reduce the risks associated with the lending function. Nocco & Stulz (2006) further assert that the methods can include risk based pricing, or adjusting the cost of credit according to the credit strength of the borrower; credit tightening, or reducing the amount of credit available to higher risk applicants; diversification, or increasing the portfolio mix of borrowers and purchasing credit insurance.

Regarding whether, “the bank charges collateral as a shield against the risk of default”, respondents agreed with a mean of 3.97 and standard deviation of 0.717. This may be attributed to the undertaking well cultivated risks aimed at minimizing loan loss and the default risk. Thus by charging collateral as a shield against default risk, the bank is at liberty to dispose it off and recover the outstanding loan balance. The results agree with Kinyua (2010) submitting that in a bid to mitigate credit risk, commercial banks consider possible recovery in the case of default and evaluate the support collateral and other credit support tools that bear on the bank's final decision to develop a creditor relationship. Kinyua adds that credit assessment is not an exact

science, and no one factor, ratio, or other indicator alone determines if a particular loan is a suitable risk. The banking industry has developed numerous methods to help structure the credit process and improve financial results and profitability

On the statement, “the bank defines acceptable levels of portfolio at risk (PAR)”, respondents agreed with a mean 3.24 and standard deviation of 1.038. This could be attributed to the being mindful of the consequences of huge NPLs on portfolio performance and the overall financial performance of the bank. This way, to mitigate the credit risk due to the default risk, the bank specifies acceptable PAR for its officers and the respective branches as well as the entire bank network and in extreme cases, some branches and officers are restricted from making new credit every time the defined PAR is surpassed. The results are supported by Reilly & Brown (2011) submitting that effective loan portfolio management begins with oversight of the risk in individual loans adding that prudent risk selection is vital to maintaining favorable loan quality. Therefore, the historical emphasis on controlling the quality of individual loan approvals and managing the performance of loans continues to be essential. They further observe that of recent, better technology and information systems have opened the door to better management methods and that managers can now obtain early indications of increasing risk by taking a more comprehensive view of the loan portfolio.

Asked whether, “the bank registers mortgages and caveats on the collateral it accepts”, respondents agreed with a mean 4.14 and a standard deviation of 0.784. This could be attributed to the bank’s will of subduing all the probable risks that would rise from inappropriate collateral perfection. Thus by registering mortgages and caveats; the bank is guaranteed of formal third

party interest that would in turn make it difficult for fraud stars to hoodwink the bank and any prospective property buyers. The results agree with Iqbal & Mirakhor (2007) who argued that the selection of particular risk tools tended to be associated with the firm's calculative culture – the measurable attitudes that senior decision makers display towards the use of risk management models. Relatedly, Mikes & Kaplan (2014) submits that while some risk functions focuses on extensive risk measurement and risk based performance management, others focus instead on qualitative discourse and the mobilization of expert opinions about emerging risk issues.

Regarding the, “the bank insures certain collateral choices comprehensively”, respondents were generally neutral with a mean of 3.06 and a standard deviation of 1.061. This may be attributed to an information gap on some of the collateral choices of the bank. For example, taking a motor vehicle as collateral might prove too risk since the vehicle is very mobile and hence exposed to high risks of accidents and other damages including theft. Thus by the bank choosing to request comprehensive insurance of such a security from the customer, it aims at reducing such risks. The findings are supported by Johanna et al., (2016) who emphasized that the consideration of credit risk associated with bonds had a strong impact on the fair valuation and risk measurement in the context of participating general insurance contracts, even in case of higher grade bond exposures.

Asked whether, “the bank engages into rigorous loan monitoring”, respondents were neutral with a mean of 2.88 and standard deviation of 1.071. This may be attributed to the carrying out loan monitoring selectively or the fact that the only monitors problematic loans especially the NPLs.. The results are contradicting Mwisho (2001) who observed that monitoring of borrowers important for current and potential exposures change with both the passage of time and the

movements in the underlying variables and that it is also very important in dealing with moral hazard problem (Derban et al., 2005). Relatedly, Siba (2012) submits that monitoring involves, among others on-site visit as well as updating borrowers' credit files.

4.2.4 Descriptive Statistics on Loan Portfolio Quality

The research formulated several statements to capture opinions of respondents on the extent of loan portfolio quality and its indicators at the bank. Table 4.4 presents the summary statistics on loan portfolio quality as generated from respondents.

Table 4.4 Descriptive Statistics on Loan Portfolio Quality at Centenary Bank

	Min	Max	Mean	Std. Dev.
The bank's loan portfolio cumulatively grows in volume every year	1	4	3.06	.989
The bank's loan portfolio quality is satisfactory and productive	1	5	3.17	1.227
The bank's portfolio at Risk is always within limits of the statutory minimum	1	4	3.88	1.091
The bank makes appropriate provisions for bad debts	1	4	3.69	1.166
The bank's loan interest income to loan interest expense is healthy and competitive	1	5	3.75	1.236
The bank has a sound liquidity position	1	5	3.41	1.321
The bank's deposit to credit ratio is always in agreement with the statutory minimum	1	5	3.31	1.554
The bank's loan portfolio quality is competitive compared with industrial standards	1	5	3.18	1.378
The bank's profitability is not affected by written off loans	1	5	3.35	1.433
The bank's NPL ratio is within acceptable limits	1	4	2.73	1.235
The bank is solvent and is a going concern	1	5	3.47	1.052
The earnings quality is competitive and attractive	1	4	3.95	1.002
Average Aggregate Mean & Standard Deviation			3.413	1.224

Source: Field data (2019)

On the overall, the results indicate that respondents agreed with an aggregate mean of 3.413 that loan portfolio quality of the bank did not greatly threaten the bank's sustainability. This was

probably because the bank's loan portfolio cumulatively grows in volume every year and that the bank's loan portfolio quality is satisfactory and productive. It could also be due to the fact that the bank's portfolio at Risk is always within limits of the statutory minimum and that the bank makes appropriate provisions for bad debts and also the fact that the bank's loan interest income to loan interest expense is healthy and competitive.

Further still, the opinions of the respondents might be stemming from the fact the fact that the bank has a sound liquidity position and that the bank's deposit to credit ratio is always in agreement with the statutory minimum as well as the bank's loan portfolio quality being competitive compared with industrial standards. The position might also be as a result of the bank's profitability not being affected by written off loans, the bank's NPL ratio being within acceptable limits, the bank being solvent and a going concern as well as the earnings quality of the bank being competitive and attractive.

The findings are supported by Mwega(2009); Darrell (2012); Eric (2015); Wambari (2017) as well as Wanjugu & Omagwa (2017) submitting that poor credit appraisal, lax in credit standards for borrowers, abuse of credit policies, poor portfolio risk management, inadequate lending requirements as well lack of attention to the changes in the economic and business environment have been linked to the ever growing volume of Non - Performing Loans(NPLs) which in turn affects profitability and business sustainability. To further understand the extent of loan portfolio quality at the bank, the researcher conducted interviews on the question, what are the various indicators of loan portfolio quality adopted by the bank? The participants in response submitted that,

“....the set performance threshold of NPA of 3.5% and PAR of 5% as maximum acceptable risk together with the classification of loans as performing, substandard,

loss(provisioning) and adaptation of IFRS...”were key indicators of loan portfolio quality at the bank.

4.3 Correlation Results between the study variables

After generating the descriptive statistics, the researcher performed correlations between the measures of the credit risk management and loan portfolio quality aimed at establishing the relationship between the variables. This was done by employing Pearson’s two tail statistic which revealed the following results in line with the study objectives.

4.3.1 Correlation between Risk identification and loan portfolio quality at Centenary Bank

The results contained in table 4.5 indicate that there exists a strong positive and significant relationship between Risk Identification and Loan Portfolio quality at the bank indicated by a correlation coefficient of $r = 0.565^{**}$; $p = 0.00$. This implies that the researcher is 99% confident that risk identification is positively and significantly related with loan portfolio quality and that varying risk identification by a unit results into a more than average change in loan portfolio quality.

Table 4.5: Correlations between Risk Identification and Loan Portfolio Quality

		Loan Portfolio Quality	Risk Identification
Loan Portfolio Quality	Pearson Correlation	1	.565 ^{**}
	Sig. (2-tailed)		.000
	N	162	162
Risk Identification	Pearson Correlation	.565 ^{**}	1
	Sig. (2-tailed)	.000	
	N	162	162

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

During interviews, the participants were asked the question, “what are the various tools employed by the bank to manage credit risk? In response they identified,

“...robust Management Information System to track loans from inception, rigorous assessment team (layers of approval limits set at different at different levels, credit administration team to track performance on a daily basis and action taken on cases going bad as well as presence of a recovery team set at legal department to monitor and follow up on bad credit...that work jointly to manage credit risk at the bank...”

4.3.2 Correlation between Risk Assessment and Loan Portfolio Quality at Centenary Bank

The results in table 4.6 reveal that there is a weak positive and significant relationship between risk assessment and loan portfolio quality indicated by a correlation value of $r = 0.225^{**}$; $p < 0.01$. This further implies that the researcher is 99% that risk assessment is positively and significantly associated with loan portfolio quality. It also implies that an adjustment in risk assessment by one unit results a 22.5% adjustment in loan portfolio quality.

Table 4.6: Correlations between Risk Assessment and Loan Portfolio Quality

		Risk Assessment	Loan Portfolio Quality
Risk Assessment	Pearson Correlation	1	.225 ^{**}
	Sig. (2-tailed)		.004
	N	162	162
Loan Portfolio Quality	Pearson Correlation	.225 ^{**}	1
	Sig. (2-tailed)	.004	
	N	162	162

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

4.3.3 Correlations between Risk Monitoring and Control and Loan Portfolio quality

The results contained in table 4.7 indicate that there exists a weak positive and significant relationship between risk monitoring and control and loan portfolio quality at the bank indicated by a correlation coefficient of $r = 0.197^*$; $p < 0.05$. The result thus imply that the researcher is 95% confident that risk monitoring and control has a weak positive association with loan

portfolio quality and that improving risk monitoring and control by one unit results into 19.7% change in loan portfolio quality.

Table 4.7: Correlations between Risk monitoring and control and Loan Portfolio Quality.

		Loan Portfolio Quality	Risk Monitoring and Control
Loan Portfolio Quality	Pearson	1	.197*
	Correlation		
	Sig. (2-tailed)		.012
	N	162	162
Risk Monitoring and Control	Pearson	.197*	1
	Correlation		
	Sig. (2-tailed)	.012	
	N	162	162

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

4.4 Regression Analysis

In order to determine the overall effect of the independent variable (Credit Risk Management) on the dependent variable (Loan Portfolio Quality), the researcher performed multiple linear regression on the examined measures of Credit Risk Management with Loan Portfolio Quality.

The results of the regression analysis carried out are presented in table 4.8 below.

Table 4.8 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.648 ^a	.419	.408	.76914910

a. Predictors: (Constant), Risk Assessment, Risk Control, Risk Monitoring

The model summary results contained in table 4.8 above indicate that on the overall, the examined measures of credit risk management explain 40.8% (***R – Square = 0.408***) of the variation in Loan Portfolio Quality. Therefore there is sufficient evidence that overall, measures of credit risk management are moderate in predicting loan portfolio quality of the bank and as such, the observed feedback appears to be averagely close to the fitted regression line. There are however other factors not studied during this research that account for the remaining 59.2%

including the moderating variables. To further the analysis, the researcher performed interviews on the question, “how has credit risk management Practices informed loan portfolio quality of the bank?”

The participants observed that,

“...over the years the bank has maintained a good level of acceptable non performing portfolio of under 5% in the last five years beating the industrial average of over 7%....”.

Relatedly, the researcher ran regression coefficients to ascertain the effect of the individual tenets of credit risk management on loan portfolio quality which revealed the results presented in table 4.9 below.

Table 4.9: Regression Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.886E-17	.060		.000	1.000
Risk Identification	.803	.085	.803	9.475	.000
Risk Monitoring and Control	-.360	.084	-.360	-4.262	.000
Risk Assessment	.162	.061	.162	2.662	.009

a. Dependent Variable: Loan Portfolio Quality

In a similar manner, the findings contained in Table 4.9 above clearly reveals that Risk Identification at the bank has the highest positive contribution to loan portfolio quality indicated by $\beta = 0.803$. This implies that Risk identification is strong predictor of loan portfolio quality at Centenary Bank. The findings further imply that improving risk identification by 100% results into 80.3% improvement in loan portfolio quality. This is followed by Risk assessment which contributes 0.162 to loan portfolio quality while risk monitoring and control negatively predicts loan portfolio quality with $\beta = -0.360$ net contributions.

It therefore implies that unit improvement in risk identification results into a 0.803 improvement in loan portfolio quality while a unit adjustment in risk assessment results result into 0.162 improvement in loan portfolio quality. On the other hand, a unit change in credit risk monitoring and control predicts a reduction loan portfolio quality by -0.360.

4.6 Conclusion

Going by the results of the regression model in tables 4.9, it can be concluded that credit risk management explains 40.8% of the variation in loan portfolio quality at Centenary Bank. Further still, much as there exists a positive relationship between all the dimensions of the Independent variable (risk identification, risk assessment and risk monitoring and control) and the dependent variable, there is sufficient evidence to conclude that only risk identification coupled with risk assessment have a positive effect on loan portfolio quality by facilitating and fostering recovery of the disbursed sums of money. On the contrary, the efforts given to risk monitoring and control as a means of reducing the risk exposure that the bank faces appear to be counterproductive as over concentration on risk monitoring has a negative effective on the bank's loan portfolio quality.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary, conclusions and recommendations arising from the study findings guided based on study objectives. It also presents highlights for further research areas that could be explored by other prospective scholars.

5.1 Summary of the findings

The study examined the effect of credit risk management on loan portfolio quality in Commercial banks in Uganda; a case of Centenary Bank and employed a total of 201 respondents who were employees of Centenary bank in all departments associated with credit risk management. At the end of the data collection process, 162 questionnaires were returned representing a response rate of 80.6%. A summary of the findings from each objective is presented hereunder;

5.1.1 Risk Identification and Loan Portfolio Quality

With a global mean of 3.483 and standard deviation of 0.8213, it implies that respondents on the overall seemed to agree that risk identification is relatively done well at the bank aimed at improved loan portfolio quality. A global standard deviation of 0.8213 however points to a relatively high variation amongst the views of the respondents about the statements on risk assessment at the bank and might negatively impact on data reliability. A correlation value of $r = 0.565$; $p < 0.01$ also revealed presence of a strong positive relationship between risk identification and loan portfolio quality while regression analysis results ($\beta = 0.803$) indicates that risk identification is a strong predictor of loan portfolio quality.

5.1.2 Risk Assessment and Loan Portfolio Quality

Under this objective, a global mean of 2.9775 indicates that it could not be ascertained whether risk assessment contributed to loan portfolio quality at Centenary bank. A standard deviation of 0.884 however points a relatively high variation regarding the aggregated opinions of respondents on the various statements used to measure risk assessment at the bank. A correlation of $r = 0.225$; $p < 0.01$ however indicates presence of a weak positive and significant relationship between the two variables. Further still, results of regression analysis reveal that risk assessment is a weak predictor of loan portfolio quality as indicated by $\beta = 0.162$. Thus a 100% change in risk assessment translates into only 16.2% change in loan portfolio quality.

5.1.3 Risk monitoring, Control and Loan Portfolio Quality

A summary of the findings under risk monitoring, control and loan portfolio quality indicates that respondents seemed to the examined indicators of risk monitoring in informing loan portfolio quality given a global mean of 3.40. A global standard deviation of 0.88 however points to a relatively high variation with regards to the opinions of the respondents on statements formulated to measure risk assessment at Centenary Bank. Correlation results further reveal that risk monitoring and control has a weak positive and significant relationship with loan portfolio quality indicated by a correlation value of $r = 0.197$; $p < 0.05$. On running regression however, it emerged that risk monitoring and control ($\beta = -0.360$) negatively contributed to loan portfolio quality at Centenary Bank.

5.2 Conclusion

Going by the study findings, the researcher concludes that all the examined measures of credit risk management in the study are positively and significantly associated with loan portfolio quality. However, risk identification and risk assessment positively contribute to loan portfolio quality with risk identification having a very high positive contribution to loan portfolio quality while risk assessment predicts just too little of loan portfolio quality. On the other hand, risk monitoring and control negatively contributes to loan portfolio quality at Centenary Bank.

5.3 Recommendations

The following recommendations are fronted;

Since all the examined measures of credit risk management covered in the study are positively associated with loan portfolio quality, management should strive to balance their application in selecting and addressing the key sources of credit risk at the bank for improved loan portfolio quality.

Further still, the bank should optimize risk identification practices particularly through authenticating the information generated from clients, identifying the risks associated with repayment ability, collateral, loan tenure and total debt exposure among others. This is because risk identification is having the highest positive contribution to improving loan portfolio quality.

The bank should also invest in risk assessment by appraising repayment ability, collateral and other augmented third parties that together harness the quality of the loan portfolio. This is because risk assessment has a positive contribution to loan portfolio quality.

With regard to risk monitoring and control, management of the bank should focus maximum efforts to activities that lead to granting a loan. This is because a loan usually goes bad at

appraisal stage and hence monitoring may hardly change what is messed up during the preamble to reaching a loan a decision.

Further still, feedback from the interviews on the question, **what advice would you give to the bank as regards improving loan portfolio quality?**” revealed,

“...quality and training of the human resources involved in the credit management is critical to improving loan portfolio quality; formation of clients through financial literacy trainings on money management, savings management, budgeting and financial planning as well; retraining staff on proper micro credit appraisal, assessment and documentation as well as continuous monitoring and tracking of both performing and non-performing loans culture needs to be redefined taking into account disbursement targets...”.

5.4 Areas for Research

The researcher recommends that further research be carried out in the following fields namely;

1. Credit risk Management and financial performance of commercial banks in Uganda
2. Budgetary Management and Financial Performance of commercial banks in Uganda
3. Interest rate risk management and Loan portfolio quality in commercial banks in Uganda

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APPENDICES

APPENDIX I

Questionnaire for credit staff and staff in sections associated with credit risk at Centenary Bank

Dear respondent,

My name is **OWORA Adolf** undertaking a study about the “**Effect of Credit Risk Management on Loan portfolio Quality of Commercial Banks in Uganda; A case of Centenary Bank**”. Your responses to the questions contained in here will assist the researcher in making the study a success and conversely will be treated with utmost confidentiality and equally will be used for academic purposes only. Your contribution to this study will be highly appreciated.

Thank You.

Instructions

Please indicate your answer by ticking **OR** circling the option you consider the most appropriate choice.

SECTION A: DEMOGRAPHIC CHARACTERISTICS

1 Gender: Male ☐ Female ☐

2. Age in years

A). Less than 25	B) 25 – 34	C) 35 – 44	D) 45 – 54	E) ≥ 55
☐	☐	☐	☐	☐

3. Academic qualification held

Diploma ☐ Bachelor's Degree ☐ C) Master's Degree ☐ others, specify ☐

4. Position held at the bank

A) Credit officer ☐ B) Risk Manager ☐ C) Credit Analyst ☐

D) Branch Manager ☐ E Credit Manager ☐ Other. Specify ☐

5. Department of Respondent

A) Credit [☐] B) Operations [☐] C) Risk and Compliance [☐] D) Internal Audit [☐]

6. Working experience at the bank

a) 1 – 5 years [] b) 6 – 10 years [] c) 11 – 15 years[] d) above 15 years[]

SECTIONB: CREDIT RISK MANAGEMENT

*In the following sections, please indicate your response by ticking the most appropriate choice
(1 = Strongly Disagree; 2= Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree)*

S/N	PART ONE: CREDIT RISK IDENTIFICATION	1	2	3	4	5
CR1	The bank has a framework for credit risk identification					
CR2	The risk identification framework the guides the bank on the potential risks that surround its operations					
CR3	The bank trains staff to effectively identify the potential risks that surround its operations					
CR4	Risk identification is the initial stage the bank employs in managing credit risk					
CR5	The bank identifies risks associated with collateral choices					
CR6	The bank identifies risks associated with the loan tenure					
CR7	The bank identifies the risks associated with total debt exposure to customers					
CR8	During risk identification, the bank pays great attention to the quality of information gathered from customers					
CR9	The bank identifies the risks associated with the ability to pay					
CR10	The bank identifies the risks associated with capacity to pay					
CR11	The bank pays attention to risks posed by the business environment					
CR12	The bank pays attention to risks posed by the political environment					
S/N	CREDIT RISK ASSESSMENT	1	2	3	4	5
RA1	The bank has a framework for credit risk assessment					
RA2	The framework guides the bank on the assessment of the various credit risks					
RA3	The bank assesses credit risk by appraising the character of the prospective borrowers to pay					
RA4	The bank assesses the capacity of the prospective borrower to pay.					
RA5	The bank evaluates the collateral presented by the borrower					
RA6	The bank assesss the underlying economic environment for guiding a loan decision					

RA7	The bank goes ahead to appraise the guarantors presented by the borrower					
RA8	The bank pays attention to the past repayment history of the borrower.					
S/N	CREDIT RISK MONITORING & CONTROL	1	2	3	4	5
RM1	The bank has a framework on credit risk mitigation					
RM2	The framework guides the bank on how to mitigate various risks that threaten the credit function					
RM3	The bank charges collateral as a shield against the risk of default					
RM4	The bank defines acceptable levels of portfolio at risk (PAR)					
RM5	The bank registers mortgages and caveats on the collateral it accepts.					
RM6	The bank insures certain collateral choices comprehensively					
RM7	The bank insures all borrowers under the life insurance scheme					
RM8	The bank engages into rigorous loan monitoring					
S/N	SECTION C: LOAN PORTFOLIO QUALITY	1	2	3	4	5
FP1	The bank's loan portfolio cumulatively grows in volume every year					
FP2	The bank's loan portfolio quality is satisfactory and productive					
FP3	The bank's portfolio at Risk is always within limits of the statutory minimum					
FP4	The bank makes appropriate provisions for bad debts					
FP5	The bank's loan interest income to loan interest expense is healthy and competitive					
FP6	The bank has a sound liquidity position					
FP7	The bank's deposit to credit ratio is always in agreement with the statutory minimum					
FP8	The bank's loan portfolio quality is competitive compared with industrial standards					
FP9	The bank's profitability is not affected by written off loans					
FP10	The bank's NPL ratio is within acceptable limits					
FP11	The bank is solvent and is a going concern					
FP12	The earnings quality is competitive and attractive					

END

THANK YOU

APPENDIX II

Interview Schedule for Top Management and heads of Department at Centenary Bank

Dear Participant,

My name is **OWORA Adolf** undertaking a study about the “**Effect of Credit Risk Management on Loan Portfolio Quality of Commercial Banks in Uganda; A case of Centenary Bank**”. Your responses to the questions contained in here will assist the researcher in making the study a success and conversely will be treated with utmost confidentiality. Your contribution to this study will be highly appreciated.

Thank You.

Questions

1. What is your understanding of the term credit risk management?
2. What are the silent credit risks faced by the bank?
3. What are the various tools employed by centenary bank to manage credit risk?
4. What the various indicators of loan portfolio quality adopted by the bank?
5. How have credit risk management practices informed loan portfolio quality of the bank?
6. What advice would you give the bank as regards improving loan portfolio quality?

End

APPENDIX III: KREJECIE & MORGAN SAMPLE SIZE TABLES

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970