

**THE EFFECT OF CREDIT RISK MAGEMENT ON THE FINANCIAL  
PERFORMANCE OF COMMERCIAL BANKS IN RWANDA**

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**DECLARATION**

This research project is my original work and has not been presented for an award of a degree in any other University.

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## **DEDICATION**

I dedicate this study to my dear husband for all the support given all the time as I prepared and worked on this project.

## **ABSTRACT**

The objective of this study was to establish the effect of credit risk management and Financial Performance of commercial banks in Rwanda. The study had four specific objectives of establishing how credit risk identification, credit risk analysis and assessment, credit scoring mechanism and risk monitoring affect financial performance of commercial banks in Rwanda. The study adopted a descriptive research design which assisted to examine the effect between regulation and financial performance of commercial banks. The sample size as well as the population of the study was eleven commercial banks. The response rate was a 100% which comprised 11 commercial banks. Data was gathered using a data a questionnaire and analysed using SPSS 17.

The overall finding and conclusion of the study was that all the measures of credit risk management used in this study are highly significant predictors of financial performance of commercial banks in Rwanda except risk monitoring. The credit risk identification was found to be significant in explaining profitability of commercial banks in Rwanda. The credit risk scoring and credit analysis and assessment also found to be significant to explain the financial performance . Based on the findings another study can be conducted in Rwanda but should really explain expand the variables of credit risk management that affect financial performance of commercial banks.

Well management of credit risks a key pillar of financial institution operations in Rwanda and by extension pillar to financial prosperity and stability. The study recommends the Government of Rwanda to develop policy and legal environment that is conducive to association of financial institutions.

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## **LIST OF ABBREVIATIONS**

AMCON	Asset Management Cooperation of Nigeria
ATMS	Automatic Teller Machines
BCR	Banque Commerciale du Rwanda
BK	Banque de Kigali
BNR	Banque Nationale du Rwanda
BPR	Banque Populaire du Rwanda
CR-AE	Credit Risk Allocative Efficiency
CR-CE	Credit risk Cost Efficiency
CR-TE	Credit Risk Technique Efficiency
DEA	Data Envelopment Analysis
FIs	Financial Institutions
GDP	Gross Domestic Product
GCC	Gulf Cooperation Council
MPT	Modern Portfolio Theory
MM	Modigliani and Miller
MENA	Middle East and North Africa
MFI	Microfinance Institutions
NPM	Net Profit Margin

S.A Société Anonyme

UBPR Union des Banques Populaires du Rwanda

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

The power of financial institutions especially commercial banks to create money is of great importance in business operations. Commercial Banks are the major Financial intermediaries in any economy and they are the major providers of credits to the household and corporate sector and operate the payment mechanism. They deal with both retail and corporate customers, have well diversified deposit and lending book and generally offer a full range of financial services. The policy of commercial banks to make money results in the elastic credit system that is necessary for economic progress at relatively steady rate of growth. Particularly, banks make profits by selling liabilities with one set of characteristics (a particular combination of liquidity risk and return) and using the proceeds to buy assets with different set of characteristics i.e. asset transformation. A modern financial management defines the business of banking as the measuring, managing and accepting of the risks. Under the definitions, the most important and uncertainty banks must measure, monitor and manage its credit risk. This hazard which is called the default risk is the danger that the counter party will default or not perform. With increased pressure on Banks to improve shareholders return banks have had to assume higher risk and at the same time, manage these risks to avoid losses. Recent changes in the banking environment (globalization, deregulation, conglomeration, etc) have posed serious risk challenges for banks but has also have offered productive opportunities (Saunders and Marcia, 2007).

Generally the aim of risk management is not simply to reduce or even to eliminate risk it is also viewed the process of recognition, measurement and control of risk that an investor faces. Indeed this may not be possible given various difficulties of measuring risk and the limitations of the instruments for controlling risks. Risk management must be of continuous process the composition of investor's portfolio and the risk of the assets therein, as well as the objectives and constraints of the investor change overtime. However the need for risk management has increased sharply in the past three decades. The risk management has the purpose and the scope of insuring that Risk management ensures that the risk-taking part of investing is being carried

out in a controlled and understood manner. It is a continuous process change of the composition the investor's portfolio, the risk of the asset in the portfolio and the objectives and constraints of investors (Haim and Thierry, 2005).

### **1.1.1 Credit Risk Management**

The goal of credit risk management is to maximize a bank's risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters. Bank need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credit risk and other risks. The effective management of credit risk is a critical component of a comprehensive approach to risk management and essential to the long- term success of any banking organizations. The fundamental dilemma in managing credit risk is overcoming the agency or incentive problems between lenders as outsiders and borrowers as insiders. Banks that managed to successfully perform its credit risk management finally this had a positive impact on their financial performance what is a reverse in the opposite case (Haim and Thierry, 2005).

Credit Risk Management is inherent in banking and is unavoidable. The basic function of bank management is risk management. Banks assume credit risk when they act as intermediaries of funds and credit risk management lies at the heart of commercial banking. The business of banking is credit and credit is the primary basis on which a bank's quality and performance are adjusted. Credit risk is composed of default risk and credit mitigation risk. Default risk is the risk that the counterparty will default on its obligations to the investor. In this risk, the credit quality deteriorates (or default risk increases). Credit risk is more difficult to measure because data on both default and recovery rates are not extensive, credit returns are highly skewed and fat tailed and longer term time horizon and higher confidence levels are used in measuring credit risks. These are problems in measuring credit risk that have inspired the development of several sophisticated models and commercial software products for measuring portfolio credit risk (Haim and Thierry, 2005).

Credit risk is the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. Generally the credit risk is associated with traditional lending activities of banks and it is simply described as risk a loan not being repaid in part or in full.

However credit risk also can derive from holding bonds or other securities. All banks have their own credit philosophy established in a formal written loan policy that must be supported and communicated with an appropriate credit culture. A credit culture is successful when all employees in the bank are aligned with the management's lending priorities (Hempel and Simonson, 1999).

Credit risk is the most important area in risk management. It arises from non performance by a borrower either inability or unwillingness to perform in the pre-committed contract manner. According to Greuning, 2003 more than 80% of all bank balance sheet relate to credit. This affects the lender holding the loan contract as well as other lenders to the creditor (Caoutte, Altman and Narayanan, 1998). All over the world exposure the credit risk has led to many banks failure. Credit risk exposure particularly to real estate led to widespread banking problems in Switzerland, Spain, the United Kingdom Sweden, Japan and others .The Basel states that credit risk is one of the major financial risks that commercial banks face. It is described as the risk to have losses because counterparty is not capable to carry out its obligations according to the term of agreement. Sometimes losses occur even when the counterparty does not breach the contract, but there are certain signs showing increasing probability of borrower's insolvency (e.g. downgrade in credit ratings of the borrower). Credit risk is one of the key for the bank's failure to not properly manage it may lead to insolvency and bankruptcy of a Financial Institution (Basel, 2002).

It is the ability of an organization to accomplish an important goal, purpose or mission (Gregory and Neal, 1990). Credit risk management has a big impact on the life of a bank and if the right policies are chosen and are wrongly implemented, then objective achievement becomes a default task. As said, the way that a bank manages its credits affect its financial performance.

To accomplish credit risk management duties and responsibilities the institution must understand its financial analysis, loan documentations, servicing, loan covenants and environmental analysis. It must also maintain sound records on the credit performance of its portfolios of risky assets because any change in underwriting; laws and regulations can significantly alter its loan loss experience (Kenneth and Thygerson, 1995).

When credit risk well managed therefore, it can finally lead the organization to the effective performance which is the goal of FIs and this must be achieved by applying credit management tools and techniques that are able to help in monitoring credits and evaluating returns from the risk bearde.

### **1.1.2 Financial Performance**

The significant changes that have occurred in financial sector industry in all advanced economies have increased the importance of financial performance analysis for modern banks. The new operating environment is characterized by more intense competition and a movement towards increasingly market – oriented banking systems. It is not surprising that the increased riskiness of the environment in which banks operate has increased the need for prudential regulations. Performance analysis is an important tool used by various agents operating either internally to the banks (e.g, managers) or who form part of bank’s external operating environment (e.g, regulators) (Casu, 2006).

The financial performance of commercial banks is of great importance on its future operating activities. The financial performance of any institution cannot be found without analyzing its financial statements as the financial analysts in United States, United Kingdom, and New Zealand have consistently given the corporate annual financial report the highest ranking as the most important source of information. Financial statements (Statement of Financial Position, and Statement of Comprehensive Income) obviously play a major role in a fundamental approach to security analysis. Among the items of potential interest to the analysis, financial ratios are the key parts of financial statements. The first thing to know about the financial performance is the profitability before turning to the debt and liquidity analysis. Recall that the ability of financial institutions to produce dividends and capital gains in the future is what gives stock its value. The ability to make timely interest payments does not compare with the ability of a firm to be profitable. However, once the firm’s profitability has been assessed, then financial institutions can meet their current and future obligations (Haim and Post, 2005).

Financial performance measures derive directly from the income statement. Banks performance is calculated using ratios analysis and assessed with the aim of: (1) looking at current and past

trends; and (2) determining future estimates of bank performance. Profitability ratios are the key measures of the financial performance.

Profitability ratios typically used in commercial banking are ROE (Return- on- equity) which is probably the most important indicator of a bank's profitability and growth potential. It is the percentage return to shareholders. ROA (Return- on- Assets), which indicates how much net income is generated per dollar of asset and NPM (Net profit margin) which is the net interest margin and measures the net interest income relative to the bank's total, average or earnings asset. It measures the bank's spread per dollar of asset. High NPM suggests that the difference between deposit rates and loan (+ other interest earnings assets) rates are high which makes stable the banking sector and vice versa. However, a higher net profit margin could reflect riskier lending practices associated with substantial loan loss provisions and could be an indication of inefficiency in the banking sector. NPM has been falling in many banking markets reflecting increased competition in the deposits and loan markets. (Casu, 2006).

The drawback of accounting ROE and ROA measures, and of the P&L of the trading portfolio, is that they do not include any risk adjustment. Hence there are not comparable from one borrower to another, because their credit risk differs, from one trading transaction to another, and because the market varies across products ( Bessis, 2005).

### **1.1.3 Effect of Credit Risk Management on the Performance of Commercial Banks**

Commercial banks and other financial institutions that exist primarily to lend money to business, to individuals, governments, and other entities but the bulk of their profits come from business loans (Gallagher, 1989).

Cultivating good loan customers and using credit-risk analysis to ensure that borrowers are credit worthy is central to a bank's long term profitability. The profitability of the lending institutions is heavily dependent on its lending programs'. In brief, lending is the most important banking financial institutions activity; it represents the largest commitment of funds for depository financial institutions and produces the greatest share of total revenue generated from earning assets. Thus lending programs must be well done and managed to affect the bank's profitability



positively because poor management of credits is one of the major causes of bank's failure, and the precision here is that profitability is the ultimate determinant of an organization's success or failure (Hubbard, 1997).

Without good Credit Risk Management companies cannot earn profit because this one leads to the company's profitability. In such a way in managing credit risk effectively a lending institution must analyze some details as who is the client? What is the type of credit requested? What is his capacity to repay the credit given, how will he repay?

All these are some of the elements of an effective credit management which aim at limiting risks which can appear when the client fail to accomplish his obligations of repaying loans , which may affect the profitability of a financial institutions like banks or any other lending institution. After this, the researcher described methods used to analyze data and limitations encountered during the research process.

#### **1.1.4 Commercial Banks in Rwanda**

According to the World Bank report (1991), it is foreigners who established commercial banking in Rwanda. By 1991, those commercial banks in Rwanda were dominated by two commercial banks: BCR established in 1963 and BK established in 1967, and in the recent years the BPR has become one of them it had changed to the Banque populaire du Rwanda SA on the 5<sup>th</sup> January 2008 but actually other commercial Banks have increased. The main sources of funds of these banks are private domestic deposit and credit market borrowing. Modern Banking has been practiced for over 50 years. Commercial banks in Rwanda have grown both in number, branches, and in a variety of services by offering like loans, credits, and 'debit card services, and the introduction of automatic teller machines (ATMs), electronic banking and other services (Lyaga, 2006).

Rwanda banking sector has therefore several opportunities for investment into mortgage banks to enhance access to property, agricultural banks to offer much needed agricultural credit to farmers and introduction of new financial products including leasing and venture capital to minimize hardships of opening business as well as its continued successful operations. Rwanda now part of

the East African Community, some major banks in the region have joined the market and are operating in Rwanda. The main foreign bank with major activities in Rwanda is KCB (Kenya Commercial Bank).

More recently, most commercial banks in Rwanda have centered their operations on trade finance as opposed to long-term debt financing. This change in banking services in Rwanda has triggered off to lack of productive investment activity, though there is urgent need to focus attention on the reform and strengthening of the financial sector in this fast developing nation. These appeals for introduction of more banks, financial products and capital market.

The banking industry in Rwanda, has experienced several upheavals that have lead to several reforms in the industry. The reforms are reflected in the 2009 Banking Act and its amendments, Central Bank Act 2009, and other FIs regulations. FIs in Rwanda also have made heavy investment in Information technology so that to help in performing banking operations.

Commercial banks in Rwanda try to help the population by offering credits to them. This is a way of increasing the economic development of the country as during late years Rwanda has faced different challenges such as 1994 Genocide, the overall 12-months inflation rise from 21.9 percent in January 2009 to 25.1 percent in February 2009 due to increase in prices of most seasonal food products. The 12-months underlying inflation was 8.7 percent in February 2009 and this inflation is likely to erode the public purchasing power which can force people and other business operating organizations to borrow from banks in order to cover the lack of sufficient capital in their operations. (Central Bank of Rwanda 2010)

Between 2007 and 2010, Rwanda's banking sector faced dramatic turbulence. "The banking sector at the end of 2008 was suffering from high levels of Non-Performing Loans [bad loans], lack of liquidity [lack of cash], poor infrastructure, high operating losses and bad controls," said the Managing Director of Rwanda Commercial Bank (BCR) Anand Sanjeev. Domestic credit also went down significantly, as banks lacked cash to lend out, leaving the economy to contract below 7%. Banks, according to Anand, also held back on large extensions of credit and focused internally to fix the internal shocks, which eventually helped to lay foundation for an improvement in performance. In 2010, when the economy regained strength, the banking sector

began to blossom again, albeit slowly. By 2011, the banking sector turned a profit, liquidity levels went up and the capacity to handle risks increased significantly.

When presenting the monetary policy and financial stability statement on Feb 9, 2012, the Governor of the National Bank of Rwanda (BNR)--the banking sector's regulator--Claver Gatete said that the sector was "liquid, well-capitalized and profitable." This literally means that banks have capacity to deal with demand for cash, and that their investment and cash holdings are healthy and they are bringing good returns to their shareholders.

The banking sector remains the strong driver of growth in the financial sector, which also includes the pension sector, insurance and microfinance sectors. The National Bank indicates that the banking sector dominated the financial sector, controlling over 73% of the total assets. According to the National Bank, the sector, which is comprised of nine commercial banks, including the new entrant Equity bank from Kenya, one development bank, three microfinance banks and a cooperative bank, has shown a growth in assets, profits and the capacity to deal with external shocks.

The growth in the banking sector witnessed an increase in profits by 42.4% to Rwf 22.8 billion 2011 from Rwf 16 billion in 2010, according to the National Bank. Commercial Banks and specialized banks saw a 24.5% growth in assets to Rwf 1, 083.3 trillion in 2011 from Rwf 869.8 billion a year before, driven mainly by the entry of Equity bank and upgrading of two big Microfinance Institutions (MFIs) to microfinance bank status. Commercial banks and specialized banks assets accounted for 82.2% of the total assets of the banking sector, which could be explained by the increased consumption of the formal banking services in the Rwandan community. The national bank statistics indicate that the increase in banking sector assets was boosted by loans and advances (53.8%).

## **1.2 Research Problem**

The aim of every banking institution is to operate profitably in order to maintain its stability and improve in growth and expansion. For most people in commercial banking, lending represents the heart of the industry. Loans are the dominant asset at most banks, generate the largest share of operating income, and represents the bank's greatest risk exposure. Banking sector in Rwanda has faced various challenges that include non-performing loans and fluctuations of interest rate among others, which have threatened the bank stability. According to Bessis (2005) Credit Risk Management is important to bank management because banks are 'risk machines' they take risks; they transform them and embed them in banking products and services. Risks are uncertainties resulting in adverse variations of profitability which shows the Financial Performance or in losses that show the bank's failure.

A study by Tang and Jiang, (2003) about the profitability of the banking sector, they found that both Bank specific as well as macro- economic factors are important determinants in performance of Banks. From a sample of four Banks in Hong Kong, Tang and Jiang highlights that macro economic factors, real GDP growth, inflation and interest rate have a positive impact. Among Bank specific variables the research identifies operational efficiency and business diversification contribute to higher Return on Assets, after controlling differences in credit quality of loans. They enlist provision for bad debts and non interest expenditure as the major factors influencing banks' financial performance in Hong Kong. In conclusion the researcher argue that controlling bad debts through prudent Credit Risk Management leads to a more efficient Bank and thus higher profitability.

The Nigerian banking industry has been strained by the deteriorating quality of its Credit Assets as a result of the significant dip in equity market indices, global oil prices and sudden depreciation of the naira against global currencies ( Banking Report, 2010).The poor quality of the banks' loan assets hindered banks to extend more credit to the domestic economy, thereby adversely affecting economic performance. This prompted the Federal Government of Nigeria through the instrumentality of an Act of the National Assembly to establish the Asset Management Corporation of Nigeria (AMCON) in July, 2010 to provide a lasting solution to the recurring problems of non-performing loans that bedeviled Nigerian banks. According to Ahmad

and Ariff (2007), most banks in economies such as Thailand, Indonesia, Malaysia, Japan and Mexico experienced high non-performing loans and significant increase in credit risk during financial and banking crises, which resulted in the closing down of several banks .

While the above research outcome provides valuable insights on Credit Risk Management, they have not introduced a clear effect between Credit Risk Management and Financial Performance of Commercial Banks. Given the gap poised by the above empirical studies, and also considering some challenges faced by Commercial Banks in Rwanda such as non-performing loans and fluctuation of interest rate, it is important to conduct the study about credit risk management as it is essential that banks manage credit risks so as to reduce losses and ensure continued existence in the long term. Credit risk management is important and necessary for banks, it enables ensuring that a transaction or business is appropriate from a risk return perspective.

From the above research gap found in the empirical studies, this study poses the research question: ‘What is the effect of credit risk management on the performance of commercial banks in Rwanda?’ To answer the above question the study seeks to establish the effect of credit risk management to the financial performance of banks. The financial performance in this context viewed as the profitability. Therefore, profitability measures of financial performance will be applied in order to provide clear evidence on the problem.

### **1.3. General Objective**

To investigate the effect of credit risk management on the financial performance of commercial banks in Rwanda

### **1.4 Value of the Study**

It is anticipated that the findings from this study will be important to:

The banking industry will obtain information about credit risk management and its effect on financial performance and this information will particularly be important and useful to future investors in the industry and the senior management. This study also will be important to banks’ credit departments and senior managers as it will provide an insight into the image of banks’

financial performance towards its credit management efficiency and how to reduce exposure to the risk.

The government will obtain information on the importance of implementation of various legal frameworks in relation to credit risk management, developing policy papers, policy making regarding credits and other regulatory requirements of commercial banks in Rwanda.

The academicians will be furnished with relevant information regarding credit risk management and its effect on the financial performance of commercial banks. The study will contribute to the general knowledge and form a basis for further research.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter deals with various concepts in regards to the relationship between credit risk management and financial performance of commercial banks. In addition the researcher will discuss various empirical studies. Thoughts and ideas from different sources will be linked together to formulate a meaningful and magnificent material. Theories about credit risk management and financial performance will be developed in this chapter and finally, the summary of the literature review will be drawn.

#### **2.2 Theoretical Review**

The theoretical review aims at giving the meaning of a word in terms of theories of a specific discipline. It will contribute to a better understanding of the concept and help in assuming both knowledge and acceptance of theories that relate to Credit Risk Management and Financial Performance.

##### **2.2.1 Modern Portfolio Theory Model**

Modern portfolio theory was largely defined by the work of Markowitz (born in 1927) in a series of articles published in the late 1950s. The theory was extended and refined by Sharpe (1934), Litner (1916 1983), Tobin (1918), and others in the subsequent decades.

MPT is a theory of finance which attempts to maximize portfolio expected return for a given amount of portfolio risk, or equivalently minimize risk for a given level of expected return, by carefully choosing the proportions of various assets. Modern Portfolio theory was introduced by Harry Markowitz in his paper "Portfolio Selection," which appeared in the 1952 Journal of Finance. The portfolio theory integrates the process of efficient portfolio formation to the pricing of individual assets. It explains that some sources of risk associated with individual assets can be eliminated or diversified away, by holding a proper combination of assets (Bodie et al, 1999).

The fundamental concept behind MPT is that the assets in an investment portfolio should not be selected individually, each on their own merits. Rather, it is important to consider how each asset changes in price relative to how every other asset in the portfolio changes in price.

Investing is a tradeoff between risk and expected return. In general, assets with higher expected returns are riskier. For a given amount of risk, MPT describes how to select a portfolio with the highest possible expected return. Or, for a given expected return, MPT explains how to select a portfolio with the lowest possible risk (the targeted expected return cannot be more than the highest-returning available security, of course, unless negative holdings of assets are possible.) Therefore, MPT is a form of diversification. Under certain assumptions and for specific quantitative definitions of risk and return, MPT explains how to find the best possible diversification strategy.

The main benefit of forming portfolios is the potential to create combinations with lower risk and possibly higher expected returns that can be obtained from individual securities (Butterworths, 1990). Now consider the risk associated with individual security as the sum of two parts. One part is represented by risk factors that are truly unique (unsystematic risk) to the specific security. The other part is represented by factors that are essentially common with all other securities. For example, the potential for a key employee to leave the firm unexpectedly or the possibility of discovering gold under corporate headquarters are unique factors that are not shared with other firms (Michaud, 1998). On the other hand, risk factors concerning the potential for unexpected and rapid growth in the National (or International) economy that affect the operating costs for all firms represent example of common risk factors. While portfolio formation reduces the influence of unique risks associated with individual securities, it cannot eliminate exposure to common risk factors. Stated differently, properly constructed portfolios allow for diversification of unique risk, but not for systematic (market) risk (Markowitz, 1991).

In summary, portfolio management theory assesses risk and return relationships for combinations of securities. While the expected return of a portfolio is the simple weighted average of the expected returns of its component securities, portfolio risk must also consider the correlation among the returns of individual securities. Since part of the price fluctuation of a security is



unique, it does not relate to price fluctuations of other securities held. This allows the investor to diversify, or eliminate a portion of each security's risk (Michaud, 1998).

In Banking loans constitute the assets in the financials and therefore the theory can be used to expound on the needs of commercial banks forming a portfolio that cuts across different industries and businesses. The portfolio can be formed on the basis of purpose, time period, industry etc. The theory poses a number of gaps; the initial intent by Markowitz was to address the importance of investment portfolio for investors to spread risk when investing and not management of loan portfolio in banks. Some of the issues not addressed by the theory include; how banks can form a portfolio of loans that minimize risk and maximize return. It does not outline ways of determining a risk free portfolio. In addition the theory does not address various risks that are faced by banks when managing a loan portfolio. Therefore, the theory cannot apply holistically when managing credit risk in banks.

### **2.2.2 Capital Asset Pricing Model**

The Capital Asset Pricing Model (CAPM) was first developed by Sharpe (1964) and Lintner (1965). Sharpe and Lintner version of CAPM was based on the one period mean variance portfolio theory of Markowitz. The Markowitz assumes that investors are risk averse and only care about risk (variance) and return (mean) of theory one period investment return. Therefore investors chose mean variance –efficient portfolio, meaning that they either maximize the expected return, giving a certain variance of portfolio return or minimize the variance given a certain expected return. To obtain the CAPM in the basic form some assumptions need be fulfilled and are explained in the following:

Firstly, investors are risk adverse as in Markowitz Model and evaluate their investment only in terms of expected return and variance of return measure over the same single holding period.

The second assumptions is that Capital market are perfect meaning that all assets are indefinitely divisible, that no transactions cost, short selling restrictions or taxes occurs, that all investors can lend and borrow at the risk free rate and that all information is costless and available for everyone.

Thirdly, all investors have the same investment opportunities and finally, all investors estimate the same individual asset return, correlation amongst assets and standard deviation of return.

CAPM uses a measure of systematic risk that can be compared with other assets in the market. Using this measure of risk can theoretically allow investors to improve their portfolios and managers to find their required rate of return. The CAPM therefore is a demand-side model. Its results arise from the investors' utility function maximisation problem, and from the resultant market equilibrium. As investors can be considered to be consumers of the asset, the demand approach is reasonable but the model does not really demonstrate how banks can manage its loan risks and for this reason the model cannot apply when managing credit risks in banks.

### **2.2.3 Arbitrage Pricing Theory**

A substitute and concurrent theory to the CAPM is one that incorporates multiple factors in explaining the movement of asset prices. The arbitrage pricing model (APT) on the other hand approaches pricing from a different aspect. It is rarely successful to analyse portfolio risks by assessing the weighted sum of its components. Equity portfolios are far more diverse and enormously large for separate component assessment, and the correlation existing between the elements would make a calculation as such untrue. Rather, the portfolio's risk should be viewed as a single product's innate risk. The APT represents portfolio risk by a factor model that is linear, where returns are a sum of risk factor returns. Factors may range from macroeconomic to fundamental market indices weighted by sensitivities to changes in each factor. Factors may be economic factors (such as interest rates, inflation, GDP) financial factors (market indices, yield curves, exchange rates) fundamentals (like price/earnings ratios, dividend yields), or statistical (e.g. principal component analysis, factor analysis.) . APT model calculates asset pricing using the different factors and assumes that in the case market pricing deviates from the price suggested by the model, arbitrageurs will make use of the imbalance and veer pricing back to equilibrium levels. At its simplest form, the arbitrage pricing model can have one factor only, the market portfolio factor. This form will give similar results to the CAPM.

According to Defusco et al (2007) APT model based on following assumptions: relationship between expected returns and risk-factors is linear; a quantity of securities is close to infinite;

expectations of investors are identical; Stock markets are perfect (there are no transactions costs and competition is perfect); and finally, there are no arbitrage opportunities in the market among well-diversified portfolios. This theory therefore emphasizes on the portfolio investments but does not give a clear approach for banks to manage loan risks.

### **2. 3 Determinants of Financial Performance**

The financial performance of banks is expressed in terms of profitability and the profitability has no meaning except in the sense of an increase of net asset. Profitability is a company's ability to earn a reasonable profit on the owner's investment (Warren E. Buffett, 2005). Most organizations exist to earn profit and profitability ratios show a company's overall efficiency and performance. We can divide profitability ratios into parts: Profit margin and returns. Ratios that show margins represent the firm's ability to translate sales dollars into profits at various stages of measurement. Ratios that show returns represent the firm's ability to measure the overall efficiency of the firm in generating returns for its shareholders (Bessis, 2005). The most popular profitability measurements are: Profit margin on sale, Return investment ratios, and return on equity.

**Return On Asset** =  $(\text{Net Income} / \text{Total Assets}) * 100$

**Return On Equity** =  $(\text{Net Income} / \text{Total Equity}) * 100$

**Profit Margin** =  $(\text{Net Income} / \text{Net Sales}) * 100$

In accordance with the study by Waymond (2007), Profitability ratios are often used in a high stream as the indicators of credit analysis in banks, since profitability is associated with the results of management performance. ROA and ROE are the most commonly used ratios, and the quality level of ROE is between 15% and 30%, for ROA is at least 1%. Measuring profitability is the most important measure of the success of the business (Mishkin, 2002).

A business that is not profitable cannot survive. Conversely, a business that is highly profitable has the ability to reward its owners with a large return on their investment. Increasing profitability is one of the most important tasks of the business managers; these ones look for the way to improve profitability.

## **2.4 Empirical Review**

Credit Risk Management is a serious threat to the performance of banks; therefore various researchers have examined the effect of credit risk management on banks in varying dimensions.

Ahmed, Takeda and Shawn (1998) in their study found that loan loss provision has a significant positive influence on non-performing loans. Therefore, an increase in loan loss provision indicates an increase in credit risk and deterioration in the quality of loans consequently affecting bank performance adversely.

Ahmad and Ariff (2007) examined the key determinants of credit risk of commercial banks on emerging economy banking systems compared with the developed economies. The study found that regulation is important for banking systems that offer multi-products and services; management quality is critical in the cases of loan-dominant banks in emerging economies. An increase in loan loss provision is also considered to be a significant determinant of potential credit risk. The study further highlighted that credit risk in emerging economy banks is higher than that in developed economies.

Ben-Naceur and Omran (2008) in attempt to examine the influence of bank regulations, concentration, financial and institutional development on commercial banks' margin and profitability in Middle East and North Africa (MENA) countries from 1989-2005 found that bank capitalization and credit risk have positive and significant impact on banks' net interest margin, cost efficiency and profitability.

Ngare (2008) conducted a survey of Credit Risk Management Practices by commercial banks in Kenya. The specific area of research were geared forward identifying the source of credit risk exposures in banks and strategies that the banks have adopted to monitor and mitigate against the credit risk exposures inherent in the operations of their business. To facilitate the attainment of the objectives of this study, questions were administered to credit risk managers and credit managers. From the study it was found that most banks use qualitative loan assessment methods to make credit granting decisions while liquidity runs on the borrowers' credit concentration and adverse trading by the borrowers were the main sources of credit risk among the banks in Kenya.

In addition, most banks were found to use loan diversification, banks guarantees and bank covenants to mitigate against credit risk.

Felix and Claudine (2008) investigated the relationship between bank performance and credit risk management. It could be inferred from their findings that return on equity (ROE) and return on assets (ROA) both measuring profitability were inversely related to the ratio of non-performing loan to total loan of financial institutions thereby leading to a decline in profitability.

In their study 'Credit Risk management and Profitability in Commercial Banks in Sweden' Juanjuann et al (2009) highlighted that credit risk management has effect on performance of the institution in order words on the profitability. The analysis further indicated that the impact of credit risk management on the financial performance is not the same on all (4) commercial banks sampled. Further the results of the study were limited to banks sampled and were not generalized for all the commercial banks in Sweden. The researchers used regression model to do the empirical analysis. The data was collected from the sample banks annual report (2000 - 2008).

Kithinji (2010) assessed the effect of credit risk management on the profitability of commercial banks in Kenya. Data on the amount of credit, level of non-performing loans and profits were collected for the period 2004 to 2008. The findings revealed that the bulk of the profits of commercial banks are not influenced by the amount of credit and non-performing loans, therefore suggesting that other variables other than credit and non-performing loans impact on profits. Chen and Pan (2012) examined the credit risk efficiency of 34 Taiwanese commercial banks over the period 2005-2008. Their study used financial ratio to assess the credit risk and was analyzed using Data Envelopment Analysis (DEA). The credit risk parameters were credit risk technical efficiency (CR-TE), credit risk allocative efficiency (CR-AE), and credit risk cost efficiency (CR-CE). The results indicated that only one bank is efficient in all types of efficiencies over the evaluated periods. Overall, the DEA results show relatively low average efficiency levels in CR-TE, CR-AE and CR-CE in 2008.

Kargi (2011) evaluated the impact of credit risk on the profitability of Nigerian banks. Financial ratios as measures of bank performance and credit risk were collected from the annual reports and accounts of sampled banks from 2004-2008 and analyzed using descriptive, correlation and regression techniques. The findings revealed that credit risk management has a significant impact on the profitability of Nigerian banks. It concluded that banks' profitability is inversely influenced by the levels of loans and advances, non-performing loans and deposits thereby exposing them to great risk of illiquidity and distress.

Epure and Lafuente (2012) examined bank performance in the presence of risk for Costa-Rican banking industry during 1998-2007. The results showed that performance improvements follow regulatory changes and that risk explains differences in banks and non-performing loans negatively affect efficiency and return on assets while the capital adequacy ratio has a positive impact on the net interest margin.

Al-Khouri (2011) assessed the impact of bank's specific risk characteristics, and the overall banking environment on the performance of 43 commercial banks operating in 6 of the Gulf Cooperation Council (GCC) countries over the period 1998-2008. Using fixed effect regression analysis, results showed that credit risk, liquidity risk and capital risk are the major factors that affect bank performance when profitability is measured by return on assets while the only risk that affects profitability when measured by return on equity is liquidity risk.

## **2.5 Summary of literature review**

The theoretical and empirical analysis found Credit Risk Management as vital in Management of Banks. All studies that tempted to analyze Credit Risk Management and Financial Performance from the empirical review are biased towards various methods and techniques of Credit Risk Management used by various Institutions. The studies described that Credit Risk management can contribute to the financial performance of Banks but did not establish a clear effect between Credit Risk Management and the Financial Performance it only stated credit as a factor influencing Financial Performance.

The theory analyzed has introduced a very important element in Banks. i.e, Risk and Return, and Holding portfolio of Assets to diversify risk. The theorists intention were to address investors of stocks in an equity market. i.e On how to maximize return while minimizing risks. Thus, the theories have not clearly explained the clear effect between Credit Risk Management and Financial Performance in Commercial Banks. From the literature review there are gaps identified and thus necessitating the Study.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter deals with how the research is to be conducted in order to achieve the stated objectives and it present the research design and methodology that has been used to carry out the research. It presents the research design, the population, and sample selection, sampling procedure, and research instruments, methods of data analysis and data collection and limitations encountered during the research process.

#### **3.2 Research Design**

Research design refers to the way the study is designed, that is the method used to carry out the research (Mugenda and Mugenda, 2003). The research design is the plan and structure of investigation so conceived so as to obtain answers of the research questions. The plan is the overall program of the research and includes an outline of what the investigator will do from writing the hypothesis and their operational implications for the final analysis of data. The essential of research design as an activity and time based plan, always based on the research questions, guides the selection of sources and types of information, a frame work for specifying the relationship among variables and outlines the procedure for every research activity (Muthee, 2010).

The research design as the outline plan or scheme that is used to generate answers to the research problems, it is basically the structure and plan of investigation (Mugenda and Mugenda, 2003). The researcher will use a descriptive research design. Descriptive research seeks to establish factors associated with certain occurrences, outcomes, conditions or types of behavior. This is deemed appropriate because the study will involve in depth a study of credit risk management and its effect on the financial performance of commercial banks in Rwanda which will help the researcher in describing the state of the real current situation of banks. A descriptive study will be undertaken in order to certain and be able to describe the characteristics of the variables of interest in a carried out study.



### **3.3 Population and Sample**

The population of interest in this study were all Commercial Banks registered by the BNR which is the Central Bank of Rwanda. The target population of the study considered 11 Commercial Banks as they fulfill all characteristics and legally accepted by the National Bank of Rwanda. A census was applied as the method of systematically acquiring and recording information from the given population.

### **3.4 Data Collection**

Data from the study was collected by the use of both primary and secondary data.

Primary Data: The study use structured questionnaires to elicit a wide range of baseline about credit risk management paradigm in Commercial Banks of Rwanda. The considered respondents are Credit Managers of each Credit Department. The purpose of this is diverse including seeking and understanding the relevant factors. The questionnaire will be divided into (2) parts. Part A aims at gathering background information about the respondent. Part B aims at getting the responses about credit risk management systems and its management approaches of each of the Commercial Banks.

Secondary data: This frequently involves the previous works from related articles including published Financial Reports from Commercial Banks and data related to those Banks available with the National Bank of Rwanda (BNR) annual reports on their performance.

### **3.5 Data Analysis**

Data analysis aims at fulfilling the research objectives and provided answers to the research questions. For the collected data to be understood by the common man easily, it needs to be analyzed. The research used qualitative and quantitative techniques in analyzing the data. After receiving questionnaires from the respondents the responses were edited, classified, coded and tabulated to analyze quantitative data using statistical package for social science (SPSS 17). Tables and charts were used for further representation for easy understanding and analyzes. The collected data will be thoroughly examined and checked for completeness and comprehensibility. The data was then be summarized, coded and tabulated. The findings from the analyzed data was

used to compare them with the financial information found from annual financial reports from each of the banks. The financial information was translated into form of percentages by using profitability ratios approach. Tables and graphical demonstrations was used to more illustrate a clear financial image. Finally after the comparison from all findings the conclusion was made by depicting the effect of Credit Risk Management on the Performance of Commercial Banks in Rwanda.

### **3.6. Data Reliability and Validity**

The reliability is understood as the extent to which results are consistent over time and an accurate representation of the total population under study and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable (Joppe, 2000). Joppe also agreed that validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are.

A pilot study was conducted by the researcher taking some questionnaires to banks' credit managers in Rwanda. From this pilot study the researcher was able to detect questions that need editing and those that are ambiguous. The final questionnaire was then printed out and used to collect data to be used for analysis.

#### **3.6.1 Analytical Model**

The inferential statistics was applied to establish a casual effect relating independent variables to the dependent variable. A linear regression of financial performance versus credit risk management was applied to establish the effect between variables. The model treats financial performance of commercial banks as the dependent variable while the independent variable is credit risk management.

The analytical model equation is represented in the linear equation below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where;

Y = Financial Performance as measured by Return on Assets ; ROA

$\alpha$  = Constant term (Total Assets)

$\beta$  = Beta coefficient

$X_1$  = Credit Risk analysis and assessment

$X_2$  = Credit Risk Identification

$X_3$  = Credit monitoring

$X_4$  = Credit Scoring mechanism

e = Error term

The significance of the analytical model was tested by the use of ANOVA statistical model which is the Analysis of Variance. A regression analysis was done to find out the relationship between Credit risk Management and Financial performance. Both the SPSS software and Microsoft Excel will be used to insure the accuracy of collected data about Credit Risk Management.

## **CHAPTER FOUR**

### **RESULTS AND DISCUSSION**

#### **4.1 Introduction**

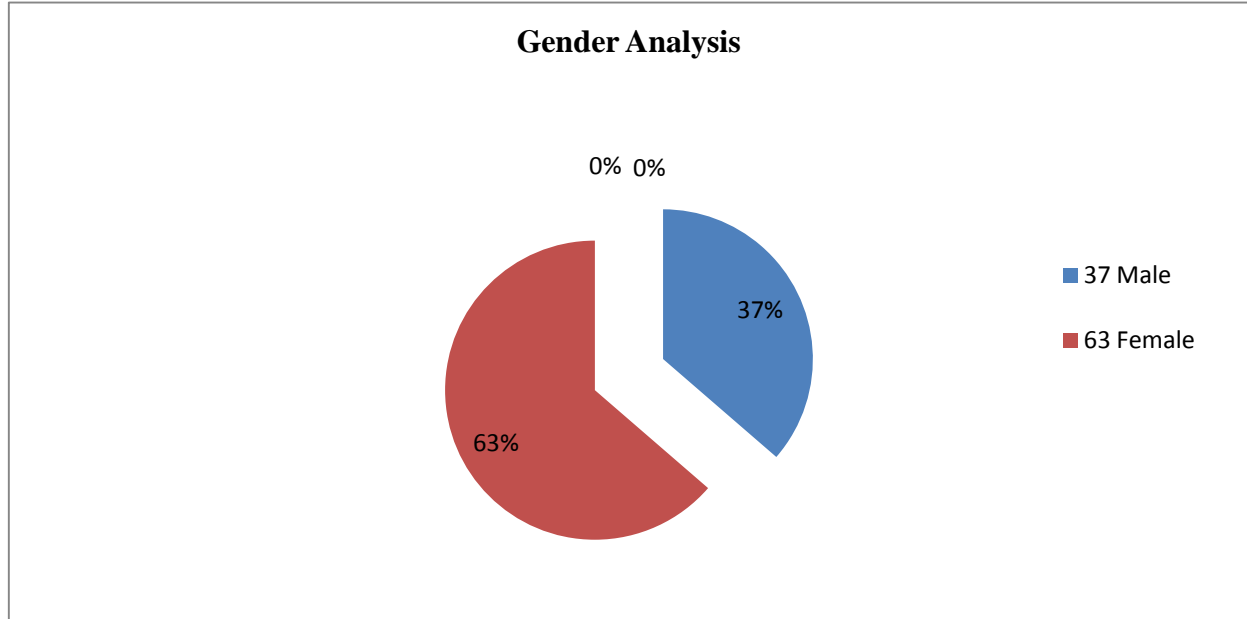
This chapter presents the analysis and discussion of the data collected in the field. The objective of this study was to establish if there is an effect of credit risk management on the financial performance of commercial banks in Rwanda. The target population was 11 credits managers commercial banks operate in Rwanda. This represented 100% response rate.

In this analysis all our respondents were the top credits managers of commercial banks , the study requested the respondents to state the period that they have been working in the organization in to make sure that the information given is relevant. From findings it was found out that respondents had worked for 17 years, 10 years, 7years, 4 years, 3 and 2 years.

### 4.1.1 Gender

The analysis of gender is as follows

**Figure 4.1.1. Gender analysis**



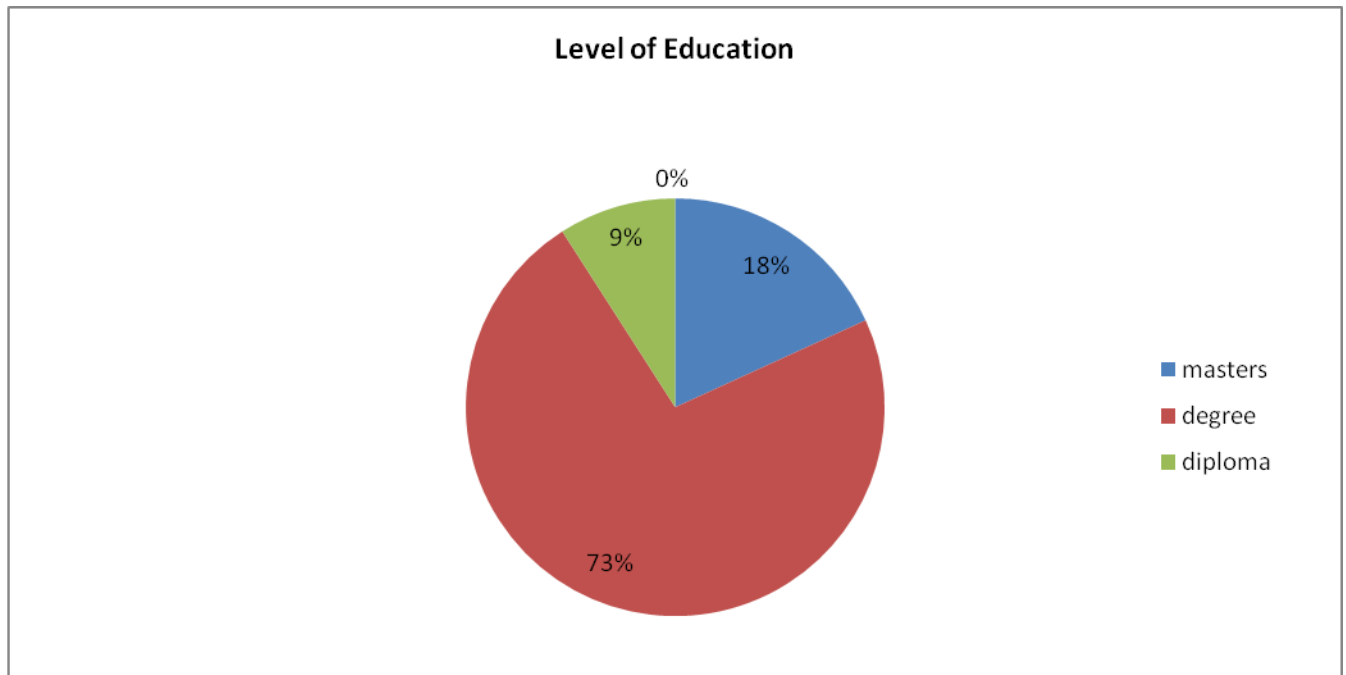
**Source: Research Findings**

Figure 4.1.1 above presents the distribution of gender 63% of the respondents were male while 37% were female. This shows that most of the respondents in our analysis who answered in the study were male.

### 4.1.2 Level of Education

In this study the respondents have different level education in the commercial bank. The study of their experience has helped us to analyze the effect of credit risk management on the financial performance. The following figure shows the level of education of the respondents.

**Figure 4.1.2 Level of education for respondents**

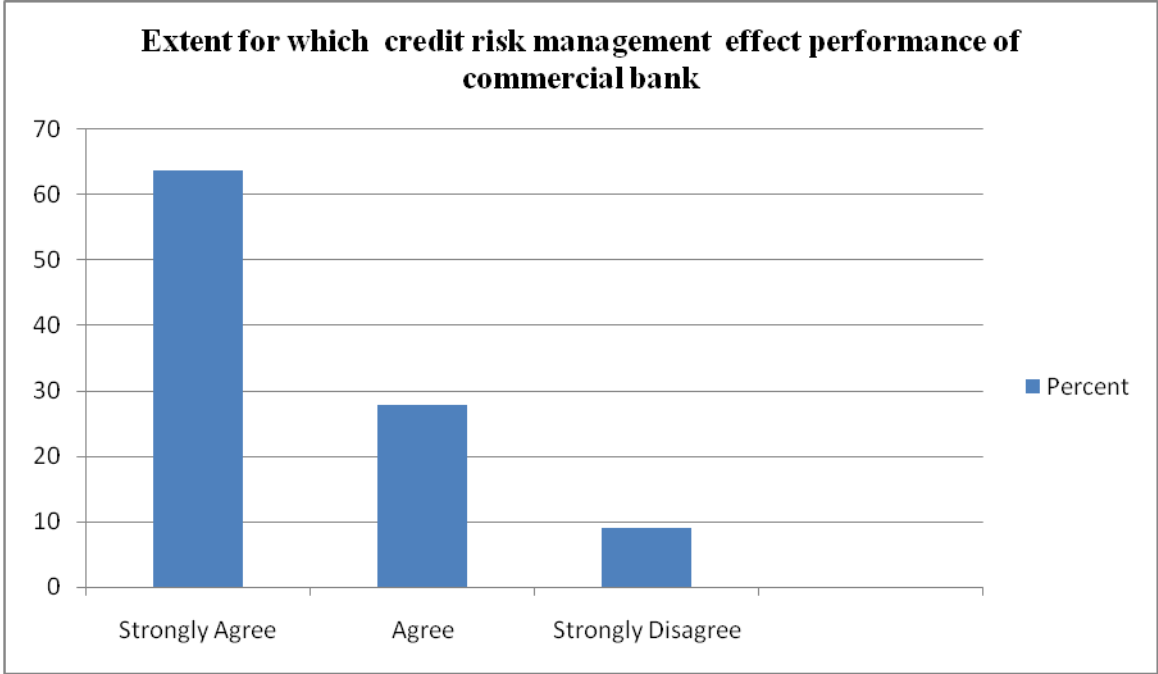


**Source : Research Findings**

This figure shows that majority of the respondents have degree level where they represented 73% then 18% represented the respondents with masters degree finally 9% represented the respondents with diploma level.

## 4.2 Credit Risk Management

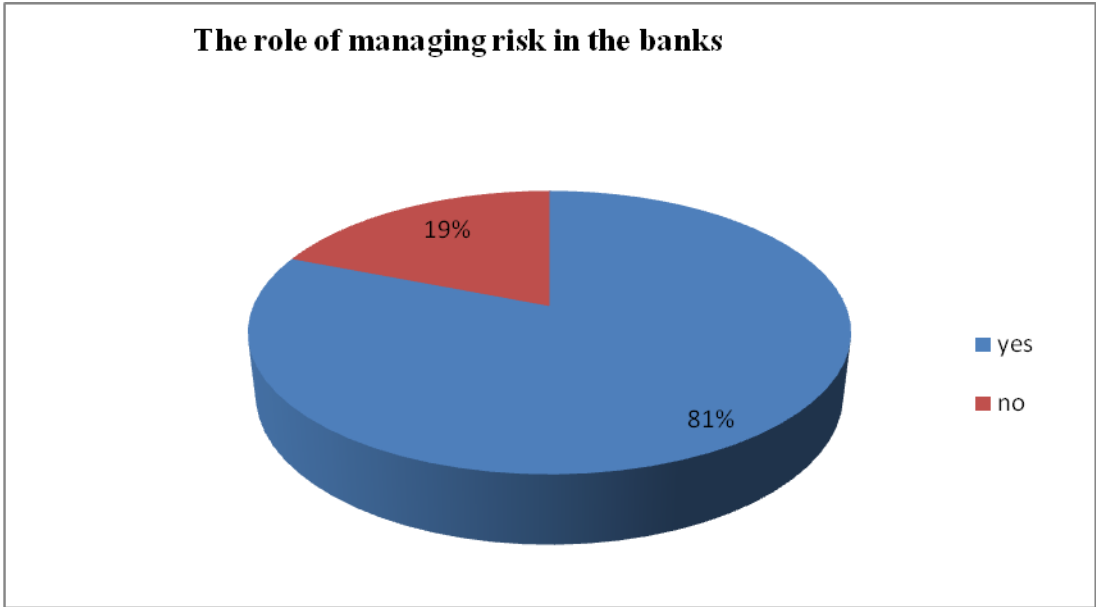
**Figure 4.2.1 Extent of agreeing that Credit Risk Management affect Financial Performance of Banks**



**Source: Research Findings**

The respondents were requested to indicate the extent to which credit risk management affect financial performance of commercial banks. From the findings, majority above 63% of the respondents strongly agreed that financial performance of commercial banks is affected by credit risk management. 27.7% of the respondents agreed that commercial banks needs to manage well credit risk in order to ensure the financial performance while 9% of the respondents which is the minority disagree the effect of credit risk management on the financial performance of commercial banks. This shows that the commercial banks needs to manage effectively credit risk for a purpose of enhancing financial performance of those financial institution.

**Figure 4.2.2 Whether is important of managing Credit Risks into your Bank**



**Source: Research Findings**

The figure above shows how the respondents think whether it was important for commercial banks to manage risk. From the findings it was found out that the majority of the respondents confirmed that it was crucial to manage credit risk as indicated by 81% while 19% of the respondents confirmed that it was really not crucial for the banks to manage credit risk.

Regarding the importance of managing credit risk the study indicated that these reduce cash loss and ensures the organization performs better increasing the return on equity. It was found that it helps the organization to operate more efficiently and more effectively.



**Table 4.2.1. Practices used by commercial banks in credit risk management**

	Frequency			% Yes
	Yes	No	Total	
Credit Risk Identification	8	3	11	0.73
Credit risk and assessment	6	5	11	0.55
Credit Scoring Mechanism	7	4	11	0.64
Credit Risk Monitoring	6	5	11	0.55

**Source: Researcher Findings**

From the findings in the above table the study found that the majority 73.3%, 64%,55%,55% of the respondents confirmed that banks adopted Credit Risk Identification, Credit risk and assessment, Credit Scoring Mechanism, Credit Monitoring as practices used by commercial to measure credit risk management.

**Table 4.2.2 Extent to which commercial banks in Rwanda consider Risk identification in credit risk management**

	Frequency	Percentage
Very great extent	8	0.73
Great extent	2	18,18
Moderate extent	1	9.09
Total	11	100

**Source: Research Findings**

The respondents were requested to indicate to which extent commercial bank in Rwanda consider risk identification in credit risk management. From the findings the majority said that their banks consider risk identification in credit risk management at 73% while 18.18% and 9.09% said that they consider risk identification greatly and moderately. This implied that risk identification was used as a credit risk management practices in commercial banks in Rwanda.

**Table 4.2.3 Extent to which commercial Banks consider Credit Scoring Mechanism process in risk management**

	Frequency	percentage
Very Great Extent	7	0.64
Great Extent	1	9.09
Moderate Extent	1	9.09
Little Extent	2	18.18
Not all	0	0.00
Total	11	100

**Source: Research Findings**

The respondents were requested to indicate the extent to which commercial bank consider credit scoring mechanism process in risk management. The findings shown that majority of the respondents 64% indicated that commercial banks in Rwanda consider credit scoring mechanism in their process of risk management to a very great extent. 9,09% indicated that commercial banks consider credit scoring mechanism process at great extent and moderate extent. Surprisingly 18,18% of the respondents indicated that credit scoring mechanism process is considered in risk management at a little extent.

**Table 4.2.4 Extent to which commercial Bank consider Credit Analysis and Assessment process**

	Frequency	percentage
Very Great Extent	6	54
Great Extent	2	18.18
Moderate Extent	1	9.09
Little Extent	2	18.18
Not all	0	0.00
Total	11	100

**Source Research Findings**

The respondents were requested to indicate the extent to which commercial bank consider credit analysis and assessment process in risk management. The findings shown that majority of the

respondents 54% indicated that commercial banks in Rwanda consider credit analysis and assessment in their process of risk management to a very great extent. 18.18% indicated that commercial banks consider credit analysis and assessment process at a great extent. 9.09 % of the respondents indicated that credit analysis and assessment process is considered in risk management at a moderate extent while 18.18% consider the process at a little extent.

**Table 4.2.5 Extent to which commercial Banks consider Risk monitoring in risk management**

	Frequency	percentage
Very Great Extent	6	54
Great Extent	3	27.27
Moderate Extent	2	9.09
Little Extent	0	0.00
Not all	0	0.00
Total	11	100

**Source: Research Findings**

The respondents were requested to indicate the extent to which commercial bank consider Risk monitoring process in risk management. The findings shown that majority of the respondents 54% indicated that commercial banks in Rwanda consider Risk monitoring in their process of risk management to a very great extent. 27.27% indicated that commercial banks consider Risk monitoring process at a great extent. 9.09 % of the respondents indicated that Risk monitoring and assessment process is considered in risk management at a moderate extent.

**Table 4.2.6 Period to which commercial Banks decide that a client has defaulted on Loan/ Credit repayment**

Period	Not at all	Least	Moderate	Most used	N
One month late payment	1	5	2	3	11
More than 12 months payments	0	2	3	6	11
Using supervision on one to one basis	2	0	1	8	11

**Source: Research Findings**

The respondents were requested to indicate the time of decision on whether the client has defaulted on loan payment. Regarding the findings most of the respondents agreed to a great extent that a client is said to have defaulted the loan after more than 12 month late. The study found that most of the respondents agreed that client default loan payment after using supervision one to one basis. To the question regarding.

The study found the approaches that are used by the banks in screening and risk analysis before awarding credit to clients. From the findings, most of the respondents revealed that capacity/ competition and conditions are the approaches mostly used in screening and risk analysis. They are two other approaches mentioned which are character and collateral or security these are two other crucial approaches used by bank to award credit to a client.

### 4.3 Regression Analysis

In the following analysis a multivariate model was applied to find out the effect of credit risk management on financial performance of commercial bank in Rwanda. A linear regression model of commercial bank represented by return on asset versus credit risk management was applied to examine the relationship between the variables. The relationship model was represented in the linear equation below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Y = Financial Performance (Return on asset)

$\alpha$  = Constant term

$\beta$  = Beta coefficient

$X_1$  = Credit Risk analysis and assessment

$X_2$  = Credit Risk Identification

$X_3$  = Credit monitoring

$X_4$  = Credit Scoring mechanism

**Table 4.3.1 Model Summary – Goodness of Fit**

Indicator	Coefficient
R	0.993
R Square	0.986
Adjusted R Square	0.976
Std. Error of the Estimate	0.062

Table 4.3.1 shows the output for model fitness. The R coefficient of 0.993 indicates that the predictors of the model which are Credit Risk analysis and assessment, Credit Risk Identification

Credit risk monitoring, Credit Scoring mechanism have a correlation of 99.3%.% with the dependent variable of return on assets. The R square also called coefficient of determination of 0.986 indicates that the model can explain 98.6% of the variations in the return on assets of the commercial bank in Rwanda and there are other factors which can only explain 1.4% of the variations in return on assets. This shows that the independent variables (= Credit Risk analysis and assessment, Credit Risk Identification, Credit monitoring, Credit Scoring mechanism) of this study are very significant predictors of the performance of the commercial banks in Rwanda.

**Table 4.3.2 Regression Coefficients**

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.761	.068		11.207	.000
Credit risk identification	.116	.074	.193	1.564	.169
Risk monitoring	-.459	.089	-.919	-5.159	.002
Credit scoring mechanism	.162	.058	.501	2.806	.031
Credit analysis and assessment	.417	.044	1.228	9.546	.000

From the above regression model, The beta coefficients to be used in this study are the unstandardized coefficients. The results indicate that a unit change (1%) in the Credit risk identification causes an increase of 0.116 (11.6%) change in the return on assets of the commercial banks. This indicates that Credit risk identification have an influence on financial performance (return on assets) of the Commercial banks which means that Credit risk

identification is a predictor of financial performance of commercial banks in Rwanda. Risk monitoring is not a predictor of financial performance or return on assets. A unit change (1%) in Risk monitoring leads to a decline of -0.459 (-459%) unit change in risk monitoring lead to the decrease of profitability of the Commercial banks. A unit change in Credit scoring mechanism leads to a positive change of 0.162 (16,2%) change in the financial performance (return on assets) commercial banks. A unit increase in credit analysis and assessment leads to a positive change of 0.417 (41.7%) in the financial performance of the commercial banks in Rwanda. This shows clearly that adoption of credit risk management has contributed to a positive effect on financial performance even if risk monitoring is not a predictor for the financial performance of the commercial bank in Rwanda.

**Table 4.3.3 Analysis of Variance - ANOVA**

	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.613	4	.403	104.455	.000 <sup>a</sup>
Residual	.023	6	.004		
Total	1.636	10			

Table 4.9 shows that variations in the performance (return on assets) can be explained by the model to the extent of 1.613 out of 1.636 or 98.5% while other variables not captured by this model can explain of the 1.5% (0.023 out of 1.636) of the variations in financial performance. . The F value of the model produces a p-value of 0.000 which is significantly the same as zero. A p-value of 0.000 is less than the set level of significance of 0.05 for a normally distributed data. This means that the model is highly significant in explaining performance of the Commercial banks.

#### **4.4 Interpretation of the Findings**

The findings reveal that, banks need to ensure that credit risk management is well used in the commercial banks in order to maintain the high level of financial performance of those institutions. The study found out that it was crucial to manage credit risk as indicated by 81% of the respondents to make sure that financial performance is achieved. Regarding the importance of managing credit risk the study indicated that these reduced cash loss and ensures the organization performs better by increasing the return on asset and it helped the organization to operate more efficiently and more effectively.

The study found that Credit Risk analysis and assessment, Credit Risk Identification, Credit monitoring, Credit scoring mechanism were the indicators that measured the credit risk management. More than 70% confirmed that credit risk identification was used as key measure of credit risk management to ensure financial performance. The same as credit scoring mechanism and credit analysis assessment both have been considered as key indicators of credit risk management at a high percentage of 64 and 55% respectively.

The study found that a client is said to have defaulted the loan after more than 12 month late. Beside that most of the respondents agreed that client default loan payment after using supervision on one to one basis as it is has been shown by the respondents. The study found that most of the respondents agreed that client default loan payment after using supervision on one to one basis. The study found the approaches that are used by the banks in screening and risk analysis before awarding credit to clients. From the findings, most of the respondents revealed that capacity/ competition and conditions are the approaches mostly used in screening and risk analysis. They are two other approaches mentioned which were character of the borrower and collateral or security these were two other crucial approaches used by banks to award credit to a client.

The regression analysis was used in this analysis. The results revealed that a unit change (1%) in the Credit risk identification causes an increase of 0.116 (11.6%) change in the return on assets of the commercial banks. This indicated that Credit risk identification has an influence on financial performance (return on assets) of the commercial banks which means that Credit risk



identification is a predictor of financial performance of commercial banks in Rwanda. A unit change in Credit scoring mechanism leads to a positive change of 0.162 (16,2%) change in the financial performance (return on assets) commercial banks. The study revealed that a unit increase in credit analysis and assessment leads to a positive change of 0.417 (41.7%) in the financial performance of the commercial banks in Rwanda consequently the adoption of credit risk management has contributed to a positive effects on financial performance even if risk monitoring was not a predictor for the financial performance of the commercial bank un Rwanda.

The analysis of variance revealed that variations in the performance (return on assets) was explained by the model to the extent of 1.613out of 1.636 or 98.5% while other variables not captured by this model was explained at the rate of the 1.5% (0.023out of1.636) of the variations in financial performance. The F value of the model produces a p-value of 0.000 which is significantly the same as zero. A p-value of 0.000 was less than the set level of significance of 0.05 for a normally distributed data consequently the model was highly significant in explaining performance of the Commercial banks.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 introduction

From the analysis and data collected the foregoing discussions, conclusions and recommendations were made. The response was based on the objectives of the study.

#### 5.2 Summary

The objective of this study was to establish the effect of credit risk management and Financial Performance of Rwanda commercial bank. The study had four specific objectives of establishing how a Credit Risk analysis and assessment, Credit Risk Identification, Credit monitoring, Credit Scoring mechanism affect financial performance of commercial bank in Rwanda.

The study distributed a questionnaire which assisted to examine the effect of credit risk management on financial performance of commercial banks in Rwanda. The sample size was the same as the population of the study. The response rate was a 100 percent which comprised eleven commercial banks. Data was gathered by analysing the answers from the credit managers of commercial banks. The data was analysed using SPSS 17.

The study found that most of the respondents agreed that client default loan payment after using supervision one to one basis. The study found the approaches that are used by the banks in screening and risk analysis before awarding credit to clients. From the findings, most of the respondents revealed that capacity/ competition and conditions are the approaches mostly used in screening and risk analysis. They are two other approaches mentioned which were character of the borrower and collateral or security these were two other crucial approaches used by bank to award credit to a client.

The analysis of variance revealed that there is a very high effect of credit risk management on financial performance of commercial banks in Rwanda. Regression results has shown that Credit Risk analysis and assessment, Credit Risk Identification, Credit Scoring mechanism are positively and very significantly related to the Financial Performance of commercial banks in Rwanda

### **5.3 Conclusion**

From the findings, the study concludes that commercial banks in Rwanda needs to manage effectively the credit risk in order to ensure the financial performance and meeting its objectives , Minimize cash loss and ensures the organisation performs better by increasing the return on assets and helps the organization in attaining maximum financial returns.

From the findings the study conclude that credit risk identification, credit scoring mechanism and credit analysis and assessment are good predictors of the model consequently those three indicators used of credit risk management have shown a positive relationship with the financial performance of commercial banks in Rwanda.

The study has also concluded that the client has defaulted on loan payment after more than 12 month late and after using supervision on one to one basis. The study found the approaches that are used by the banks in screening and risk analysis before awarding credit to clients. From the findings, the study has concluded capacity/ competition and conditions are the approaches mostly used in screening and risk analysis. Finally the study concludes that there were a positive effect of credit risk management on financial performance of Rwanda commercial banks.

### **5.4 Policy Recommendation**

Generally banks have suffered after the genocide of 1994 it was necessary for the government of Rwanda to develop the policy that governed those financial institutions. The bank's policy recommendations are the key factor of success of financial institutions. Credit risk management is a key factor for the success of financial institution operations in Rwanda and by extension pillar to financial prosperity and stability. It is therefore important for the Government of Rwanda to develop policy and legal environment that is conducive to association of commercial banks.

Financial specialists will be able to appreciate the challenges that may influence financial performance of commercial banks in Rwanda. Many specialists may assume that all financial institutions have uniform set of factors that influence financial performance. This study offers beside four indicators of credit risk management a set of factors that can always be tested which conducting financial appraisal of commercial banks.

The Proper management of credit risk is the key factor for success the regulatory institution which is central bank of Rwanda should come up with uniform eligibilities in the financial institutions when it comes to the award of credit.

Banks management should enhance the construction of employee teams through providing training and seminars to improve the business knowledge this will ensure effective risk identification and assessment is carried out before disbursement of credit to creditors mitigates the occurrence of credit risk and improves financial performance.

### **5.5 Limitations of the study**

The study faces limitations. Obtaining data from commercial banks was a great challenge and the management in some few commercial banks was not cooperative, luckily the researcher managed to obtain the data from the credit managers of all the 11 commercial banks.

The study faces challenges of times resources limiting the study from collecting information for the study particularly where the respondents delay in filling the questionnaire and travelling for collection the filled questionnaire.

The study faces various limitations. The respondents were found to be uncooperative from the respondents because of the sensitivity of the information required for the study. The researcher overcome this by explaining to the respondents that that the information they provided was to be held confidential and was only for academic purpose only.

### **5.6 Suggestions for further Research**

The study investigated the effect of credit risk management on financial performance in commercial banks in Rwanda. Other researcher may focus on the relationship credit risk management and financial performance in SACCOs in Rwanda.

Another study can be conducted in Rwanda but should expand the variables. Other variables that could be included are the diversification of assets and portfolio asset quality banks. This kind of study will have an advantage of having many variables.

The study also suggests that a further study should be carried out to determine how credit risk management can increase financial stability in commercial banks in Rwanda. This will offer a broad analysis on impact of credit risk management on profitability in Rwanda

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## APPENDIX 1: QUESTIONNAIRE

This questionnaire seeks to collect data to be used in a study of “THE EFFECT OF CREDIT RISK MANAGEMENT ON THE FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN RWANDA”. You are kindly requested to provide answers to these questions as honestly and precisely as possible.

The information you will provide will be treated as confidential and will be used only for the purpose of this study. Please tick [ ] where appropriate and fill the required information in these spaces provided.

### Part A: General information

1. Name of the Bank .....
2. Years served in the bank.....
3. Level of education.....

### Part B: Credit risk Management

Please indicate by a tick [ ] to show your answer to the stated questions.

1. Do you think there is any effect between the Credit Risk Management and the Financial Performance of Banks?

Yes [ ] No [ ]

2. Does Credit Risk Management affect the Performance of your Bank?

Yes [ ] No [ ]

3. What is the importance of managing Credit Risks into your Bank?

.....

.....

.....

4. Among the following practices that measure credit risk mention by ticking which does your bank apply

- Credit Risk Identification [    ]
- Credit Analysis and Assessment [    ]
- Credit Scoring Mechanism [    ]
- Risk monitoring [    ]

5. To what extent does your Bank consider Credit Risk Identification?

- |                        |        |                    |        |
|------------------------|--------|--------------------|--------|
| To a very great extent | [    ] | To a little extent | [    ] |
| To a great extent      | [    ] | Not at all         | [    ] |
| To a moderate extent   | [    ] |                    |        |

6. To what extent does your Bank consider Credit Analysis and Assessment?

- |                        |        |                    |        |
|------------------------|--------|--------------------|--------|
| To a very great extent | [    ] | To a little extent | [    ] |
| To a great extent      | [    ] | Not at all         | [    ] |
| To a moderate extent   | [    ] |                    |        |

7. To what extent does your Bank consider Credit Scoring Mechanism?

To a very great extent [ ]                      To a little extent [ ]

To a great extent [ ]                      Not at all [ ]

To a moderate extent [ ]

8. To what extent does your Bank consider Risk monitoring?

To a very great extent [ ]                      To a little extent [ ]

To a great extent [ ]                      Not at all [ ]

To a moderate extent [ ]

9. When does your Bank decide that a client has defaulted on Loan/ Credit repayment?

Period	Not at all	Least	Moderate	Most used
One month late payment				
More than 12 months payments				
Using supervision on one to one basis				

10. Which approach(s) does your Bank use in Credit Risk analysis before awarding Credit to the Customer?

## APPENDIX 2 : LIST COMMERCIAL BANKS IN RWANDA

As at 31<sup>st</sup> December, 2012

No	BANKS
1	Access Bank Rwanda
2	Bank of Kigali (BK)
3	Commercial Bank of Rwanda (Banque Commerciale du Rwanda) (BCR)
4	Banque Populaire du Rwanda SA (BPR)
5	Compagnie Generale de Banque (COGEBANQUE)
6	Ecobank
7	Equity Bank (Rwanda)
8	Fina Bank (Rwanda)
9	Rwanda Development Bank (Bank de l'Habitat du Rwanda) (BHR)
10	Kenya Commercial Bank (Rwanda) (KCB)
11	Urwego Opportunity Bank (UOB)

*Source: Central Bank of Rwanda 2012*

**APPENDIX III:** *To whom it may concern from University of Nairobi , School of Business*