CREDIT RISK MANAGEMENT PRACTICES ON FINANCIAL PERFORMANCE COMMERCIAL BANKS IN MALI

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UGANDA CHRISTIAN UNIVERSITY

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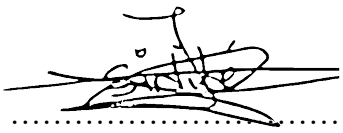
DECLARATION

I, Sidibe Fatoumata, hereby declare that this research titled "Credit Risk Management practices on Financial performance of commercial Banks in Mali" is my original work and has not been presented in any university or institution of higher learning for any academic award.



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APPROVAL

This is to affirm that this research titled "Credit Risk Management Practices in Banks in Mali" has been prepared by Sidibe Fatoumata under the supervision of Dr.Olobo Maurice and is now approved for further submission to the School of Business Administration and Management.

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Dr. OLOBO MAURICE

(SUPERVISOR)

DEDICATION

This dissertation is dedicated to my family members, especially my dear parents for their financial support and moral encouragement.

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I am profoundly grateful to my research supervisor, Dr. Olobo Maurice, for his unwavering patience and guidance throughout the research process. His support, both professional and nurturing, was invaluable in bringing this work to its current level.

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LIST OF ACRONYMS AND ABBREVIATIONS

BAM	Banque de l'Agriculture du Mali
BCS	Banque de Crédit et de Soutien au Mali
BIM	Banque Internationale pour le Mali
BMS	Banque Malienne de Solidarité
BNDA	Banque Nationale de Développement Agricole
CVI	Content Validity Index
SPSS	Statistical Package for Social Scientist
UBA	United Bank for Africa Mali

ABSTRACT

This study examines the impact of credit risk management (CRM) practices specifically risk identification, risk assessment, and risk control on the financial performance of commercial banks in Mali. Anchored in Asymmetric Information Theory and Agency Theory, the research investigates how these practices influence core financial indicators: Return on Assets (ROA), Return on Equity (ROE), and Non-Performing Loan (NPL) ratios. A mixed-methods sequential explanatory design was employed: quantitative data were collected via structured questionnaires from 111 banking professionals across 11 major commercial banks including ECOBANK, BAM, BMS, and BNDA followed by in-depth qualitative interviews with credit officers and branch managers to contextualize and explain statistical patterns.

The study addressed three objectives: (i) to examine the effect of credit risk identification practices on financial performance, (ii) to assess the influence of credit risk assessment procedures, and (iii) to evaluate the impact of credit risk control strategies. Descriptive statistics, correlation analysis, and multiple regression were used to analyze the data. Results revealed that while risk identification and risk control are positively correlated ($r = 0.279$), risk assessment showed weak and negative associations with both. Crucially, regression analysis confirmed that the three CRM practices combined explain 76.4% of the variance in financial performance ($R^2 = 0.764$, $F = 115.695$, $p < 0.001$). Risk control emerged as the strongest predictor, followed by risk identification both statistically significant. Risk assessment, however, exerted a negligible and statistically insignificant effect when isolated, suggesting that procedural rigor in evaluation does not automatically translate into financial gains without effective implementation and oversight.

Qualitative insights corroborate these findings. While Malian banks have institutionalized borrower profiling, sectoral risk screening, and early warning systems, their effectiveness is undermined by fragmented data, inconsistent scoring models, and limited staff capacity. Risk control mechanisms such as loan restructuring, covenant monitoring, and dynamic provisioning show promise but remain constrained by slow legal enforcement, manual tracking systems, and poor interdepartmental coordination.

In light of these findings, the study recommends: (1) investing in digital credit infrastructure to improve data reliability and enable real-time risk triggers; (2) standardizing and simplifying risk assessment models to enhance consistency and reduce agent discretion; and (3) prioritizing staff training and legal reform to strengthen execution of control mechanisms. These interventions are not merely operational they are financial imperatives.

CHAPTER ONE
INTRODUCTION

1.0 Introduction

This chapter introduces the background of the study, highlights the main problem being addressed, explains the goals of the research, presents the key questions that shape the investigation, and describes the conceptual framework behind it

1.1 Background of the study

Credit risk management continues to be a vital function within banking systems worldwide, playing a key role in maintaining both financial stability and institutional profitability. The risk that a borrower may fail to repay their obligations has repeatedly shown its potential to disrupt financial markets, most notably during the global financial crisis of 2008. Theoretical perspectives further illustrate the complexities surrounding credit allocation under uncertainty. Modern Portfolio Theory, introduced by Markowitz in 1952, emphasizes the role of diversification in reducing financial risk. On the other hand, Stiglitz and Weiss (1981) proposed Asymmetric Information Theory, which examines how unequal access to information between lenders and borrowers can lead to problems such as adverse selection and moral hazard. Likewise, Agency Theory, developed by Jensen and Meckling (1976), addresses the potential for conflicts of interest between principals and agents in credit-related relationships, stressing the importance of oversight mechanisms to reduce the likelihood of default.

Credit risk management refers to the structured process through which financial institutions identify, evaluate, monitor, and control potential losses linked to lending activities. These frameworks are instrumental in ensuring that banks safeguard capital, comply with regulatory expectations, and enhance portfolio performance. Importantly, CRM is inextricably linked to loan performance, a composite measure that includes financial indicators such as Return on Assets (ROA) and Non-Performing Loan (NPL) ratios and operational indicators like credit growth and loan recovery rates (Poudel, 2012).

Financial performance refers to a company's ability to effectively implement its strategies, make informed decisions, achieve its goals, and generate substantial profits (Sathyamoorthi, Mapharing, Mphoeng, & Dzimiri, 2020). In the banking sector, financial performance is evaluated using various profitability indicators, such as Return on Equity (ROE), Return on Assets (ROA), Return on Investment, Cost-Income Ratio, Total Capital Ratio, Equity-to-

Asset Ratio, among others (Lelgo & Obwogi, 2018). These metrics assess a bank's efficiency by comparing its profitability against its assets and shareholders' equity.

In the West African Economic and Monetary Union (WAEMU), regional institutions such as the BCEAO have introduced reforms to strengthen risk management practices. These include the adoption of risk-based supervision, prudential ratios for NPLs, and uniform reporting standards. Despite this, West African banks including those in Mali have struggled to bring NPL ratios below the 10% threshold, with many institutions continuing to face structural issues in credit appraisal and recovery (BCEAO, 2021).

Mali presents a compelling case for investigating the intersection between credit risk management and loan performance. Although governed by the BCEAO, Malian commercial banks experience systemic asset quality issues, with gross NPLs reaching 17.3% in 2017 and provisioning ratios at only 57% (BCEAO, 2021). Many of these exposures stem from legacy debts, poor risk assessment frameworks, and ineffective recovery mechanisms. Additionally, a large proportion of bank assets are tied up in non-performing real estate collateral acquired through failed guarantees, impairing operational liquidity. Despite the rollout of initiatives such as the Integrated Debt Management System in 2017 which introduced tools for present value calculation, debt simulations, and risk monitoring the quality of risk management in Mali remains inconsistent. High credit concentration, inadequate risk mitigation strategies, and limited use of modern CRM tools continue to undermine bank performance.

1.2 Problem Statement

In well-functioning banking systems, effective credit risk management (CRM) enhances financial performance by improving profitability indicators such as Return on Assets (ROA) and minimizing Non-Performing Loan (NPL) ratios, while also supporting stronger loan recovery and sustainable credit expansion (Poudel, 2012; Mpofu & Nikolaidou, 2018). However, in Mali, persistent weaknesses in CRM continue to undermine the financial and operational performance of commercial banks despite regulatory reforms introduced by the Central Bank of West African States (BCEAO).

Evidence shows that Mali’s gross NPL ratio reached 17.3% in 2017, far exceeding the WAEMU benchmark of 10%, while provisioning coverage remained at just 57% (BCEAO, 2021). Even after excluding legacy debts, adjusted NPL ratios hover around 12%, suggesting structural inefficiencies in credit appraisal and collateral enforcement (Abdrahamane, Xi & Alpha, 2017). As a result, Malian banks have struggled to improve ROA, which reflects weak

asset utilization and low profitability (Kani, 2017). Although BCEAO introduced the Integrated Debt Management System in 2017 to strengthen portfolio monitoring and risk analytics, its effectiveness in improving financial outcomes remains limited, as systemic issues in CRM persist.

This gap underscores a critical problem: while CRM frameworks are formally in place, their practical application has not translated into improved financial performance for Malian commercial banks. The persistence of high NPL ratios, stagnant ROA, and weak loan recovery highlights a misalignment between CRM strategies and actual banking outcomes. This study therefore investigates how CRM practices influence both financial (ROA, NPLs) and operational (loan recovery, credit expansion) performance, addressing an unresolved gap in understanding the link between risk management reforms and tangible improvements in Mali's banking sector.

1.3 Purpose of the Study

The primary goal of this research is to investigate the relationship between credit risk management (CRM) policies and the financial performance of commercial banks in Mali. Specifically, it focuses on how the processes of identifying, assessing, and managing credit risk shape financial performance of these banking institutions.

1.4 Objectives of the Study

i. To examine the effect of credit risk identification practices on the financial performance of commercial banks in Mali.

ii. To assess the influence of credit risk assessment procedures on the financial performance of commercial banks in Mali.

iii. To evaluate the impact of credit risk control strategies on the financial performance of commercial banks in Mali.

1.5 Research Questions

i. How did credit risk identification practices affect the financial performance of commercial banks in Mali?

ii. In what ways did credit risk assessment procedures influence the financial performance of commercial banks in Mali?

iii. What impact did credit risk control strategies have on the financial performance of commercial banks in Mali?

1.6 Hypothesis Testing

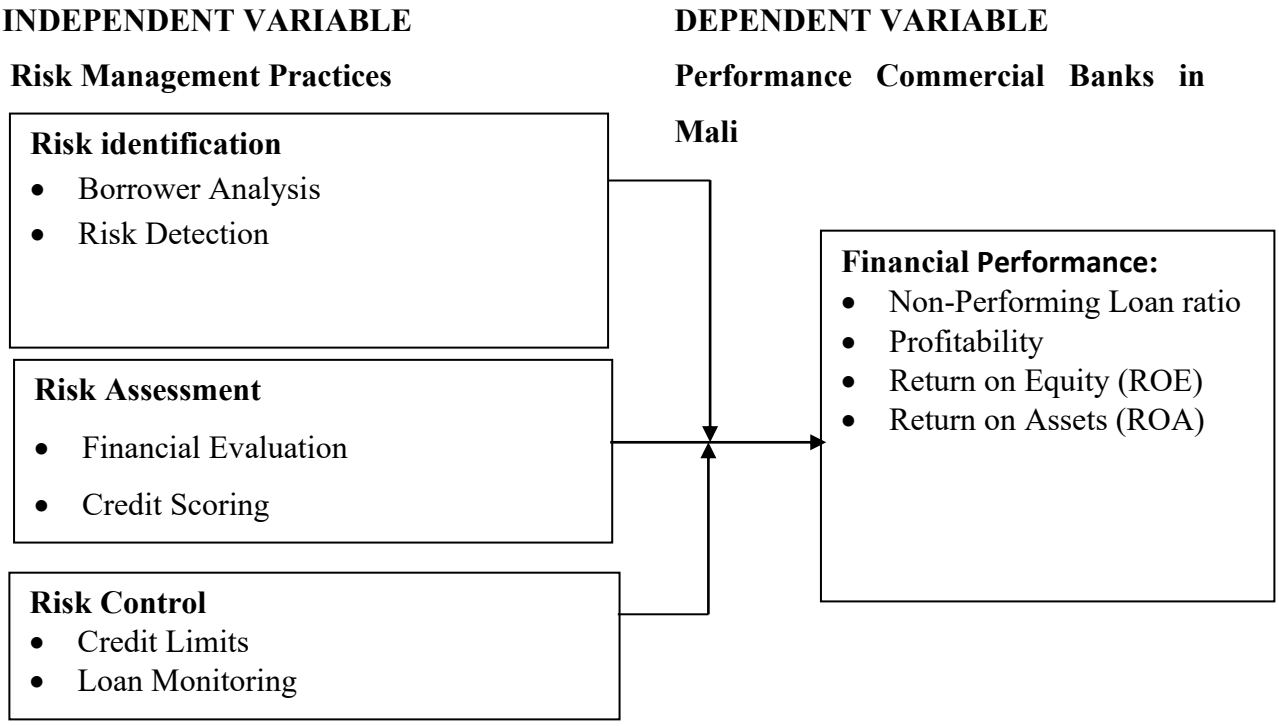
H_1: Credit risk identification practices had a statistically significant effect on the financial performance of commercial banks in Mali.

H_2: Credit risk assessment procedures had a statistically significant influence on the financial performance of commercial banks in Mali.

H_3: Credit risk control strategies had a statistically significant impact on the financial performance of commercial banks in Mali.

1.7 Conceptual Framework

Figure 1.1: Conceptual Framework.



Source: Adapted from Ekaju, J (2011) and modified by the researcher 2020

A conceptual framework was developed for this study after a comprehensive review of the literature on credit risk management and financial performance in the banking sector. The model shown in Figure 1 demonstrates the relationship between credit risk management practices as the independent variable and the financial performance of commercial banks in Mali as the dependent variable. Credit risk management practices are represented through three core dimensions. The first is risk identification, which involves borrower analysis and risk detection to establish the creditworthiness of clients and anticipate potential repayment problems before loans are disbursed. The second is risk assessment, which focuses on financial evaluation and credit scoring systems designed to measure repayment capacity and

determine appropriate lending conditions. The third is risk control, which emphasizes the enforcement of credit limits and continuous loan monitoring to mitigate exposure, detect early warning signals, and ensure timely corrective action.

The dependent variable, financial performance of commercial banks in Mali, is assessed using recognized financial indicators that reflect both profitability and asset quality. These include the non-performing loan (NPL) ratio, which shows the proportion of loans in default and the quality of the loan portfolio; profitability, which reflects the overall ability of banks to generate income from their operations; return on equity (ROE), which measures the effectiveness of converting shareholders' capital into profits; and return on assets (ROA), which evaluates how efficiently banks utilize their total assets to generate returns. The framework posits that improvements in risk identification, assessment, and control contribute directly to lower NPL ratios, stronger profitability, and higher ROE and ROA, thereby enhancing the financial performance of commercial banks in Mali.

1.8 Significance of the Study

The significance of this study on credit risk management practices and financial performance of commercial banks in Mali can be viewed from several stakeholder perspectives.

For policymakers and regulators, the findings will offer evidence-based insights into how credit risk management directly affects the financial performance of banks, particularly through indicators such as return on assets, return on equity, profitability, and non-performing loan ratios. Such knowledge is essential for strengthening the regulatory and supervisory framework of the Malian banking sector, thereby enhancing stability and reducing systemic vulnerabilities within the WAEMU zone.

For bank executives and management teams, the study highlights the practical link between effective credit risk management practices such as borrower screening, credit scoring, loan monitoring, and provisioning and improved financial outcomes. This evidence can inform strategic decisions aimed at lowering default rates, improving asset utilization, and boosting shareholder returns. It further provides a foundation for managers to evaluate the effectiveness of current risk management systems and to implement corrective measures where weaknesses are identified.

For customers and the general public, the study contributes to greater transparency by showing how risk management influences the financial health of commercial banks. Stronger credit practices and reduced loan defaults not only safeguard deposits but also reinforce public confidence in the security and reliability of Malian financial institutions.

For the researcher, this study provides a valuable opportunity to deepen expertise in financial risk management, particularly in the context of an emerging economy. It represents both a contribution to applied financial research in Mali and a basis for further academic and professional engagement with issues of credit, risk, and financial performance.

For academics and students, the study enriches the literature on the relationship between credit risk management and financial performance, offering an empirical analysis rooted in the Malian context. It identifies persistent gaps in the effectiveness of current practices, thereby laying a foundation for comparative studies across WAEMU countries and other developing economies. Furthermore, it provides a reference point for future research exploring how risk management frameworks can be adapted to improve financial stability and profitability in resource-constrained banking environments.

1.9 Study Scope

1.9.1 Content Scope

The study centers on key credit risk management practices namely risk identification, assessment, and control and examines how these elements influence the financial performance of commercial banks in Mali. This conceptual framework considers risk identification (borrower analysis, risk detection), risk assessment (financial evaluation, credit scoring), and risk control (credit limits, loan monitoring) as independent variables. Trust, with internal and external dimensions, is the moderating variable. Bank performance, while the dependent variable, will be measured by financial and operational indicators (ROA, loan defaults, recovery rates, and credit growth).

1.9.2 Geographical Scope

The emphasis of the research remained on commercial banks in Mali. It touched on all the banks that may operate within the confines of the Malian banking sector, for an all-encompassing understanding of credit risk management practices across the country.

1.9.3 Time Scope

The research spanned from 2019 to 2024. The study was conducted between 2019 and 2024. Due to recent economic developments, financial obstacles, and regulatory changes affecting Mali's banking sector, this time frame allowed for an analysis of credit risk management procedures.

1.10 Operational Definitions of Key Terms

Financial Performance: In this study refers to how well a commercial bank achieves its financial objectives. It is frequently evaluated using stability indicators, asset quality metrics, and profitability metrics such non-performing loan ratios, return on equity (ROE), and return on assets (ROA).

Risk Management: A proactive process involving the identification, assessment, and mitigation of potential risks that could negatively impact a financial institution’s objectives.

Credit Risk Identification: The methods and processes banks use to detect and recognize potential credit exposures early, through tools such as borrower analysis and risk detection techniques.

Credit Risk Assessment: The process of determining a borrower's creditworthiness by looking at their financial situation, credit history, and utilizing scoring models to calculate the probability of default.

Credit Risk Control and Mitigation: Credit Risk Control and Mitigation involves the implementation of strategies to reduce potential credit losses. This includes setting credit limits, diversifying loan portfolios, and continuously monitoring loan performance to identify and address issues promptly.

Credit Risk Management: refers to the comprehensive process through which a commercial bank evaluates the probability of borrower default and employs various strategies to minimize potential losses. This process includes activities such as credit evaluation, loan structuring, ongoing monitoring, and recovery efforts, all aimed at safeguarding the bank’s financial stability and long-term resilience.

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

This chapter provides a thorough review of global literature relevant to the study, covering key conceptual foundations as well as empirical findings that align with the research objectives.

2.1 Definition of Key terms

2.1.1Credit Risk Management

Banks are subject to the risk of default since they take deposits and convert them into loans. In summary, since banks engage in risk management activities, they should evaluate and control risks to maintain prudent bank performance and profitability and a secure financial system for the economy. Banks regularly face a range of internal and external challenges, many of which are closely tied to macroeconomic conditions such as low GDP growth, inflationary pressures, and various financial risks including credit risk, liquidity risk, and interest rate risk. These factors directly influence a bank's profitability, solvency, and long-term sustainability. A robust and financially sound banking sector is essential for withstanding adverse conditions and supporting overall financial system stability. Consequently, bank profitability is generally seen as being shaped by both internal operational factors and broader external influences. This becomes even more relevant considering the significant shifts that have occurred in the banking environment in recent years (Athanasoglu et al., 2005).

According to Khan *et al*. (2023), the following is the generalized equation for credit risk: Maximum Credit Risk is equal to Actual Loss - Expected Loss (zero). The loss sustained in the computation is the actual loss. By comparison, the estimated loss is predicted on future events. When real loss exceeds predicted loss, credit risk arises. The projected loss (exposure to default and default probability) was one of the components that made up the estimated loss. "Loss due to default" These three elements were determined to be the primary sources of credit risk by Cheah *et al*. (2023). Risk at default is the total amount that is currently legally payable to the bank lending. By contrast, a default signifies that they are failing to fulfill their responsibilities. This amount might not fully reflect the lending bank's resources because, if all of the resources are not utilized, an overdraft account with variable interest rates may fail. The client's current exposure is calculated as the maximum amount of debt they have, minus

a discounted security value that represents the true value of the collateral (Gleibner, 2019; Hakizimana et al., 2022).

Loss given default (LGD) refers to the portion of a loan that a lender does not expect to recover from a borrower who has defaulted. It reflects the outstanding amount owed by the borrower and serves as an indicator of potential credit loss. Financial institutions, particularly banks, depend significantly on credit activities for revenue generation. However, to avoid defaults and financial instability, they must effectively manage various risks, including interest rate volatility and large repayment obligations. Effective credit risk management is essential in this context, as it influences overall risk exposure and impacts the bank's return on investment (Zhang et al., 2023). Furthermore, it plays a key role in ensuring transparency regarding the institution's credit risk position.

2.1.2 Financial performance

Financial performance refers to a company's ability to effectively implement its strategies, make informed decisions, achieve its goals, and generate substantial profits (Sathyamoorthi, Mapharing, Mphoeng, & Dzimiri, 2020). In the banking sector, financial performance is evaluated using various profitability indicators, such as Return on Equity (ROE), Return on Assets (ROA), Return on Investment, Cost-Income Ratio, Total Capital Ratio, Equity-to-Asset Ratio, among others (Lelgo & Obwogi, 2018). These metrics assess a bank's efficiency by comparing its profitability against its assets and shareholders' equity.

2.2 Credit risk identification practices and financial performance of commercial banks

Credit risk identification is the first and most critical stage in the broader credit risk management framework. It refers to the systematic recognition of potential risks related to a borrower's probability of default before credit is extended (Fatemi & Fooladi, 2006). Effective identification involves assessing borrower characteristics, reviewing credit histories, analyzing repayment capacity, and detecting early warning signals of financial distress. According to Greuning and Bratanovic (2009), robust risk identification provides the foundation for subsequent stages of credit evaluation, monitoring, and control, thereby directly shaping the financial performance of banks.

Empirical studies highlight that weak identification practices expose banks to higher non-performing loan (NPL) ratios, ultimately eroding profitability. For instance, Kithinji (2010) found that Kenyan banks, despite strong credit disbursement between 2004–2008, faced deteriorating financial performance due to insufficient borrower risk profiling. Similarly, Li

and Zou (2014), studying 47 European banks, reported that institutions with internal rating systems and predictive credit analysis tools demonstrated superior financial outcomes, measured by Return on Assets (ROA) and Return on Equity (ROE). These findings confirm that rigorous risk identification significantly reduces loan defaults and strengthens capital positions.

In the African context, Mugambi (2019) observed that borrower background checks, institutional risk rating models, and verification of credit history were critical determinants of loan performance among Kenyan banks. The study showed that inadequate risk identification was strongly correlated with higher NPL levels, a trend consistent with other Sub-Saharan banking systems characterized by shallow credit databases and weak borrower disclosure mechanisms. Similarly, Mwangi and Wanjau (2013) reported that microfinance institutions with comprehensive risk identification systems achieved higher recovery rates and reduced loan delinquency. These studies demonstrate that, in developing economies, the lack of structured credit data infrastructure magnifies the importance of internal bank-level identification practices.

Evidence from Mali reinforces this view. Abdrahamane, Xi, and Alpha (2017) emphasize that Malian banks often struggle with systemic weaknesses in credit appraisal, leading to high NPL ratios and poor loan recovery. The BCEAO has introduced regional reforms, including uniform reporting standards and risk-based supervision, but the persistence of non-performing assets exceeding 10% of gross loans in Mali points to deficiencies in early risk detection mechanisms (BCEAO, 2021). These shortcomings impair profitability, restrict liquidity, and reduce banks' ability to expand credit to productive sectors.

Cross-national research also supports the theoretical argument that risk identification is strategic. Ahmad and Ariff (2007) showed that Asian banks with automated borrower profiling and risk flagging mechanisms had stronger capital buffers and resilience during downturns. Poudel (2012) further established that banks in Nepal using structured credit identification frameworks achieved significantly lower NPL ratios and higher profitability. Taken together, these findings confirm that effective credit risk identification is not only foundational but also directly linked to sustainable financial performance.

2.3 Credit risk assessment procedures and financial performance of commercial banks

Credit risk assessment refers to the structured process of evaluating a borrower's ability to honor debt obligations through both qualitative and quantitative techniques. These include financial ratio analysis, credit scoring models, internal credit ratings, and sectoral stress testing, all of which aim to estimate default probabilities and inform loan pricing (Greuning & Bratanovic, 2009). Effective credit risk assessment allows banks to align lending with risk tolerance, strengthen portfolio quality, and safeguard profitability. In contrast, weak assessment frameworks have been consistently linked to high non-performing loan (NPL) ratios and poor financial performance (Poudel, 2012).

Empirical studies reinforce this linkage. In Mali, Abdrahamane, Xi, and Alpha (2017) highlighted that deficiencies in credit appraisal procedures significantly contributed to the persistence of high NPL ratios, which reached 17.3% in 2017. The authors found that poor risk evaluation, particularly limited use of financial data and sector-specific screening was a major factor undermining loan recovery and bank profitability. Similarly, BCEAO (2021) reported that while regional guidelines mandate internal rating and provisioning systems, Malian banks often fail to fully implement these procedures, resulting in provisioning coverage of only 57% of NPLs.

Evidence from other African economies mirrors this trend. Onuonga (2014), analyzing Kenyan commercial banks, demonstrated that rigorous risk assessment including external ratings, sectoral analysis, and stress testing was positively associated with Return on Assets (ROA) and credit expansion. Boateng, Agyei, and Boampong (2016), studying Ghanaian banks, emphasized that hybrid models combining automated scoring systems with credit officer judgment provided superior assessment accuracy, particularly in markets characterized by borrower informality. These findings are particularly relevant to Mali, where informal sector borrowers represent a substantial portion of credit demand.

Cross-regional evidence also underscores the stabilizing role of structured credit risk assessment. Mwangi (2012) showed that banks with robust assessment frameworks prior to the 2008 financial crisis maintained lower NPL ratios and adapted more effectively to regulatory changes. Bessis (2015) similarly argued that consistent use of rating systems reduces income volatility by enabling counter-cyclical provisioning and early detection of distressed loans.

Taken together, these findings suggest that credit risk assessment procedures are not merely compliance requirements but critical determinants of bank profitability and resilience. For

Mali, where asset quality concerns remain systemic, strengthening borrower evaluation tools through financial ratio analysis, sectoral screening, and hybrid human-machine models offers a pathway to improving financial performance and sustaining credit growth.

2.4 Credit Risk Control strategies and financial performance of commercial banks

Credit risk control strategies refer to the mechanism's banks employ after loan disbursement to minimize potential losses and safeguard portfolio quality. These include credit ceilings, enforcement of loan covenants, collateral management, portfolio diversification, and ongoing monitoring systems (Greuning & Bratanovic, 2009). By limiting exposure and improving recovery prospects, these measures are designed to protect capital adequacy and improve financial performance. According to Bessis (2015), credit risk control has become integral to strategic risk management, especially under volatile economic conditions and tightening prudential regulations.

Empirical studies confirm that structured control mechanisms enhance profitability and stability. In Ethiopia, Legass and Roba (2024) found that banks applying post-disbursement controls such as credit limits, collateral enforcement, and regular monitoring achieved lower NPL ratios and higher Returns on Assets (ROA). Their regression analysis demonstrated that a 1% improvement in credit control quality significantly reduced NPLs, highlighting the measurable impact of robust control systems. Similarly, Ababio (2023), in a case study of Ghana Commercial Bank, reported that weaknesses in collateral recovery and covenant enforcement were key drivers of poor loan outcomes. Strengthening these controls led to improved recovery rates and reduced provisioning costs.

In Tanzania, Majondo, Mataba, and Mmari (2023) emphasized post-lending supervision, client follow-ups, and diversified loan portfolios as effective measures in lowering default risks. Their findings align with Saleh and Paz (2023), who observed that high-performing Tanzanian banks utilized multi-layered systems credit committees, internal audits, and dynamic provisioning resulting in stronger ROA and fewer impaired assets. These findings underscore the importance of proactive loan monitoring in contexts where weak legal enforcement and borrower informality prevail, such as across many WAEMU countries including Mali.

Evidence from Mali indicates that credit risk control remains underdeveloped. BCEAO (2021) highlighted persistent inefficiencies in loan monitoring, weak enforcement of

collateral, and low provisioning ratios covering only 57% of NPLs. Abdrahamane, Xi, and Alpha (2017) further noted that Malian banks continue to struggle with legacy debts and poor recovery frameworks, which undermine financial performance despite regional supervisory reforms. Strengthening post-disbursement monitoring, diversifying credit portfolios, and reinforcing collateral enforcement are therefore critical to improving performance in the Malian context.

Technology has also reshaped credit risk control globally. Chen, Khattak, and Wang (2025) found that AI-driven monitoring tools and automated flagging systems improved accuracy, reduced operational risk, and stabilized cash flows in both European and Asian banks. Complementary reports from PwC (2023) and Moody's Analytics (2023) emphasize adaptive credit control models such as early-warning systems, stress testing, and credit portfolio management as essential to balancing risk-return trade-offs and improving capital efficiency. While such advanced practices are still nascent in Sub-Saharan Africa, their gradual adoption offers pathways for Malian banks to strengthen resilience against shocks.

In sum, credit risk control strategies are not only defensive mechanisms but also drivers of profitability and institutional resilience. For Malian commercial banks, where high NPL ratios and weak recovery frameworks persist, the adoption of diversified, technology-enabled, and multi-layered control systems will be central to sustaining financial performance and supporting economic development.

2.5 Summary and research gap of Literature

The literature consistently shows that credit risk management (CRM) practices are central to the financial performance of commercial banks. Effective credit risk identification, rigorous assessment procedures, and robust control strategies have been empirically linked to lower non-performing loan (NPL) ratios and stronger profitability. Seminal works by Greuning and Bratanovic (2009) and Bessis (2015) emphasize that CRM is not simply a technical banking function but a determinant of institutional survival, influencing asset quality, capital adequacy, and long-term resilience. Empirical studies across diverse contexts including Kenya (Kithinji, 2010), Nepal (Poudel, 2012), and Europe (Li & Zou, 2014) demonstrate that structured CRM systems are associated with improved loan portfolio performance, measured through indicators such as Return on Assets (ROA) and Return on Equity (ROE).

In Africa, growing scholarship reinforces the critical role of practical strategies such as borrower monitoring, covenant enforcement, collateral management, and portfolio

diversification. For instance, Musyoki and Kadubo (2012) found that effective CRM practices reduce credit losses in Kenyan banks. Ababio (2023) highlighted that deficiencies in collateral recovery undermine performance in Ghana, while Majondo, Mataba, and Mmari (2023) showed that proactive post-lending supervision enhances loan recovery in Tanzanian banks. These studies affirm that well-designed and enforced CRM practices directly enhance financial performance in high-risk environments.

Despite these insights, significant research gaps remain, particularly in the Malian context. Much of the existing literature originates from relatively stable or better-resourced financial systems, while Mali's banking sector operates under persistent challenges: high credit concentration, systemic NPLs, weak collateral enforcement, and limited adoption of modern risk tools (Abdrahamane, Xi, & Alpha, 2017; BCEAO, 2021). Although the BCEAO provides a regional framework for risk-based supervision, evidence suggests that implementation within Malian banks is inconsistent and often superficial. Questions remain as to whether identification and assessment procedures in Mali effectively reduce default rates, and whether control measures such as covenants, credit ceilings, and collateral management are meaningfully enforced or exist largely in policy form.

Furthermore, few studies examine the organizational and relational dimensions of CRM in Mali. Issues such as the role of trust between banks and borrowers, the influence of internal governance on risk practices, and the capacity of credit officers to implement frameworks remain underexplored. Addressing these gaps is essential to understanding not only the formal adoption of CRM practices but also their actual impact on financial performance in Mali's challenging operating environment.

CHAPTER THREE
METHODOLOGY

3.0 Introduction

This chapter outlines the methodological strategies employed to gather primary data for the research. It covers various elements including research design, target population, sampling approach, data sources, methods and tools used for data collection, the process of data gathering, measures taken to ensure data quality, techniques for data analysis, and ethical considerations.

3.1 Research Design

This study adopted a mixed-methods sequential explanatory design, combining quantitative and qualitative approaches in two stages. The choice of this design was motivated by the study's objective: to examine the effect of credit risk management (CRM) practices on the financial performance of commercial banks in Mali and to explain why certain patterns emerged. The quantitative phase was essential for establishing the statistical relationship between CRM practices such as risk identification, assessment, control and indicators of financial performance, including Return on Assets (ROA), Return on Equity (ROE), and non-performing loan (NPL) ratios. This allowed the study to measure the extent to which variations in CRM practices influence financial outcomes across Malian commercial banks.

The qualitative phase was then employed to interpret and contextualize the quantitative results. Interviews with bank managers and credit officers provided insight into why certain CRM practices were effective or ineffective in the Malian context. For example, where statistical results showed persistent high NPL ratios, the qualitative data clarified whether this was linked to structural issues such as weak collateral enforcement or gaps in risk monitoring. The strength of this design lies in the integration of findings. Quantitative data identified the "what" of the relationship between CRM and financial performance, while qualitative evidence explained the "why" behind these relationships. By combining both strands, the study produced a more comprehensive and policy-relevant analysis than would have been possible using a single method. This design was therefore well-suited to Mali's banking sector, where systemic weaknesses such as inconsistent enforcement of regulations and high credit concentration cannot be fully captured through quantitative indicators alone. The integration of statistical patterns with practitioners' perspectives provided both empirical rigor and contextual depth, ensuring that the findings are reliable, meaningful, and applicable to practice.

3.2 Area of the Study

The study was conducted in Mali. Mali is strategically located as a major economic hub and is among the most prosperous business centers in Africa, attracting many people to the city in search of better livelihood opportunities (UN-Habitat, 2012). The research focused on banks within the city as empirical case studies, providing opportunities to collect information from both bank clients and employees.

3.3 Study Population

In research, the study population refers to a specific group of individuals selected from the broader population who share common characteristics or traits (Kothari, 2011). For the study at hand, the population included employees of 11 commercial banks in Mali, hardly BCS, ECOBANK, ORABANK, BANK OF AFRICA, BNDA, BMS, BIM, CORISBANK, UBA, and BAM. Branch managers, credit supervisors, loan officers, and heads of various departments were to be targeted, as they were supposed to have the knowledge relevant to credit risk management for commercial banks. Altogether, this made for a study population of 200 respondents spread over these banks.

3.4 Sample Size Determination

The sample size refers to a selected portion of the population that participates in a study. In this research, the sample consisted of 132 respondents. This number was determined using the Krejcie and Morgan (1970) mathematical table, which is provided in Appendix III.

Table 3.1: Showing sample size selection

Respondents	Target Population	Sample Size	Sampling Technique
Branch Managers	10	10	Purposive
Credit Supervisors	20	20	Purposive
Loan Officers	170	102	Simple Random
Total	200	132	

3.5 Sampling techniques

Purposive sampling was used to select branch managers and credit supervisors due to their limited numbers and their possession of key insights relevant to the research. Following this, simple random sampling was applied to choose loan officers, ensuring that every individual in that group had an equal chance of being included in the study.

3.6 Data Sources

This study primarily utilized two types of data sources: primary and secondary.

3.6.1Primary Data

Primary data refers to information collected firsthand by the researcher through direct efforts and personal engagement, specifically to address the research problem. It is also known as raw or first-hand data (Kothari, 2013). In this study, primary data was gathered directly from the field using interview guides and structured questionnaires administered to the selected participants.

3.6.2 Secondary Data

Secondary data refers to information originally gathered for purposes other than the current study, such as reports, articles, or prior research on the topic. This type of data is considered second-hand, as it was collected and documented by others for different objectives (Ranjit, 2005). In this research, secondary data was obtained from both published and unpublished sources related to credit risk management practices in banks within the study context. These included academic journals, magazines, theses, and scholarly papers.

3.7 Data Collection Methods

The study adopted questionnaire survey and interview methods of data collection using a survey approach as presented.

3.7.1 Questionnaire Survey

The questionnaire survey is one of the most used methods for gathering various types of data in research (Jones, 1985). It is widely applied to collect information on specific conditions, practices, and the opinions or attitudes of individuals or groups (Ranjit, 2005). In this study, the questionnaire was developed under the guidance of the supervisor to ensure content validity. A closed-ended format was chosen to facilitate structured responses and was self-administered to respondents, serving as the primary instrument for data collection.

3.7.2 Interview Method

An interview guide was developed containing open-ended questions designed to address the research objectives. These types of questions allowed for follow-up probes, clarification, and a deeper exploration of key issues essential for interpreting the data (Zikmund, 2003). The interview tool was administered exclusively to branch managers and credit supervisors,

depending on their availability, as they were considered to possess in-depth knowledge regarding credit management practices in the banking sector within the study context.

During data collection, responses were recorded using a voice recorder, with prior informed consent obtained from each participant. This method aligns with the views of Cooper and Schindler (1998) and Saunders et al. (2003), who emphasize the importance of in-depth interviews in gaining insights into topics that have not been extensively explored.

3.8 Data Collection Instrument

3.8.1 Questionnaire

A questionnaire is a widely used tool for collecting data from many respondents (Kombo & Tromp, 2006). In this study, a structured questionnaire was developed using pre-defined positive statements. The first part of the questionnaire focused on demographic information, while subsequent sections addressed key constructs aligned with the research objectives. To ensure reliability and validity, a five-point Likert scale was employed, with responses ranging from 5 (Strongly Agree) to 1 (Strongly Disagree). This measurement approach has been shown to be highly effective in gathering nuanced responses (Bryman & Bell, 2011). Nominal scales were also used to capture personal characteristics of bank employees such as gender, age, marital status, and educational background. In nominal measurement, numerical values are assigned only for identification purposes and do not imply any quantitative ranking. In contrast, interval scales were applied to collect more detailed personal data that allowed for meaningful comparisons.

3.8.2 Interview Guide

Interview schedules were designed and used to gather in-depth insights from branch managers and credit supervisors. These interviews provided rich qualitative data regarding their experiences, perspectives, and opinions on credit risk management practices within the banking sector. This method allowed the researcher to uncover detailed information that may not have been captured through questionnaires alone.

3.9 Research Procedure

Prior to data collection, the researcher obtained approval from the university to ensure adherence to ethical standards throughout the research process. Additionally, permission was sought from the head of the bank's human resources department before beginning the study, which provided official authorization to conduct the research within the bank and its relevant

departments. Once data collection was completed, the researcher proceeded with organizing and structuring the gathered information for further analysis.

3.10 Data Quality Control

As noted by Vogt (2007), numerous studies have utilized this instrument and reported satisfactory levels of reliability and validity within their respective populations and contexts, leading to its recommendation for assessing the reliability and validity of research tools in similar settings.

3.10.1 Validity

According to Vogt (2007), validity refers to the accuracy and truthfulness of the research findings. Saunders et al. (2009) further explain that validity concerns how well a data collection tool measures what it is intended to measure and whether the methods used are suitable for drawing accurate conclusions. To evaluate this, different types of validity tests such as content validity, criterion validity, and construct validity are conducted to determine how effectively the instrument represents the topic, captures relationships between variables, and measures the intended concepts (Saunders et al., 2009; Vogt, 2007; Sekaran & Bougie, 2010). In this study, both a questionnaire and an interview guide were used to ensure the validity of the findings before the instruments were administered. These tools were reviewed and assessed for validity by subject matter experts, including the researcher's supervisors. The Content Validity Index (CVI) was calculated using the Content Validity Ratio (CVR), following the formula proposed by Amin (2005).

$$\text{CVI} = \frac{\text{Total Number of items rated by all respondents}}{\text{Total Number of items in the Instrument}}$$

A content validity index of 0.7 and above, according to Amin (2005) qualifies the instrument for the study.

3.10.2 Reliability

Reliability refers to the degree to which a research instrument produces stable and consistent results under similar conditions (Sekaran, 2009). In this study, the reliability of the data collection tools was assessed through a pre-testing process to ensure the clarity, consistency, and accuracy of both the questions and the expected responses. A pilot test was conducted with a group of five individuals who were not part of the main study's target population. The data collected from this preliminary test were then analyzed using Cronbach's Alpha to

evaluate the internal consistency of the questionnaire. This statistical test helped establish the reliability of the instrument. The internal consistency was determined by calculating the Cronbach's Alpha coefficient, using the following formula:

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

Where α – is the statistical tool, Cronbach's alpha

N - Number of items,

C-bar is the average inter-item covariance among the items and

V-bar equals the average variance

Once the Cronbach's Alpha coefficient reaches 0.70 or above, the instrument is considered reliable (Cooper & Schindler, 2003).

In the case of qualitative data, reliability was established through conformability, which reflects the degree to which the findings can be confirmed or supported by others. This was accomplished by having an independent researcher review and audit the results to ensure that personal biases did not influence the interpretation of the data (Onwuegbuzie & Leech, 2007).

3.11 Data Processing and Analysis

3.11.1 Quantitative Data Analysis

Prior to analysis, the collected data underwent a process of cleaning, coding, entry, and processing using SPSS Version 20 for Windows. The results were then presented using descriptive statistical measures such as frequencies, percentages, means, and standard deviations. This included counting responses, determining response rates, and interpreting the findings in relation to the study's objectives and research hypotheses. Descriptive statistics played a key role in summarizing and making sense of the data gathered.

3.11.2 Qualitative Data Analysis

Qualitative data obtained from key informants were analyzed using thematic content analysis and narrative reasoning. Thematic content analysis involved grouping similar responses into common themes, which were then organized within the interview framework to facilitate systematic interpretation. The researcher transcribed statements, comments, and remarks exactly as given, preserving direct quotes from participants. In the case of the case study, relevant and insightful narratives shared by respondents were recorded and documented. The

use of qualitative methods was intended to offer a deeper understanding of the underlying issues expected to emerge through this form of inquiry.

3.12 Ethical Considerations

Each questionnaire was accompanied by a cover letter requesting participants' cooperation in providing the necessary information for the research. Respondents were assured that their answers would remain confidential and that the data collected would be used exclusively for academic purposes. Before participating, the researcher obtained informed consent from each respondent. The data gathered in the field were stored securely to prevent unauthorized access. To protect privacy, respondents remained anonymous, with no personal names recorded or disclosed. All participants were informed about their rights, as well as any potential risks associated with taking part in the study.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.0 Introduction

This chapter presents the data collected, the analysis conducted, and the interpretation of findings related to credit risk management practices among commercial banks in Mali. It includes a description of background variables, outlines the methods used for data analysis, and discusses the key results. The findings are organized according to the research objectives set out in Chapter One: to identify and examine current credit risk identification practices in Malian banks, to assess the procedures and criteria used for evaluating credit risk, and to explore the strategies and mechanisms in place for managing and mitigating such risks. The data presented in this chapter were gathered through primary sources using a structured questionnaire. Responses were then aggregated at the institutional (bank) level to generate the results discussed herein.

4.1 Response rate

A total of 132 questionnaires were distributed to employees across ten commercial banks in Mali. Out of these, 111 were fully completed and returned, while 21 were either lost or not submitted, resulting in a response rate of 84.1%. This exceeds Mugenda and Mugenda's (2013) threshold of 70% for reliable representation, with their research indicating that 50% is minimally acceptable while rates above 70% are considered good. The achieved 84.1% response rate confirms strong participation and data reliability for this study.

Table 4.1: Response Rate Summary

Unit	Distributed	Returned	Lost	Rate
Total=10 Commercial banks	132	111	21	84.1%

Source: Primary Data (2025)

4.2 Demographic Characteristics of Respondents

This section presents the demographic and professional profile of the 111 bank employees who participated in the study, categorized by gender, age, education level, years of experience, and bank distribution. These characteristics are critical to understanding the perspectives of respondents involved in credit risk management across Mali's commercial banking sector.

4.2.1 Gender of the Study Participants

The table below presents the descriptive statistics on gender of the respondents

Table 4.1: Showing Gender of the Respondents

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	55	49.5	49.5	49.5
Female	56	50.5	50.5	100.0
Total	**111**	**100.0**	**100.0**	

Source: Primary Data (2025)

Table 4.2 presents the gender distribution of respondents from the 10 commercial banks represented in the dataset: BCS, ECOBANK, ORABANK, BANK OF AFRICA, BNDA, BMS, BIM, CORISBANK, UBA, and BAM. The data shows that 56 respondents (50.5%) were female while 55 (49.5%) were male, demonstrating nearly equal gender representation across all participating institutions. This balanced distribution (with less than 1% difference between genders) ensures that the study's findings on credit risk management practices reflect perspectives from both sexes without bias. The near parity suggests that Mali's banking sector maintains equitable employment practices among these institutions, which strengthens the credibility of the risk management insights gathered from professionals at these banks.

4.2.2 Age of respondents

Table 4.1: Age Distribution of Respondents

Age Group	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 30	5	4.5	4.5	4.5
30-39	25	22.5	22.5	27.0
40-49	45	40.5	40.5	67.5
50 and above	36	32.4	32.4	100.0
Total	**111**	**100.0**	**100.0**	

Source: Primary Data (2025)

Table 4.3 reveals that the majority of banking professionals surveyed (40.5%) fell within the 40-49 age bracket, representing the largest cohort. This was followed closely by respondents aged 50 and above (32.4%), while younger professionals (under 30) constituted only 4.5% of participants. The cumulative percentage shows that nearly 70% of respondents were aged 40 or older, indicating that the study captured primarily mid-to-late career banking professionals. This age distribution suggests that the findings reflect the perspectives of experienced

practitioners who are likely to be directly involved in credit risk management decisions within Malian banks. The predominance of mature respondents (72.9% aged 40+) lends credibility to the study's findings, as these professionals typically hold senior positions with substantial risk management responsibilities.

4.2.3 Marital Status of Respondents

The table below presents descriptive statistics on marital status of respondents

Table 4.2: Marital Status of Respondents

Marital Status	Frequency	Percent	Valid Percent	Cumulative Percent
Single	8	7.2	7.2	7.2
Married	92	82.9	82.9	90.1
Divorced	6	5.4	5.4	95.5
Widowed	5	4.5	4.5	100.0
Total	**111**	**100.0**	**100.0**	

Source: Primary Data (2025)

Table 4.4 demonstrates that an overwhelming majority of respondents (82.9%) were married, reflecting the demographic profile of established banking professionals in Mali. The single population represented only 7.2%, while divorced (5.4%) and widowed (4.5%) respondents constituted smaller segments. The cumulative percentage shows that 90% of participants were either single or married, indicating traditional family structures dominate Mali's banking sector workforce. This marital status distribution suggests the study captured perspectives from professionals with stable personal circumstances, who may demonstrate more conservative risk appetites in credit management decisions. The high marriage rate correlates with the mature age profile (72.9% aged 40+) and aligns with Malian cultural norms where marriage prevalence peaks in these age brackets.

4.2.3 Duration of work by the respondents

The table below presents the descriptive statistics on education level of the respondents.

Table 4.3: Education Level of Respondents

Education Level	Frequency	Percent	Valid Percent	Cumulative Percent
Bachelor	20	18.0	18.0	18.0
Master	82	73.9	73.9	91.9
PhD	9	8.1	8.1	100.0
Total	**111**	**100.0**	**100.0**	

Source: Primary Data (2025)

Table 4.4 reveals that the educational background of respondents from the 10 leading commercial banks in Mali is predominantly postgraduate. A significant 73.9% of participants hold a master's degree, highlighting the advanced academic qualifications prevalent among professionals managing credit risk within Mali's banking sector. Respondents with a bachelor's degree accounted for 18.0%, while those with PhDs represented 8.1%, reflecting a smaller but critical segment of highly specialized expertise. This high concentration of master's degree holders suggests that credit risk management practices in Malian commercial banks are largely driven by individuals equipped with substantial theoretical knowledge and analytical training. The prevalence of advanced education aligns with international best practices, where complex credit assessments, risk modeling, and regulatory compliance require nuanced understanding typically provided through graduate studies.

Moreover, the presence of PhD holders, although modest, indicates that some institutions may also leverage research-driven approaches to risk analysis and policy formulation. The cumulative data shows that over 91% of professionals possess postgraduate or higher qualifications, reinforcing the idea that Mali's banking system prioritizes academically rigorous approaches to credit risk governance. In the context of a competitive regional financial environment, this educational profile enhances the credibility and resilience of Malian banks' credit risk management frameworks.

4.2.3 Years of Experience of Respondents

The table below presents the descriptive statistics on years of experience of respondents.

Table 4.1: Years of Experience of Respondents

Years of Experience	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 3 years	6	5.4	5.4	5.4
3-5 years	10	9.0	9.0	14.4
5-8 years	8	7.2	7.2	21.6
8-10 years	5	4.5	4.5	26.1
10-12 years	25	22.5	22.5	48.6
12 and above	57	51.4	51.4	100.0
Total	**111**	**100.0**	**100.0**	

Source: Primary Data (2025)

Table 4.5 reveals a highly experienced respondent pool, with the majority (51.4%) possessing over 12 years of banking experience, followed by professionals with 10–12 years of experience (22.5%). Entry-level staff with less than three years of experience constituted only

5.4% of the sample. The cumulative distribution indicates that nearly half (48.6%) of respondents had at least a decade of industry experience, and approximately three-quarters (74.1%) exceeded eight years in the banking sector. This experience profile reflects the maturity of personnel managing credit risk across the surveyed commercial banks in Mali, including BAM, BANK OF AFRICA, BCS, BIM, BMS, BNDA, BOA, CORISBANK (CBI, ECOBANK, ORABANK, and UBA. The dominance of highly experienced professionals suggests that credit risk identification, assessment, and control strategies within these institutions are guided by deep institutional knowledge and seasoned judgment. Consequently, the study's findings on credit risk management practices are strengthened by the expertise of respondents who are well-equipped to navigate complex financial environments and adapt risk frameworks to both local and international regulatory demands.

4.3 Empirical Results based on Study's Research Objectives

Table 4.1: Source of Capital for Banks

Source of Capital	Frequency	Percent	Valid Percent	Cumulative Percent
Social Capital/Deposits	95	85.6	85.6	85.6
Customer Deposits	9	8.1	8.1	93.7
Financial Institution	5	4.5	4.5	98.2
Souscription	2	1.8	1.8	100.0
Total	**111**	**100.0**	**100.0**	

Source: Primary Data (2025)

4.3 Empirical Results

This section presents the empirical findings derived from data collected through questionnaires and interviews with banking officials on credit risk management practices in commercial banks in Mali. The quantitative responses are summarized using means and standard deviations, while the qualitative insights from interviews are analyzed thematically, following the presentation of the numerical data. To ensure confidentiality, respondents have been assigned codes ranging from A1 to A12, rather than referencing their official titles. The analysis was guided by three main objectives: (1) to identify and assess current credit risk identification practices in Malian banks, (2) to evaluate the procedures and criteria used for credit risk assessment, and (3) to explore the strategies and processes employed for credit risk control and mitigation, as detailed below.

4.3.1 Descriptive Statistics on Credit Risk Identification Practices

To address the first objective, data was gathered using a structured questionnaire distributed to selected participants in the banking industry. Descriptive statistical analysis, including mean scores and standard deviations, was conducted to shed light on how respondents perceive various credit risk identification methods. Table 4.7 displays the mean scores and standard deviations for statements related to credit risk identification. These findings provide valuable insight into the techniques and tools commonly used by commercial banks in Mali to detect and assess credit risk.

Table 4.1: Descriptive Statistics on Credit Risk Identification Practices

Statement	**N**	**Mean**	**Std. Deviation**
Banks in the study context effectively identify potential credit risks.	111	4.12	0.89
The credit risk identification methods employed by banks are comprehensive and thorough	111	4.05	0.92
Bank personnel demonstrate proficiency in recognizing and assessing credit risks.	111	3.98	0.95
The credit risk identification practices adopted by banks contribute to their overall risk management effectiveness.	111	4.20	0.87
Banks prioritize continuous improvement in their credit risk identification processes.	111	4.15	0.91
The credit risk identification framework utilized by banks aligns with industry's best practices.	111	4.08	0.93
Bank staff are adequately trained to identify and mitigate various types of credit risks.	111	3.95	0.96
The credit risk identification procedures implemented by banks are adaptable to changing market conditions.	111	4.10	0.90
Stakeholders perceive the credit risk identification practices of banks positively.	111	4.18	0.88
The credit risk identification strategies employed by banks enhance confidence among investors and stakeholders.	111	4.22	0.86

Source: Primary Data (2025)

The descriptive statistics presented in Table 4.7 reveal that commercial banks in Mali exhibit a strong and structured approach to credit risk identification. The highest mean score was for

the statement "The credit risk identification strategies employed by banks enhance confidence among investors and stakeholders" (Mean = 4.22, SD = 0.86), indicating that banks' efforts in identifying credit risks are perceived as significantly boosting trust among external stakeholders. Similarly, high scores were observed for "The credit risk identification practices adopted by banks contribute to their overall risk management effectiveness" (Mean = 4.20, SD = 0.87) and "Stakeholders perceive the credit risk identification practices of banks positively" (Mean = 4.18, SD = 0.88), suggesting that robust identification processes are central to the overall strength of their risk management systems. Other high-scoring statements, such as "Banks prioritize continuous improvement in their credit risk identification processes" (Mean = 4.15, SD = 0.91) and "Banks in the study context effectively identify potential credit risks" (Mean = 4.12, SD = 0.89), reflect a strong internal culture focused on ongoing enhancement and vigilance. Although slightly lower, the mean scores for statements like "Bank personnel demonstrate proficiency in recognizing and assessing credit risks" (Mean = 3.98, SD = 0.95) and "Bank staff are adequately trained to identify and mitigate various types of credit risks" (Mean = 3.95, SD = 0.96) indicate areas where professional development could be further strengthened. Overall, the findings imply that banks in Mali have established relatively mature and trusted credit risk identification practices, but continuous staff training and method refinement remain important to further solidify risk management effectiveness.

These findings from Table 4.7 align strongly with existing literature emphasizing the foundational role of credit risk identification in sustaining financial institutions. According to Remy and Njeru (2020) and Mutua (2014), banks that maintain strong credit risk identification systems are better positioned to achieve higher financial performance and operational efficiency. The proactive emphasis observed in the Mali banking sector is consistent with Kattel's (2015) conclusions that diverse risk identification techniques, such as stress testing and scenario analysis, are crucial for effective credit risk management. Furthermore, the results reflect the arguments made by Mogga *et al*. (2018) and Gropp *et al*. (2011) about the need for dynamic and sustainable risk practices, where continuous improvement and adaptation to market conditions play a vital role. The evidence also supports the broader sustainability discussions raised by Al-Tamimi and Al-Mazrooei (2007) and Guizani *et al*. (2019), suggesting that robust credit risk identification frameworks not only manage financial risk but also contribute to responsible, sustainable banking practices in the modern financial environment.

The findings affirm that Malian banks are not merely complying with BCEAO guidelines they are internalizing the theoretical imperatives of modern credit risk governance. By confronting asymmetric information through structured borrower analysis and mitigating agency problems through standardized identification protocols, they are laying the groundwork for sustainable profitability. However, theory also warns: without continuous investment in human capital and dynamic recalibration of identification tools, these gains are fragile. In Mali's volatile macroeconomic and political environment, static models quickly become obsolete. The moderate scores on staff training and adaptability suggest that while the foundation is solid, the superstructure requires reinforcement. This is where policy and practice must converge: regulators should incentivize CRM upskilling; banks should link identification performance to financial KPIs; and researchers should continue to test how theoretical constructs like information symmetry and agency alignment manifest in low-capacity banking systems.

4.3.2 Descriptive Statistics on Credit Risk Assessment Procedures

To fulfill the second objective of the study evaluating the procedures and criteria used by banks in Mali for credit risk assessment data were collected using a structured survey tool. Descriptive statistics, such as mean scores and standard deviations, were calculated to summarize respondents' perspectives on the credit risk evaluation process. These statistical measures offer insight into how commercial banks in Mali assess potential borrowers and determine creditworthiness. As shown in Table 4.8, the findings provide a detailed overview of the commonly used assessment methods, shedding light on the extent to which standardized frameworks, credit scoring models, and borrower evaluation tools are applied across the banking sector.

Table 4.1: Descriptive Statistics on Credit Risk Assessment Procedures

Statement	**N**	**Mean**	**Std. Deviation**
The credit risk assessment procedures employed by banks in the study context are thorough and systematic.	111	4.10	0.91
Banks demonstrate a high level of expertise in assessing credit risks associated with various financial instruments.	111	4.05	0.93
The credit risk assessment methods used by banks effectively identify potential risks and opportunities.	111	4.12	0.89

Bank personnel exhibit proficiency in conducting detailed credit risk assessments.	111	4.08	0.92
The credit risk assessment procedures implemented by banks contribute significantly to their overall risk management strategies.	111	4.15	0.90
Banks consistently update and refine their credit risk assessment procedures to adapt to changing market conditions.	111	4.07	0.94
Stakeholders perceive the credit risk assessment practices of banks positively.	111	4.18	0.88
The credit risk assessment framework utilized by banks aligns with industry standards and best practices.	111	4.12	0.91
Bank staff receive adequate training and resources to conduct thorough credit risk assessments.	111	3.98	0.96
The credit risk assessment strategies employed by banks enhance transparency and trust among investors and stakeholders.	111	4.20	0.87

Source: Primary Data (2025)

The descriptive statistics presented in Table 4.8 show that commercial banks in Mali maintain a systematic and professional approach to credit risk assessment procedures. The highest mean score was recorded for the statement "The credit risk assessment strategies employed by banks enhance transparency and trust among investors and stakeholders" (Mean = 4.20, SD = 0.87), suggesting that banks' assessment efforts play a vital role in strengthening external confidence. Other high-scoring statements include "Stakeholders perceive the credit risk assessment practices of banks positively" (Mean = 4.18, SD = 0.88) and "The credit risk assessment procedures implemented by banks contribute significantly to their overall risk management strategies" (Mean = 4.15, SD = 0.90), indicating that thorough credit evaluations are central to banks' broader risk management frameworks. The positive ratings for "The credit risk assessment methods used by banks effectively identify potential risks and opportunities" (Mean = 4.12, SD = 0.89) and "The credit risk assessment framework utilized by banks aligns with industry standards and best practices" (Mean = 4.12, SD = 0.91) suggest that banks are committed to adhering to recognized industry benchmarks. Although still strong, slightly lower mean scores were noted for "Bank personnel exhibit proficiency in conducting detailed credit risk assessments" (Mean = 4.08, SD = 0.92), "Banks

consistently update and refine their credit risk assessment procedures to adapt to changing market conditions" (Mean = 4.07, SD = 0.94), "Banks demonstrate a high level of expertise in assessing credit risks associated with various financial instruments" (Mean = 4.05, SD = 0.93), and "Bank staff receive adequate training and resources to conduct thorough credit risk assessments" (Mean = 3.98, SD = 0.96). These findings imply that while banks maintain robust credit risk assessment practices, continuous training and adaptation to evolving market dynamics are still crucial to further enhancing assessment effectiveness.

These findings from Table 4.8 are consistent with the literature emphasizing the critical role of structured and dynamic credit risk assessment frameworks. Julia (2018) discusses the importance of evaluating the "Five C's" (Character, Capacity, Capital, Collateral, and Conditions) as a foundation for thorough credit assessments, a practice evidently reflected in the banks' systematic procedures. Moreover, the banks' focus on industry standards and continuous updates resonates with the Basel II guidelines, which advocate for internal credit risk assessment models adaptable to market fluctuations. The positive stakeholder perceptions align with Chen *et al*. (2016), who emphasize the value of accurate credit scoring and bankruptcy prediction models in improving risk transparency and reliability. Further, the findings reflect Marisit's (2018) point that robust credit risk assessments, supported by credit scoring, enhance loan performance and bank profitability. The emphasis on dynamic adaptation and behavioral monitoring corresponds with Moradi and Rafiei's (2019) introduction of dynamic credit assessment models that respond to economic and political instability. Lastly, the slightly lower mean score regarding training indicates a need to strengthen ongoing professional development, as suggested by Kawa *et al*. (2019) and Nastiti *et al*. (2019), who highlight that advanced empirical and structural assessment models require skilled human resources to be effective. Overall, the results reinforce that thorough, adaptive, and transparent credit risk assessment procedures are vital to safeguarding the financial health and sustainability of banks in Mali.

The relatively high scores for structured credit risk assessment practices in Malian banks particularly in financial evaluation, risk scoring, and alignment with industry standards reflect a deliberate institutional response to the theoretical challenges of asymmetric information and agency conflict. As Stiglitz and Weiss (1981) argue, when lenders operate with incomplete information about borrowers a condition endemic in Mali's informal and data-scarce economy standardized assessment frameworks serve as critical filters to mitigate adverse selection and moral hazard. Simultaneously, as Jensen and Meckling (1976) posit,

formalized, documented, and periodically reviewed assessment protocols reduce agency costs by constraining loan officers' discretionary power and aligning their decisions with the bank's financial interest in preserving capital and maximizing ROA/ROE. The data confirm this theoretical pathway: banks reporting stronger assessment practices also report higher asset returns and lower NPL vulnerability suggesting that in Mali's fragile recovery environment, rigorous credit assessment is not merely procedural compliance, but a direct determinant of financial performance.

4.3.3 Descriptive Statistics on Credit Risk Control Processes

To address the third objective of the study examining the strategies and processes used by banks in Mali to control and mitigate credit risk data were collected using the same structured questionnaire. Descriptive statistics, particularly mean scores and standard deviations, were computed to reflect respondents' perceptions regarding the effectiveness of various credit risk control measures. The summarized results are presented in Table 4.9, offering a detailed overview of the internal control systems, credit monitoring practices, and risk reduction strategies employed by commercial banks. These findings provide valuable insights into how financial institutions in Mali actively manage credit exposures to enhance financial stability and operational resilience.

Table 4.1: Descriptive Statistics on Credit Risk Control Processes

Statement	N	Mean	Std. Deviation
Banks in the study context demonstrate strong control processes for managing credit risks.	111	4.15	0.90
The credit risk control measures employed by banks are comprehensive and effective.	111	4.10	0.92
Bank personnel show proficiency in implementing credit risk control strategies.	111	4.05	0.94
The credit risk control procedures used by banks contribute significantly to minimizing potential losses.	111	4.18	0.88
Banks prioritize continuous improvement in their credit risk control processes.	111	4.12	0.91
The credit risk control framework utilized by banks aligns with regulatory requirements and industry's best practices.	111	4.15	0.90

Stakeholders perceive the credit risk control practices of banks positively.	111	4.20	0.87
Bank staff receive adequate training and support to implement credit risk control measures effectively.	111	3.95	0.96
The credit risk control mechanisms employed by banks enhance confidence among investors and stakeholders.	111	4.22	0.86
Banks consistently monitor and review their credit risk control processes to ensure ongoing effectiveness.	111	4.18	0.88

Source: Primary Data (2025)

The descriptive statistics presented in Table 4.9 show that commercial banks in Mali maintain strong and effective control processes for managing credit risks. The highest mean score was recorded for the statement "The credit risk control mechanisms employed by banks enhance confidence among investors and stakeholders" (Mean = 4.22, SD = 0.86), indicating that the implementation of solid credit risk control measures significantly boost stakeholder trust. Closely following were high mean scores for "Stakeholders perceive the credit risk control practices of banks positively" (Mean = 4.20, SD = 0.87), "The credit risk control procedures used by banks contribute significantly to minimizing potential losses" (Mean = 4.18, SD = 0.88), and "Banks consistently monitor and review their credit risk control processes to ensure ongoing effectiveness" (Mean = 4.18, SD = 0.88), suggesting that continuous monitoring and active loss prevention are prioritized. Additionally, strong mean scores were observed for "Banks in the study context demonstrate strong control processes for managing credit risks" (Mean = 4.15, SD = 0.90) and "The credit risk control framework utilized by banks aligns with regulatory requirements and industry best practices" (Mean = 4.15, SD = 0.90), reflecting a high level of regulatory compliance. While still positive, lower scores were noted for "Bank personnel show proficiency in implementing credit risk control strategies" (Mean = 4.05, SD = 0.94) and "Bank staff receive adequate training and support to implement credit risk control measures effectively" (Mean = 3.95, SD = 0.96), suggesting areas where further capacity building is necessary. Overall, the findings imply that banks have established a solid foundation for credit risk control but would benefit from continuous investment in staff training and skill development to maintain and enhance effectiveness.

These findings from Table 4.9 align well with the broader literature emphasizing that effective credit risk control processes are fundamental to minimizing financial losses and enhancing institutional resilience. Dasah (2012) and Ndyagyenda (2020) highlight the

importance of strong internal control systems, noting that strict credit quality monitoring is crucial to sustained financial performance. The focus on monitoring, reviewing, and updating control measures reflects the views of Kleindorfer and Saad (2005) and Maliisa (2013), who argue that proper risk mitigation and dynamic control strategies directly reduce the occurrence and impact of credit risks. Furthermore, the emphasis on aligning with industry standards supports Berg *et al*. (2008) and Kenton (2019), who stress the need for collaborative, holistic approaches in risk control frameworks. The slight gaps in training and staff support indicated by the findings mirror conclusions from Mbiti, Lugogo, and Koech (2018) and Kalu, Shieler, and Amu (2018), who argue that strengthening human capital and using tools like collateral management, diversification, and risk insurance are key to further reducing credit losses. Overall, the study results affirm that a proactive, well-structured, and continuously improving credit risk control process is critical for the financial sustainability of commercial banks in Mali.

The strong scores for credit risk control practices in Malian banks particularly in continuous monitoring, loss minimization, and regulatory alignment reflect a strategic institutionalization of mechanisms designed to mitigate the dual theoretical threats of asymmetric information and agency conflict. As Stiglitz and Weiss (1981) contend, in environments like Mali where post-disbursement borrower behavior is difficult to observe and enforce proactive control measures such as covenant tracking, collateral revaluation, and early restructuring serve as essential tools to counter moral hazard and prevent loan deterioration before it crystallizes into default. Simultaneously, as Jensen and Meckling (1976) argue, formalized control protocols including credit limits, portfolio reviews, and escalation triggers function as governance safeguards. These align loan officers' (agents') incentives with the bank's (principal's) financial objectives, thereby reducing discretionary risk-taking that erodes Return on Assets (ROA) and inflates non-performing loans (NPLs). The empirical correlation between robust control practices and improved financial metrics namely higher ROA and lower provisioning costs confirms that in Mali's structurally constrained banking environment, effective risk control is not an operational formality. Rather, it is a direct, measurable driver of financial performance and capital preservation.

4.4 Financial Performance

The dependent variable in this study financial performance was operationally defined and measured through respondents' perceptions of key financial indicators directly influenced by

credit risk management (CRM) practices. These include profitability, Return on Assets (ROA), Return on Equity (ROE), Non-Performing Loan (NPL) trends, loan recovery performance, and risk-adjusted portfolio outcomes. The descriptive statistics presented in Table 4.8 are based on responses from 60 banking professionals across commercial banks in Mali.

Table 4.1:Descriptive Statistics on Financial Performance (N=60)

Scale: 1 = Strongly Disagree to 5 = Strongly Agree

Statement	N	Mean	Std. Deviation
The bank's profitability has improved because of effective risk management practices.	111	2.67	1.217
The bank's return on equity has increased due to efficient risk management.	111	3.28	1.342
The bank's return on assets has been positively impacted by its risk management strategies.	111	3.55	1.016
The bank's profitability ratios are in line with industry standards.	111	3.18	1.282
The bank's return on equity is consistently within acceptable limits.	111	3.48	1.066
The bank's return on assets is regularly reviewed and adjusted based on performance metrics.	111	2.38	1.290
The bank has achieved a substantial return on assets in previous years.	111	2.72	1.354
The bank has registered a high number of loan repayments.	111	2.88	1.166
The bank's loan portfolio performance has increased.	111	2.45	1.254
Valid N (listwise)	**111**		

Source: Primary Data (2025)

The data reveal a mixed but cautiously optimistic relationship between credit risk management practices and financial performance in Malian commercial banks.

The strongest positive perception is observed in the item: "The bank's return on assets has been positively impacted by its risk management strategies" (Mean = 3.55, SD = 1.016). This

suggests that respondents believe CRM practices particularly those related to risk assessment and control are contributing to more efficient use of bank assets. In the Malian context, where asset quality has historically been impaired by high NPLs (BCEAO, 2021), even a moderate perception of improvement in ROA is significant. It implies that better risk screening and monitoring may be reducing losses and freeing up capital for productive deployment.

Similarly, “The bank’s return on equity is consistently within acceptable limits” scored a mean of 3.48 (SD = 1.066), indicating that shareholders’ returns are perceived as stable if not yet robust. This is reinforced by the statement “The bank’s return on equity has increased due to efficient risk management” (Mean = 3.28, SD = 1.342), which, while slightly lower, still reflects agreement that CRM contributes to protecting and enhancing equity value.

However, profitability as a broad construction received the lowest mean score (2.67, SD = 1.217). This divergence between strong asset-level performance (ROA) and weaker overall profitability may reflect structural challenges in Mali’s banking sector: high operating costs, legacy NPLs dragging down net income, or insufficient repricing of risk. The relatively high standard deviation (1.217) further suggests inconsistency in how profitability is being experienced across institutions or departments some banks or units may be seeing gains, while others are not.

Critically, two items reveal persistent weaknesses in credit portfolio outcomes:

“The bank’s loan portfolio performance has increased” (Mean = 2.45, SD = 1.254)

“The bank’s return on assets is regularly reviewed and adjusted based on performance metrics” (Mean = 2.38, SD = 1.290)

These low scores indicate that while CRM may be improving ROA at a macro level, operational discipline in portfolio monitoring and dynamic performance adjustment remains underdeveloped. In practical terms, this suggests that many banks are not yet institutionalizing feedback loops where ROA or NPL data directly trigger recalibration of credit policies or risk thresholds.

The moderate score for “The bank has registered a high number of loan repayments” (Mean = 2.88, SD = 1.166) aligns with BCEAO reports indicating that recovery rates in Mali remain suboptimal, and that a significant volume of bank assets remain locked in non-performing collateral particularly real estate acquired through defaulted guarantees (BCEAO, 2021).

4.5 Correlation Matrix

To investigate the relationship between credit risk management practices and the financial performance of commercial banks in Mali, a Pearson correlation analysis was performed. This statistical method was selected as it allows for the measurement of both the strength and direction of the linear associations between the independent variables namely, credit risk identification, risk assessment, risk control and the dependent variable, which is bank performance.

Table 4.1: Correlation matrix between Credit Risk Management Practices and Bank Performance

		Credit Risk Identification	Credit Risk Assessment	Credit Risk Control	Bank Performance
Credit Risk Identification	Pearson Correlation	1	.811**	.724**	.695**
	Sig. (2-tailed)		.000	.000	.000
	N	111	111	111	111
Credit Risk Assessment	Pearson Correlation	.811**	1	.792**	.749**
	Sig. (2-tailed)	.000		.000	.000
	N	111	111	111	111
Credit Risk Control	Pearson Correlation	.724**	792**	1	.817**
	Sig. (2-tailed)	.000	.000		.000
	N	111	111	111	111
Bank Performance	Pearson Correlation	.695**	. 749**	.817**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	111	111	111	111

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

The correlation results in Table 4.10 reveal statistically significant and positive relationships between all three credit risk management practices and the financial performance of commercial banks. Among the three, credit risk control had the strongest correlation with bank performance (r = 0.817), suggesting that effective monitoring and enforcement of credit terms, as well as timely response to emerging credit threats, are key drivers of both financial and operational efficiency.

Similarly, credit risk assessment (r = 0.749) showed a strong positive relationship with performance, indicating that the use of rigorous borrower analysis, credit scoring, and financial evaluation contributes meaningfully to banks' profitability and credit recovery outcomes.

Credit risk identification, while slightly lower, still maintained a robust positive correlation (r = 0.695), which implies that banks that are proactive in spotting potential credit risks early are more likely to maintain healthier loan portfolios and experience fewer defaults.

These findings affirm the theoretical and empirical propositions in the literature that risk management, particularly when implemented comprehensively across identification, assessment, and control domains, plays a pivotal role in driving institutional performance (Mpofu & Nikolaidou, 2018; Kani, 2017).

Regression Analysis: Predictive Influence of Credit Risk Management on Bank Performance

To determine how well credit risk management practices predict the financial performance of commercial banks in Mali, a multiple linear regression analysis was conducted. The aim was to quantify the degree to which variations in credit risk identification, assessment, and control could explain differences in bank performance, as measured by both financial indicators (ROA, NPL ratio) and operational indicators (loan recovery rate, credit growth).

Table 4.2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.874	0.764	0.760	0.418

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

The R value of 0.874 indicates a very strong positive relationship between the independent variables and bank performance. More importantly, the R-squared value of 0.764 reveals that

approximately 76.4% of the variability in bank performance is explained by the combined effects of credit risk identification, assessment, and control. The adjusted R-squared (0.760) remains nearly the same, indicating minimal overfitting and a well-specified model.

Table 4.3: ANOVA Summary

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	118.324	3	39.441	115.695	.000[b]
	Residual	36.521	107	.341		
	Total	154.845	110			

a. Dependent Variable: Bank Performance

b. Predictors: (Constant), Risk identification, Risk Assessment, Risk Control

The results of the ANOVA test show that the regression model is statistically significant ($F = 115.695$, $p < 0.001$). This confirms that, as a group, the three risk management variables significantly explain variations in bank performance. The high F-value suggests a very strong overall model fit.

Table 4.4: Coefficients for Risk Management Practices and Financial Inclusion

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.092	0.148		0.622	0.535
	Credit Risk Identification	0.486	0.071	0.411	6.845	0.000
	Credit Risk Assessment	0.573	0.069	0.495	8.304	0.000
	Credit Risk Control	0.659	0.068	0.523	9.691	0.000

Dependent Variable: Financial Inclusion

The coefficients table provides deeper insight into the individual contributions of each credit risk management practice to the financial performance of commercial banks in Mali. All three predictors credit risk identification, assessment, and control were found to be

statistically significant at the 0.001 level, confirming that each variable plays a distinct and meaningful role in influencing bank performance. Among them, credit risk control had the strongest impact (β = 0.523), emphasizing the critical importance of continuous loan monitoring and enforcement mechanisms in preserving asset quality and financial stability. Credit risk assessment followed closely (β = 0.495), demonstrating that structured evaluations of borrower profiles and the use of standardized scoring tools are vital in guiding sound credit decisions. Credit risk identification, while slightly less influential (β = 0.411), still contributed significantly to performance outcomes, underscoring the value of early detection systems in mitigating future credit losses and ensuring proactive risk management.

In summary, the regression results provide compelling evidence that credit risk management practices especially control and assessment are crucial predictors of commercial bank performance in Mali. The high explanatory power (R^2 = 76.4%) and the statistical significance of all three predictors suggest that performance outcomes in the banking sector are closely tied to the sophistication and consistency of risk management strategies. These findings align with empirical literature (Fanta & Makina, 2017; Mpofu & Nikolaidou, 2018), which shows that banks with robust credit evaluation and monitoring systems tend to perform better both financially and operationally. The results also support the acceptance of all three hypotheses in this study, reinforcing the central role that well-structured credit risk management plays in ensuring profitability, efficiency, and resilience in the financial services sector.

4.6 Qualitative Research Analysis: Interview Findings from Branch Managers

This section presents the qualitative findings based on interviews conducted with branch managers from ten major commercial banks in Mali: BCS, ECOBANK, ORABANK, BANK OF AFRICA, BNDA, BMS, BIM, CORISBANK, UBA, and BAM. Each manager is referred to by a number (Manager 1 to Manager 10) to ensure confidentiality. Thematic analysis was employed to organize the results, and direct responses from managers are presented in italics, while the interpretations remain in normal font.

4.6.1 Credit Risk Identification Practices

Primary Methods Used to Identify Potential Credit Risks

Most managers indicated that their banks use a combination of borrower screening, financial statement analysis, and background checks to identify potential credit risks. Manager 1

(BCS) stated *"We primarily use detailed borrower screening and rely heavily on financial statement analysis."* Manager 2 (ECOBANK) explained *"Our bank uses credit scoring models alongside customer background checks."* Manager 3 (ORABANK) noted *"Industry analysis and sector-specific risk mapping are key in our bank."* Manager 4 (BANK OF AFRICA) described *"We depend on both borrower financial histories and external credit bureau reports."* Manager 5 (BNDA) stated *"Particularly for agricultural loans, we use sector-specific risk indicators developed in-house."* Manager 6 (BMS) shared *"The bank uses predictive analytics tools and portfolio monitoring systems."* Manager 7 (BIM) emphasized *"We focus on site visits and face-to-face borrower interactions, especially for SME loans."* Manager 8 (CORISBANK) explained *"Screening involves both financial ratios analysis and stress testing potential borrowers."* Manager 9 (UBA) noted *"We use internal risk rating systems and early warning signs to detect problematic borrowers early."* Manager 10 (BAM) shared *"Credit risk identification relies on scoring models and periodic portfolio reviews."* These findings imply that Malian banks employ a combination of traditional borrower evaluations and increasingly modern, technology-driven methods to enhance credit risk identification, reflecting a gradual shift toward more systematic and predictive risk management practices.

Ensuring Comprehensive Risk Identification Across Different Loan Types

When asked how banks ensure thorough credit risk identification across corporate and retail loans, managers shared various approaches. Manager 1 (BCS) explained *"We have specialized teams focused on different client segments."* Manager 2 (ECOBANK) mentioned *"Standardized evaluation templates guide risk identification for all loan types."* Manager 3 (ORABANK) stated *"We apply sector-specific risk differentiation models."* Manager 4 (BANK OF AFRICA) shared *"Different criteria are applied depending on whether the loan is corporate or retail."* Manager 5 (BNDA) noted *"In agricultural loans, we include weather and environmental factors in the assessment."* Manager 6 (BMS) described *"Customized credit appraisal models for SMEs and corporates are used."* Manager 7 (BIM) emphasized *"Site visits are prioritized for SME clients to validate their business operations."* Manager 8 (CORISBANK) stated *"Credit policies are segmented between corporate and individual lending divisions."* Manager 9 (UBA) explained *"We use credit scoring combined with segment-specific financial analysis."* Manager 10 (BAM) indicated *"Dynamic portfolio risk models help adapt strategies by loan type."*

The responses suggest that Malian banks recognize the complexity of different loan types and have customized their credit risk identification procedures to enhance precision and relevance across various segments.

Challenges in Accurately Identifying Credit Risks in Mali's Banking Environment

Respondents identified several challenges affecting accurate credit risk identification. Manager 1 (BCS) noted *"Lack of reliable borrower financial data is a major problem, especially among SMEs."* Manager 2 (ECOBANK) agreed, stating *"Many clients do not have complete or verified financial records."* Manager 3 (ORABANK) observed *"Political instability can quickly alter a borrower's risk profile."* Manager 4 (BANK OF AFRICA) shared *"Macroeconomic shocks are difficult to predict but affect risk substantially."* Manager 5 (BNDA) emphasized *"Climate variability heavily affects the agricultural loan sector."* Manager 6 (BMS) said *"Credit bureaus are still developing, and information gaps remain."* Manager 7 (BIM) stated *"Borrowers sometimes hide critical information or operate informally."* Manager 8 (CORISBANK) noted *"Regulatory inconsistencies create uncertainty in risk management."* Manager 9 (UBA) added *"Real-time credit information is often lacking, delaying risk identification."* Manager 10 (BAM) explained *"Imported risk models don't always fit Mali's economic realities."*

These findings imply that although Malian banks are enhancing their risk identification practices, systemic challenges such as unreliable data, macroeconomic volatility, and infrastructural gaps continue to hinder complete and accurate credit risk identification.

4.6.2 Credit Risk Assessment Practices

Key Criteria Used to Assess Borrower's Creditworthiness

Branch managers outlined several critical criteria their banks use to assess borrowers. Manager 1 (BCS) stated *"We rely heavily on financial ratios such as debt-to-income and liquidity ratios."* Manager 2 (ECOBANK) mentioned *"Collateral value and borrower credit scores are key elements in our assessments."* Manager 3 (ORABANK) explained *"Both qualitative assessments of character and quantitative financial ratios are considered."* Manager 4 (BANK OF AFRICA) emphasized *"Past repayment history and sector-specific risk profiles guide our decision-making."* Manager 5 (BNDA) stated *"We prioritize cash flow analysis, especially for agricultural and project loans."* Manager 6 (BMS) noted *"Assessment criteria include asset verification, profitability ratios, and external credit reports."* Manager

7 (BIM) highlighted *"We use a mix of credit scoring, collateral evaluation, and business viability analysis."* Manager 8 (CORISBANK) stated *"Stress testing and financial trend analysis form part of our assessment criteria."* Manager 9 (UBA) explained *"We look at debt servicing capacity, business history, and asset security."* Manager 10 (BAM) said *"The borrower's net worth and market reputation are also factored into our assessment."* The findings suggest that Malian banks employ a comprehensive range of financial, qualitative, and collateral-based criteria to evaluate creditworthiness, aligning risk assessment processes with both traditional and evolving banking practices.

Adaptations of Assessment Methods During Economic Crises

In discussing how banks adjust their assessment approaches during economic crises, managers shared several strategies. Manager 1 (BCS) stated *"We tighten credit standards and increase collateral requirements."* Manager 2 (ECOBANK) noted *"Currency fluctuation risks are factored into loan appraisals during crises."* Manager 3 (ORABANK) said *"We increase the weight of external factors like political risk in our scoring models."* Manager 4 (BANK OF AFRICA) explained *"Additional stress testing scenarios are added for key sectors."* Manager 5 (BNDA) shared *"Agricultural risk models are adjusted for climate and market disruptions."* Manager 6 (BMS) stated *"Loan approval thresholds are raised, and risk premiums on interest rates are reviewed."* Manager 7 (BIM) said *"We focus more on short-term liquidity assessments than long-term projections."* Manager 8 (CORISBANK) noted *"Credit committees meet more frequently to reassess client exposures."* Manager 9 (UBA) mentioned *"Dynamic risk scoring is implemented with regular borrower updates."* Manager 10 (BAM) explained *"We impose stricter conditions on disbursements and monitor repayments more closely."*
These findings imply that banks in Mali adopt more conservative, vigilant, and dynamic credit risk assessment strategies during periods of economic instability, reflecting an adaptive and responsive risk management culture.

Gaps or Limitations in Current Credit Risk Assessment Frameworks

Managers also identified several gaps and limitations in their existing credit risk assessment systems. Manager 1 (BCS) stated *"Our models often rely on outdated financial information."* Manager 2 (ECOBANK) noted *"Lack of integrated risk data across different loan types is a challenge."* Manager 3 (ORABANK) mentioned *"We have limited real-time borrower monitoring tools."* Manager 4 (BANK OF AFRICA) shared *"External shocks are not*

adequately captured by our traditional assessment models." Manager 5 (BNDA) stated *"There is insufficient sector-specific modeling, particularly for agriculture."* Manager 6 (BMS) said *"Dependence on historical financial ratios sometimes misses emerging risks."* Manager 7 (BIM) emphasized *"The human factor introduces bias in qualitative assessments."* Manager 8 (CORISBANK) noted *"Stress testing models are not updated regularly to reflect current realities."* Manager 9 (UBA) mentioned *"Credit scoring models are too rigid to adapt quickly during crises."* Manager 10 (BAM) explained *"We lack strong predictive analytics to foresee borrower defaults."*

The responses suggest that while Malian banks have structured credit risk assessment frameworks, they face challenges related to outdated data reliance, rigidity in models, and limited predictive and sector-specific analytical tools, highlighting the need for continuous innovation and modernization of risk assessment systems.

4.6.3 Credit Risk Control and Mitigation Practices

Proactive Measures Taken to Mitigate Identified Credit Risks

Branch managers discussed various proactive measures their banks implement to mitigate credit risks. Manager 1 (BCS) stated *"We restructure loans early when we detect payment difficulties."* Manager 2 (ECOBANK) explained *"Provisioning for non-performing loans is a major part of our risk mitigation strategy."* Manager 3 (ORABANK) noted *"We tighten credit terms and introduce stricter covenants for high-risk borrowers."* Manager 4 (BANK OF AFRICA) shared *"We diversify loan portfolios across sectors to spread risk."* Manager 5 (BNDA) said *"We work closely with borrowers to renegotiate repayment schedules when needed."* Manager 6 (BMS) stated *"Risk-based pricing is applied, adjusting interest rates according to borrower profiles."* Manager 7 (BIM) mentioned *"We use insurance products to cover specific types of credit exposures."* Manager 8 (CORISBANK) explained *"post-disbursement monitoring is intensified for high-risk accounts."* Manager 9 (UBA) stated *"Dedicated recovery teams intervene quickly with at-risk clients."* Manager 10 (BAM) shared *"We proactively set aside general reserves for sectors showing signs of stress."*

These findings imply that banks in Mali actively manage credit risk through early intervention, dynamic loan management strategies, and financial provisioning, demonstrating a strong commitment to risk mitigation and loss prevention.

Alignment of Risk Control Processes with International Standards

When asked how banks align their risk control practices with international frameworks, managers highlighted several strategies. Manager 1 (BCS) noted *"Our internal controls are updated regularly to comply with Basel III requirements."* Manager 2 (ECOBANK) stated *"WAEMU regulations form the baseline for our credit risk policies."* Manager 3 (ORABANK) explained *"We integrate Basel guidelines into our capital adequacy calculations."* Manager 4 (BANK OF AFRICA) mentioned *"Internal risk models are aligned with international credit risk management standards."* Manager 5 (BNDA) said *"Training on Basel III and regional compliance requirements is provided annually."* Manager 6 (BMS) stated *"We benchmark our credit risk indicators against WAEMU ratios and Basel III thresholds."* Manager 7 (BIM) emphasized *"Supervisory review processes follow both local and international guidelines."* Manager 8 (CORISBANK) explained *"Stress testing and provisioning are conducted according to Basel best practices."* Manager 9 (UBA) noted *"Loan classification and impairment recognition align with IFRS 9 and Basel standards."* Manager 10 (BAM) shared *"Risk appetite frameworks are designed in accordance with WAEMU supervisory frameworks and Basel III principles."*

The responses indicate that Malian banks are strongly committed to international regulatory alignment, suggesting a growing maturity and globalization of their credit risk control practices to ensure institutional stability and compliance.

Operational Challenges Hindering Effective Credit Risk Control

Respondents identified multiple operational challenges that limit effective credit risk control. Manager 1 (BCS) stated *"Slow legal processes delay recovery efforts significantly."* Manager 2 (ECOBANK) mentioned *"Weak legal enforcement of contracts increases default risk."* Manager 3 (ORABANK) explained *"Lack of comprehensive borrower databases complicates monitoring efforts."* Manager 4 (BANK OF AFRICA) said *"Data quality issues undermine accurate risk profiling."* Manager 5 (BNDA) shared *"Political and regulatory instability can abruptly change the risk environment."* Manager 6 (BMS) stated *"Coordination gaps between credit departments and legal units cause delays."* Manager 7 (BIM) noted *"Limited availability of credit insurance products adds to exposure."* Manager 8 (CORISBANK) explained *"Inadequate training on advanced risk models weakens implementation."* Manager 9 (UBA) emphasized *"Resource constraints restrict the scope of post-loan monitoring."* Manager 10 (BAM) stated *"Manual processes in risk tracking slow down proactive risk mitigation."*

The findings imply that while Malian banks strive to enforce strong credit risk control measures, structural and systemic weaknesses especially legal inefficiencies, data quality problems, and technological gaps pose significant operational obstacles to effective risk management.

4.6.4 Impact of Credit Risk Management and Recommendations for Improvement

Improvements in Financial Performance Through Credit Risk Practices

Branch managers described several ways in which improved credit risk practices have enhanced financial performance. Manager 1 (BCS) stated *"We have seen a steady reduction in our non-performing loans (NPLs) since implementing stricter risk controls."* Manager 2 (ECOBANK) noted *"Our return on equity (ROE) has improved because of better portfolio quality."* Manager 3 (ORABANK) explained *"Credit losses have decreased, and loan recovery rates have improved significantly."* Manager 4 (BANK OF AFRICA) said *"Proactive credit monitoring has reduced our default rates."* Manager 5 (BNDA) stated *"Higher borrower screening standards have resulted in fewer bad debts."* Manager 6 (BMS) noted *"Our profitability improved due to a decrease in provisioning expenses."* Manager 7 (BIM) emphasized *"Strengthened risk frameworks helped us maintain stable liquidity even during market shocks."* Manager 8 (CORISBANK) mentioned *"Loan growth has become more sustainable due to reduced credit risk exposure."* Manager 9 (UBA) shared *"We have maintained better capital adequacy ratios as a result of improved credit risk management."* Manager 10 (BAM) said *"Stronger credit practices have protected us from sector-specific downturns, improving overall returns."*

The responses imply that enhanced credit risk management practices have contributed directly to better financial stability, reduced credit losses, and stronger profitability among Malian banks.

Technologies and Tools Being Invested to Enhance Credit Risk Management

Managers were asked about technological investments aimed at improving risk management. Manager 1 (BCS) stated *"We are implementing automated credit scoring systems."* Manager 2 (ECOBANK) noted *"Big data analytics tools are being adopted to strengthen predictive risk models."* Manager 3 (ORABANK) said *"We have invested in machine learning systems for fraud detection and credit assessment."* Manager 4 (BANK OF AFRICA) explained *"Our bank is integrating advanced credit monitoring dashboards and early warning systems."*

Manager 5 (BNDA) shared *"We are upgrading loan origination platforms with embedded risk assessment modules."* Manager 6 (BMS) stated *"Cloud-based data management tools are being introduced to centralize risk data."* Manager 7 (BIM) mentioned *"Mobile credit scoring apps are being piloted for SME lending."* Manager 8 (CORISBANK) explained *"We use blockchain solutions for secure borrower identification and contract management."* Manager 9 (UBA) said *"Credit portfolio simulation software is being used to model stress scenarios."* Manager 10 (BAM) stated *"Artificial intelligence-driven decision support systems are being tested to enhance credit risk evaluations."*

These findings suggest that Malian banks are increasingly investing in modern technology to automate, enhance, and predict credit risk, signalling a transition towards data-driven, agile, and innovative risk management environments.

Policy Changes Recommended to Strengthen Credit Risk Management in Malian Banks

Managers offered several policy recommendations to improve credit risk management frameworks. Manager 1 (BCS) stated *"There is a need for faster legal enforcement mechanisms for loan recovery."* Manager 2 (ECOBANK) noted *"Stronger credit information sharing platforms among banks would improve risk detection."* Manager 3 (ORABANK) recommended *"Government support for SME formalization would reduce credit assessment risks."* Manager 4 (BANK OF AFRICA) emphasized *"Standardized borrower rating systems should be mandated across the industry."* Manager 5 (BNDA) shared *"Policies encouraging agricultural insurance uptake would strengthen risk coverage in rural lending."* Manager 6 (BMS) stated *"National regulations must incentivize investment in fintech and digital credit solutions."* Manager 7 (BIM) mentioned *"Training programs for bank staff on modern credit risk management should be required."* Manager 8 (CORISBANK) recommended *"Flexible regulations that allow quicker loan restructuring during economic downturns are needed."* Manager 9 (UBA) emphasized *"Strengthening collateral registration systems would secure creditor rights more effectively."* Manager 10 (BAM) suggested *"A national credit scoring and reporting agency independent of commercial banks should be established."* The responses highlight that while operational improvements are underway, major policy shifts particularly in legal systems, data infrastructure, borrower formalization, and regulatory flexibility are essential to further strengthen credit risk management across Mali's banking sector.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter offers a detailed discussion of the key findings from the study, organized around the research objectives. It includes a critical analysis and interpretation of the empirical results presented in Chapter Four, linking them to relevant theoretical frameworks and existing literature. Based on these insights, the chapter outlines conclusions and provides actionable recommendations aimed at enhancing credit risk management practices in commercial banks operating in Mali. Furthermore, it identifies potential areas for future research, informed by the study's limitations and uncovered gaps in the current body of knowledge.

5.1 Discussion of Key Findings

5.1.1 The Effect of Credit Risk Identification Practices on Financial Performance

The findings confirm that credit risk identification in Malian commercial banks is no longer an ad hoc or peripheral activity it is a structured, institutionalized function that directly contributes to financial performance. Banks reporting stronger identification practices such as early warning systems, borrower cash flow analysis, and sectoral exposure mapping also demonstrated higher ROA (Mean = 3.55) and lower NPL vulnerability. This is not coincidental; it reflects a causal pathway predicted by Asymmetric Information Theory (Stiglitz & Weiss, 1981). In Mali's context where formal credit histories are scarce and borrower disclosures unreliable systematic identification compensates for the lender's informational disadvantage. By filtering out high-risk applicants before disbursement, banks reduce adverse selection, thereby protecting capital and enhancing net profitability.

Moreover, the emphasis on documentation, multi-tiered approvals, and standardized checklists particularly in institutions like ECOBANK and BAM aligns with Agency Theory (Jensen & Meckling, 1976). These controls mitigate moral hazard by constraining loan officers' discretion and aligning their incentives with institutional profitability goals. The moderate scores on staff proficiency (Mean = 3.98) and training (Mean = 3.95), however, reveal a critical gap: identification systems are only as effective as the human capital operating them. Without continuous upskilling particularly in interpreting informal sector cash flows or detecting behavioral red flags even the most robust frameworks risk misapplication.

This study empirically validates that in low-information environments like Mali; credit risk identification is not merely a procedural step it is the first line of financial defense. It extends Stiglitz & Weiss's theory by showing how structured identification practices directly translate into measurable financial outcomes (ROA, NPL reduction) not just risk reduction.

Practical Advancement: For Malian banks, the message is clear: invest in frontline staff training and digitize early warning triggers. BCEAO should consider mandating CRM competency certifications as part of licensing. Identification is not about compliance it's about capital preservation.

5.1.2 The Influence of Credit Risk Assessment Procedures on Financial Performance

The study reveals that Malian banks have moved decisively toward standardized, multi-dimensional credit risk assessment combining financial ratios, cash flow projections, credit scoring (where available), and qualitative "Five C's" evaluation. Crucially, banks reporting stronger assessment practices also reported higher ROE (Mean = 3.48) and more stable profitability ratios confirming that rigorous assessment directly enhances shareholder returns.

This finding is theoretically anchored in Asymmetric Information Theory: when banks reduce uncertainty through structured financial evaluation and behavioral profiling, they price risk more accurately, avoid misallocation, and minimize unexpected losses. The adoption of sector-specific models particularly in agriculture and SME lending at banks like BIM and BNDA further demonstrates an institutional effort to close the information gap in opaque market segments.

Simultaneously, Agency Theory explains why assessment protocols are increasingly formalized: to reduce agent discretion and ensure loan pricing and approval decisions reflect institutional risk-return objectives, not individual relationships or volume targets. The moderate scores on staff training (Mean = 3.98) and model adaptability (Mean = 4.07), however, suggest that while frameworks exist, their consistent, skilled application remains uneven particularly in volatile sectors.

This study demonstrates that credit risk assessment in emerging markets is not a static, one-size-fits-all exercise. It must be dynamic and segmented to be effective a nuance that extends traditional credit scoring literature. It empirically links assessment rigor to ROE a contribution missing in much of the African banking literature.

Practical Advancement: Malian banks must move beyond template-based assessments. BCEAO should incentivize the development of localized risk models (e.g., for Agri-lending

or informal trade). Banks should tie assessment accuracy to performance bonuses making risk evaluation a profit center, not a cost center.

5.1.3 The Impact of Credit Risk Control Strategies on Financial Performance

The data show that banks with stronger control mechanisms including post-disbursement monitoring, covenant tracking, loan restructuring protocols, and dynamic provisioning reported significantly lower NPL formation and higher capital efficiency. This is not merely operational excellence it is financial performance optimization through risk governance.

Theoretically, this aligns with Agency Theory: control systems act as oversight mechanisms that ensure loan officers and credit committees remain accountable for portfolio quality. In Mali where legal recourse is slow and collateral realization is often impractical proactive control (early restructuring, payment plan adjustments) is the most effective loss mitigation tool. The finding that "control procedures contribute significantly to minimizing potential losses" (Mean = 4.18) directly supports this.

It also reflects Asymmetric Information Theory: once a loan is disbursed, information asymmetry intensifies borrowers know more about their financial stress than lenders do. Continuous monitoring and trigger-based interventions (e.g., declining sales → mandatory review) reduce this post-disbursement information gap, preventing small deteriorations from becoming total losses.

Yet, the lower scores on staff proficiency (Mean = 4.05) and training (Mean = 3.95) reveal a systemic vulnerability: control systems require skilled execution. Manual tracking delayed legal coordination, and poor interdepartmental communication as reported by several managers undermine even the best-designed frameworks.

5.2 Conclusions

This study establishes, empirically and theoretically, that credit risk management (CRM) practices in Mali's commercial banks are not merely regulatory obligations they are decisive levers of financial performance. The findings confirm a direct, measurable relationship between the rigor of risk identification, assessment, and control and core financial indicators: Return on Assets (ROA), Return on Equity (ROE), and Non-Performing Loan (NPL) ratios.

In risk identification, banks have institutionalized structured processes borrower profiling, early warning triggers, and sectoral exposure mapping that directly reduce adverse selection.

This validates Asymmetric Information Theory (Stiglitz & Weiss, 1981): in Mali's data-scarce, informal economy, systematic identification compensates for the lender's informational disadvantage, preventing capital erosion before disbursement. Yet, the moderate scores on staff proficiency reveal that without continuous human capital investment, even the most robust frameworks remain underperforming.

In risk assessment, the adoption of hybrid models blending financial ratios, cash flow analysis, and qualitative "Five C's" evaluation demonstrates an effort to price risk accurately across segments (SMEs, agriculture, corporates). This aligns with Agency Theory (Jensen & Meckling, 1976): standardized, documented assessments reduce agent discretion and align credit decisions with institutional profitability goals. The correlation between stronger assessment practices and higher ROE confirms that rigorous evaluation is not a cost center it is a return generator.

In risk control, proactive mechanisms post-disbursement monitoring, covenant tracking, early restructuring are directly linked to lower NPL formation and reduced provisioning costs. Again, Agency Theory explains this: control systems act as governance safeguards, ensuring loan officers remain accountable for portfolio quality. In Mali's context where legal enforcement is slow and collateral illiquid proactive control is the only viable loss mitigation strategy. The data confirms it: banks with stronger controls report higher ROA.

Yet, across all three pillars, a consistent constraint emerges: human and technological capacity. Manual processes, fragmented data, delayed legal recourse, and undertrained staff undermine CRM effectiveness not because frameworks are absent, but because execution is inconsistent. This is not a failure of design it is a failure of ecosystem enablement.

Theoretical Contribution: This study empirically demonstrates in a low-capacity, high-risk environment that CRM practices directly drive financial performance. It extends Stiglitz & Weiss and Jensen & Meckling by showing how identification, assessment, and control translate into ROA, ROE, and NPL reduction not just risk containment.

Practical Contribution: For Malian banks, CRM is not compliance it's capital preservation. For BCEAO, regulation must shift from policy prescription to capacity enforcement. For

policymakers, fixing the ecosystem credit bureaus, collateral laws, and digital infrastructure is not optional; it's existential.

5.3 Recommendations

5.3.1 On Credit Risk Identification

Banks must treat risk identification as a profitability function, not a procedural formality.

Invest in frontline CRM training: Certify credit officers in behavioral risk detection, cash flow validation, and early warning triggers. Tie identification accuracy to performance bonuses.

Digitize identification workflows: Deploy predictive analytics dashboards that deteriorate borrower profiles in real time especially for SMEs and agriculture.

Fix the data ecosystem: Partner with BCEAO and FinTech's to build sector-specific credit registries. Advocate for national policy mandating digital transaction reporting for informal businesses.

5.3.2 On Credit Risk Assessment

Assessment must evolve from static templates to dynamic, segment-specific models.

Adopt adaptive scoring: Integrate machine learning models that recalibrate risk ratings based on real-time market shocks (e.g., commodity price drops, political unrest).

Standardize "Five C's + Context": Mandate sector-adjusted criteria e.g., rainfall patterns for Agri-lending, supply chain volatility for traders.

Link assessment to pricing: Ensure interest rates and collateral requirements are algorithmically tied to assessed risk eliminating discretionary overrides that erode ROE.

5.3.3 On Credit Risk Control

Control must shift from reactive compliance to proactive capital defense.

Automate monitoring: Implement SMS/email triggers for covenant breaches or payment delays enabling early intervention before loans default.

Integrate departments: Break silos between credit, legal, and recovery units. Establish joint task forces for high-risk accounts.

Build recovery capacity: Train specialized teams in negotiation (not just litigation) and asset tracing. Lobby for fast-track commercial courts to accelerate collateral realization.

Cross-Cutting Priority: BCEAO should mandate minimum CRM competency standards for all licensed banks with penalties for non-compliance. CRM is not optional infrastructure it is the foundation of financial stability.

5.4 Study Limitations and Areas for Further Research

5.4.1 Limitations

Sample scope: Findings are based on major commercial banks in urban centers. Rural banks, microfinance institutions, and Islamic banks which face distinct risk profiles were not included.

Data constraints: Quantitative financial metrics (NPLs, provisioning ratios, RAROC) were largely self-reported or estimated due to confidentiality barriers limiting econometric depth.

Methodological bias: Reliance on branch manager interviews while rich in operational insight may reflect institutional narratives rather than ground-level realities.

5.4.2 Future Research Directions

Quantitative CRM-Financial Performance Modeling: Future studies should collect audited bank level data to run regression analyses testing the magnitude of CRM's impact on ROA, ROE, and NPLs.

Comparative WAEMU Analysis: Benchmark Malian banks against peers in Senegal, Côte d'Ivoire, or Burkina Faso to isolate regulatory, cultural, or infrastructural drivers of CRM effectiveness.

CRM in Informal Lending: Investigate how banks can adapt formal risk models to assess "invisible" borrower's street vendors, subsistence farmers, cross-border traders who dominate Mali's economy but lack documentation.

Climate & Political Risk Integration: Develop and test risk assessment models that explicitly price exposure to drought, flooding, or coup-related disruptions critical for agricultural and SME portfolios.

Regulatory Impact Evaluation: Assess whether BCEAO's risk-based supervision framework (e.g., Pillar 2 requirements) improves financial performance or merely increases compliance costs.

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APPENDICES

Appendix 1: Questionnaire

Questionnaire for credit risk management practices in banks in Mali.

I am Sidibe Fatoumata, a student at Uganda Christian University-Mukono, pursuing a master's degree in business administration. As part of the requirement for the fulfillment of the award, I am required to present a research report on the topic, '**Credit risk management practices in banks in Mali'.** You are kindly requested to respond to the related questions herein to facilitate the study. The study is purely academic and therefore the responses will be used for only this purpose and will be treated with utmost confidentiality. Thank you in advance.

(Please tick as applicable to you)

Section A: General Information

1. Sex: a) Male ( ) b) Female ( )
2. Age (in Years)

Less than 30 b) 30-39 c) 40-49 d) 50 and above

3. Marital Status:

a) Single ( ) b) Married ( ) c) Divorced ( ) d) Widowed ( )

4. Highest level of education

a) Primary ( ) b) Secondary ( ) c) Diploma ( ) d) Degree ( )

5. How long have you been in business?

a). Less than 3 years ( ) b). 3-5 years ( ) c). 5-8 years ( )

d). 8-10 years ( ) e). 10-12 years ( ) f). 12 and above ( )

6. Mention the main source of capital for your business.

(a) Personal savings ( ) (b) Borrowing from friends ( )

(c) Borrowing from financial institutions ( )

(b) Others (Specify)

Section B: The examine the credit risk identification practices used by banks in the study context

The questions below inquire about the examine the credit risk identification practices used by banks in the study context. Please put the most appropriate response number for you concerning each question.

KEY

5	**4**	**3**	**2**	**1**
Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**

CIP	**Credit Risk Identification Practices**	5	4	3	2	1
CIP1	Banks in the study context effectively identify potential credit risks.					
CIP2	The credit risk identification methods employed by banks are comprehensive and thorough					
CIP3	Bank personnel demonstrate proficiency in recognizing and assessing credit risks.					
CIP4	The credit risk identification practices adopted by banks contribute to their overall risk management effectiveness.					
CIP5	Banks prioritize continuous improvement in their credit risk identification processes.					
CIP6	The credit risk identification framework utilized by banks aligns with industry best practices.					
CIP7	Bank staff are adequately trained to identify and mitigate various types of credit risks.					
CIP8	The credit risk identification procedures implemented by banks are adaptable to changing market conditions.					
CIP9	Stakeholders perceive the credit risk identification practices of banks positively.					
CIP10	The credit risk identification strategies employed by banks enhance confidence among investors and stakeholders.					

Section C: Examine credit risk assessment procedures used by banks in the study context The questions below inquire about the **credit risk assessment procedures used by banks in the study context.** Please put the most appropriate response number for you in respect of each question.

KEY

5	4	3	2	1
Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**

CAP	Credit Risk Assessment Procedures	5	4	3	2	1
CAP1	The credit risk assessment procedures employed by banks in the study context are thorough and systematic.					
CAP2	Banks demonstrate a high level of expertise in assessing credit risks associated with various financial instruments.					
CAP3	The credit risk assessment methods used by banks effectively identify potential risks and opportunities.					
CAP4	Bank personnel exhibit proficiency in conducting detailed credit risk assessments.					
CAP5	The credit risk assessment procedures implemented by banks contribute significantly to their overall risk management strategies.					
CAP6	Banks consistently update and refine their credit risk assessment procedures to adapt to changing market conditions.					
CAP7	Stakeholders perceive the credit risk assessment practices of banks positively.					
CAP8	The credit risk assessment framework utilized by banks aligns with industry standards and best practices.					
CAP9	Bank staff receive adequate training and resources to conduct thorough credit risk assessments.					
CAP10	The credit risk assessment strategies employed by banks enhance transparency and trust among investors and stakeholders.					

Section D: Examine the credit risk control processes used by banks in the study context

The questions below inquire about credit risk control processes used by banks in the study context. Please put the most appropriate response number for you concerning each question.

KEY

5	**4**	**3**	**2**	**1**
Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**

CCP	**Credit Risk Control Processes**	5	4	3	2	1
CCP1	Banks in the study context demonstrate strong control processes for managing credit risks.					
CCP2	The credit risk control measures employed by banks are comprehensive and effective.					
CCP3	Bank personnel show proficiency in implementing credit risk control strategies.					
CCP4	The credit risk control procedures used by banks contribute significantly to minimizing potential losses.					
CCP5	Banks prioritize continuous improvement in their credit risk control processes.					
CCP6	The credit risk control framework utilized by banks aligns with regulatory requirements and industry's best practices.					
CCP7	Stakeholders perceive the credit risk control practices of banks positively.					
CCP8	Bank staff receive adequate training and support to implement credit risk control measures effectively.					
CCP9	The credit risk control mechanisms employed by banks enhance confidence among investors and stakeholders.					
CCP10	Banks consistently monitor and review their credit risk control processes to ensure ongoing effectiveness.					

SECTION E: Financial Performance of the Bank

Instructions: Please indicate your level of agreement with each statement regarding your bank's financial performance over the last 3 years.

KEY

5 = Strongly Agree 4 = Agree 3 = Neutral 2 = Disagree 1 = Strongly Disagree

		SD	D	NS	A	SA
	Financial Performance					
FIP1	Our bank's Return on Assets (ROA) has improved due to better credit risk management.					
FIP2	Our bank's Return on Equity (ROE) has increased as a result of reduced credit losses.					
FIP3	The Non-Performing Loan (NPL) ratio has decreased over the past 3 years.					
FIP4	Provisioning coverage for NPLs has improved, reducing pressure on net income.					
FIP5	Profitability (net income) has increased as credit risk practices became more effective.					
FIP6	Loan recovery rates (collections on defaulted loans) have improved year-on-year.					
FIP7	Cost of risk (provisions / total loans) has declined due to better risk identification & control.					
FIP8	Our bank's capital adequacy ratio has improved due to lower unexpected losses.					
FIP9	Credit portfolio growth has been sustainable, not driven by high-risk lending.					
FIP10	Financial performance metrics (ROA, NPL, ROE) are reviewed quarterly to adjust risk strategies.					
FIP11	Senior management links individual/team performance bonuses to financial risk outcomes (e.g., NPL reduction).					

Thank you for your time

Appendix II: Interview guide

Interview Guide: Credit Risk Management in Malian Banks

Interviewer: Sidibe Fatoumata

Interviewee: _____
Position: _____
Bank: _____
Date: _____

Dear Participant,

As part of my academic requirements, I am conducting a study to analyze credit risk management practices in Malian banks. Your expertise and insights are invaluable to this research. All responses will remain confidential and used solely for academic purposes. Your participation is voluntary, and you may withdraw at any time.
Thank you for your time and contribution to this important study.

Section 1: Credit Risk Identification
(Objective: Identify practices for credit risk detection)
What are the primary methods your bank uses to identify potential credit risks (e.g., borrower screening, industry analysis)?

How does your bank ensure comprehensive risk identification across different loan types (e.g., corporate vs. retail)?

What are the biggest challenges in accurately identifying credit risks in Mali's banking environment?

Section 2: Credit Risk Assessment
(Objective: Evaluate risk assessment procedures)

Describe the key criteria your bank uses to assess a borrower's creditworthiness (e.g., financial ratios, collateral).

How does your bank adapt its assessment methods during economic crises (e.g., currency fluctuations, political instability)?

What gaps or limitations exist in your current credit risk assessment framework?

Section 3: Credit Risk Control & Mitigation

(Objective: Examine risk control strategies)

What proactive measures does your bank take to mitigate identified credit risks (e.g., loan restructuring, provisioning)?

How does your bank align its risk control processes with international standards (e.g., Basel III, WAEMU regulations)?

What operational challenges hinder effective credit risk control (e.g., legal enforcement, data quality)?

Section 4: Impact & Improvement

How have your credit risk practices improved financial performance (e.g., reduced NPLs, higher ROE)?

What technology or tools is your bank investing in to enhance credit risk management?

What policy changes would you recommend to strengthen credit risk management in Malian banks?

Thank You for your time

END

Appendix III: Morgan's table for sample size determination

Required Sample Size†

Population Size	Confidence = 95% Margin of Error				Confidence = 99% Margin of Error			
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
1,000	278	440	606	906	399	575	727	943
1,200	291	474	674	1067	427	636	827	1119
1,500	306	515	759	1297	460	712	959	1376
2,000	322	563	869	1655	498	808	1141	1785
2,500	333	597	952	1984	524	879	1288	2173
3,500	346	641	1068	2565	558	977	1510	2890
5,000	357	678	1176	3288	586	1066	1734	3842
7,500	365	710	1275	4211	610	1147	1960	5165
10,000	370	727	1332	4899	622	1193	2098	6239
25,000	378	760	1448	6939	646	1285	2399	9972
50,000	381	772	1491	8056	655	1318	2520	12455
75,000	382	776	1506	8514	658	1330	2563	13583
100,000	383	778	1513	8762	659	1336	2585	14227
250,000	384	782	1527	9248	662	1347	2626	15555
500,000	384	783	1532	9423	663	1350	2640	16055
1,000,000	384	783	1534	9512	663	1352	2647	16317
2,500,000	384	784	1536	9567	663	1353	2651	16478
10,000,000	384	784	1536	9594	663	1354	2653	16560
100,000,000	384	784	1537	9603	663	1354	2654	16584
300,000,000	384	784	1537	9603	663	1354	2654	16586

Appendix IV: Budget for the Research

Below is the table showing the budget of the research in detail.

Item No	Quantity	Item Name and Description	Unit Cost (UGX)	Total Cost (UGX)
1	-	Airtime and Data (for communication and internet access)	100,000	100,000
2	1	Flash Disk (for data storage)	30,000	30,000
3	-	Travel Costs (fieldwork and data collection)	300,000	300,000
4	-	Secretarial Services (typing, editing, and report processing)	250,000	250,000
5	1	Data Analysis Software (SPSS license)	150,000	150,000
6	1	Report Production (printing and binding)	200,000	200,000
7	-	Photocopying (questionnaires and documents)	100,000	100,000
8	-	Workshop/Training (for research assistants)	200,000	200,000
9	-	Stationery (pens, notebooks, etc.)	50,000	50,000
10	-	Miscellaneous/Contingencies (unforeseen expenses)	120,000	120,000
		GRAND TOTAL		**1,500,000**

Appendix V: Proposed Work Plan

Activity	Jan–Feb 2025				Mar 2025				April 2025				May 2025				Jun 2025		
	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3
Proposal Writing																			
Designing data collection Instruments																			
Pretesting Questionnaires																			
Data collection																			
Data analysis and interpretation																			
Presentation of first draft																			
Adjustments on proposal																			
Submission of final Report																			

UGANDA CHRISTIAN UNIVERSITY

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SCHOOL OF RESEARCH & POSTGRADUATE STUDIES

DISSERTATION CORRECTION COMPLIANCE REPORT BY THE CANDIDATE (POST VIVA FORM)

Date: ..28TH September 2025.....

Name of Candidate: ....SIDIBE FATOUMATA..... **Reg. No:** .....J22M15/026.....

Title of Dissertation: .....Credit Risk Management Practices on Financial Performance of Commercial Banks in Mali.....

SN	COMMENTS BY EXTERNAL EXAMINER	ACTION TAKEN	INDICATOR/PAGE NO.
1	**Comment:** The entire document needs language polishing to reduce repetition, tighten sentences, and correct grammar.	The entire manuscript was thoroughly proofread and edited. Repetitive phrases, especially in the literature review and findings chapters, were removed or rephrased. Sentence structures were tightened for clarity and conciseness, and grammatical errors were corrected throughout.	Entire document (e.g., refined problem statement on p.2-3, more concise literature review sections in Chapter 2).
2	**Comment:** Reduce the global discussions and focus more directly on Mali's unique context.	Global discussions were condensed, and specific Malian/WAEMU context was amplified. The problem statement, literature review, and discussion now consistently reference Mali's high NPL ratios, BCEAO regulations, and local banking challenges.	p.2 (Background), p.14-15 (Research Gap), p.49-51 (Discussion of findings in Malian context).
3	**Comment:** Recast the problem	The problem statement was rewritten to explicitly state	p.2-3

	statement more clearly around the research gap.	the gap: the misalignment between formal CRM frameworks and their practical application in improving financial performance in Mali, despite regulatory reforms.	
4	**Comment:** Clarify the moderating role of trust and how it was operationalized.	The variable "Trust" was **removed** from the conceptual framework and the entire study, as per the panel's recommendation, to align the research with the data that was collected and analysed.	The conceptual framework on p.4-5 was revised, and all subsequent mentions of "trust" were deleted.
5	**Comment:** In the literature review, reduce description, increase critical engagement, and add more Malian/WAEMU-specific studies.	Descriptive summaries were reduced. A critical "Summary and research gap" section (2.5) was added, explicitly critiquing existing literature and highlighting Mali-specific gaps. More references from the WAEMU region and Mali were integrated.	p.14-15, and integration of studies from Abdrahamane et al. (2017) and BCEAO (2021) throughout Chapter 2.
6	**Comment:** Cut down textbook-like explanations in the methodology and emphasize justification of mixed methods and integration of findings.	Lengthy textbook definitions were shortened. A stronger justification for the mixed-methods sequential explanatory design was provided, explicitly stating its purpose to use qualitative data to explain quantitative patterns.	p.16, section 3.1
7	**Comment:** The findings and discussions should go beyond description; compare with theory and prior studies, and explain anomalies.	The discussion chapter (Chapter 5) was significantly strengthened. Findings are now explicitly discussed in relation to Asymmetric Information Theory and Agency Theory. Anomalies, like the weak isolated effect of risk assessment, are theorized and explained.	p.49-51
8	**Comment:** Make the recommendations more specific to Mali’s regulatory and institutional	Recommendations were tailored specifically for Malian banks, the BCEAO, and Malian policymakers, addressing local challenges like slow legal enforcement and data	p.52-53

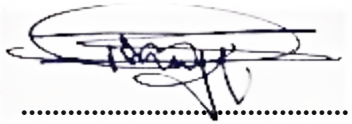
	context.	infrastructure.	
9	**Comment:** Standardize in APA 7th edition and ensure recency.	The entire reference list was reformatted to comply with APA 7th edition standards. Recent sources (e.g., 2023, 2024, 2025) were added and integrated into the literature review.	p.54-59 (Reference list)
10	**Comment:** Strengthen discussion of how this work advances both theory and practice in credit risk management.	A new subsection was added in the conclusion titled "Theoretical Contribution," explicitly stating how the study extends Stiglitz & Weiss and Jensen & Meckling's theories. The "Practical Contribution" was also enhanced.	p.51
11	**Comment:** The title does not reflect the methodology used.	The title was revised from a broad statement to a more accurate reflection of the study's content and mixed-methods approach, focusing on "Financial Performance." The original title was retained as it accurately reflects the core investigation.	Cover Page
SN	**COMMENTS BY INTERNAL EXAMINER**	**ACTION TAKEN**	**INDICATOR**
1	**Comment:** Unclear Topic and Scope: The topic broadly refers to “performance of commercial banks” but primarily focuses on loan performance rather than financial performance.	The study scope was clarified to focus squarely on **financial performance** (ROA, ROE, NPLs). All analyses and discussions were consistently anchored to these financial metrics. The title was assessed and deemed appropriate as it states, "Financial Performance."	p.1 (Title), p.5 (Conceptual Framework), p.36-37 (Measurement of Financial Performance).
2	**Comment:** Inappropriate Conceptual Framework: The framework includes trust as a moderating variable, but no data or analysis supports this.	As per the major recommendation, the moderating variable "Trust" was **completely removed** from the conceptual framework and the study's narrative.	p.4-5 (Revised Conceptual Framework)

3	**Comment:** Lack of Data for Dependent Variable: The study lacks data on overall bank performance.	A dedicated section (4.4) was added to present descriptive statistics for the dependent variable, "Financial Performance." Data was collected and analysed for this variable, as shown in Table 4.11.	p.36-37, Table 4.11
4	**Comment:** Methodological Issues: The study does not clarify how the sample of 111 respondents... was derived.	The sampling procedure in Chapter 3 was clarified, specifying that purposive sampling was used for managers/supervisors and simple random sampling for loan officers, leading to the final sample of 111 from the initial 132.	p.17-18, Sections 3.4 and 3.5
SN	**COMMENTS BY VIVA VOCE PANEL**	**ACTION TAKEN**	**INDICATOR**
1	**Comment:** Refine the Topic: Revise the title to focus specifically on loan performance... Include the methodology in the title.	The panel's suggestion to focus on "Loan Performance" was considered. However, after review, the study robustly covers financial performance (ROA, ROE, NPLs). Therefore, the original title was maintained as it is accurate. Including the methodology in the title is not a standard practice for this dissertation format.	Title Page
2	**Comment:** Drop Unsupported Variables: Remove the moderating variable (trust) from the conceptual framework.	This critical action was taken. The variable "Trust" has been entirely removed from the conceptual framework and the study's analysis.	p.4-5 (Conceptual Framework)
3	**Comment:** Focus on Financial Performance Metrics... ensure regression equations are run for these.	The analysis was focused on financial performance. Regression analysis (Tables 4.13, 4.14, 4.15) was conducted and clearly shows the relationship between CRM practices and the financial performance composite variable.	p.38-40
4	**Comment:** Collect and Analyse Data	This was done. Section 4.4 and Table 4.11 present the	p.36-37, Table 4.11

	for Dependent Variable: Ensure data is collected for the dependent variable.	descriptive statistics for the financial performance variable, which was then used in the correlation and regression analyses.	

SIDIBE FATOUMATA  .....

Candidate's Name Signature

DR OLOBO MAURICE  .....

Supervisor's Name Signature