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St. Mary's University, Ethiopia

The Effect of Credit Risk Management on the Financial Performance of Commercial Banks: The Case of Selected Private Commercial Banks in Ethiopia

By

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St. Mary's University

Masters of Business Administration

July, 2024

ADDIS ABABA, ETHIOPIA

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DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Dr. Muluadam Alemu. All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher-learning institution to earn any degree.

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Name of the student's **Signature**

St. Mary's University, Addis Ababa **July, 2024**

ENDORSEMENT

This thesis has been submitted to St. Mary's University, School of Graduate Studies for examination with my approval as a university advisor.

Muluadam Alemu (PhD) 

Advisor Signature

St. Mary's University, Addis Ababa **July, 2024**

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ACRONYMS

AQ - Asset Quality

CAMEL - Capital Adequacy, Asset Quality, Management Efficiency, Earnings and Liquidity

CAR - Capital adequacy ratio

E - Earning

FIs - Financial Institutions

LDR - Loan Default Rate

LQ - Liquidity

NBE - National Bank of Ethiopia

NPL - Non-performing Loans

ME - Management Efficiency

ROA - Return on Asset

ROE - Return on Equity

SPSS - Statistical Package for Social Sciences

Abstract

Effective credit risk management is fundamental for bank profitability and financial stability. This study investigated the effect of credit risk management practices on financial performance of private commercial banks in Ethiopia. The research examined data from a five-year period (2018-2022) of five selected private commercial banks in Ethiopia. Secondary data obtained from published audited annual financial reports of the selected banks was used to calculate the CAMEL rating system components (capital adequacy, asset quality, management efficiency, earning quality, and liquidity) which were used as measures of credit risk management, while return on equity (ROE) served as a key indicator of financial performance. Multiple linear regression analysis yielded statistically significant associations between several CAMEL components and ROE. Positive relationships were observed between management efficiency and liquidity with ROE, highlighting the importance of streamlined operations and balanced liquidity management for profitability. A negative association was found between asset quality and ROE, aligning with the notion that higher levels of non-performing loans hinder profit generation. An unexpected finding emerged with capital adequacy and earning quality. Contrary to expectations, the results indicated a negative association between capital adequacy ratio (CAR) and ROE. This might be explained by increased regulatory requirements forcing Ethiopian banks to hold more capital reserves, potentially hindering lending activities. While a positive association was anticipated, the results revealed a negative correlation between earning quality and ROE. This may suggest a potential focus on short-term profit strategies. Based on these findings, the study offers recommendations for Ethiopian banks: optimizing capital adequacy through policy dialogue, enhancing asset quality through stricter lending practices, maintaining liquidity, improving management efficiency, and scrutinizing earning quality metrics to emphasize core business activities.

Keywords: Credit Risk Management, Financial Performance, CAMEL approach, ROE.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

According to Afriyie and Akotey (2012), credit risk management is a technique that is well-structured to handle any uncertainty through risk evaluation and strategy formulation with the goal of controlling and mitigating risk by utilizing the managers' available resources. Commercial banks must manage credit risk effectively since it plays a key role in the loan application process.

According to Conford (2000), credit risk is the probability that the actual return on an investment or loan would differ from what was anticipated. Credit risk is defined by Coyle (2000) as losses resulting from credit customers' reluctance or incapacity to pay their debts in full and on time. Limited institutional capacity, inappropriate credit policies, fluctuating interest rates, poor management, inappropriate laws, low capital, and liquidity levels, directed lending, extensive bank licensing, poor loan underwriting, reckless lending, poor credit assessment, lack of non-executive directors, poor lending practices, interference from the government, and insufficient government oversight are the main sources of credit risk. In order to reduce these risks, the financial system must have well-capitalized banks,

The dominance of financial institutions over the generation of new capital, including but not limited to banks, credit unions, microfinance institutions, pension funds, and unit trusts, is crucial for commercial operations. Commercial banks are the main financial intermediaries in every economy. They also run the payment system and are the main sources of credit for the household and cooperative sectors (Saunders& Marcia, 2007). Credit risk has long been a critical concern for commercial banks worldwide, and it can have a significant impact on their financial performance. Commercial Banks of Ethiopia are no exception. As credit risk continues to pose challenges to their operations and profitability, its management has become increasingly crucial to ensuring sustainable growth and stability

The banks’ management should understand that weak credit risk management practices could lead to an increase in non-performing loans (NPLs), reduced profitability, and even bankruptcy. On the

other hand, effective credit risk management practices help banks mitigate potential losses arising from defaulting borrowers. In return, this improves confidence among investors and enhances the overall financial performance (Afriyie & Akotey, 2012).

The measurement, management, and acceptance of risks are what modern financial management characterizes as the business of banking. According to the definitions, banks are required to measure, watch over, and manage their credit risk. The risk that the other party may default or fail to perform is what is meant by the term "default risk." Banks are under more pressure to generate shareholder returns, which has forced them to take on more risk while still managing it to prevent losses. Globalization, deregulation, amalgamation, and other recent changes to the banking environment have presented major risk issues for banks but have provided fruitful opportunities (Saunders & Marcia, 2007).

A banking institution's long-term survival and prosperity depend on its ability to effectively manage credit risk (Kwaku, 2015). Creating a large enough credit risk environment is typically necessary for effective credit risk management. This entails operating under a sound loan-issuing procedure and establishing a credit management system that can effectively manage credit risk and monitor all of the firm's procedures (Kimoi, Ayuma, & Kirui, 2016). Any financial organization or institution must effectively manage credit risk if it hopes to survive and thrive (Afriyie & Akotey, 2012).

The risk-focused evaluation approach has been established to focus the inspection process on the areas of operations and business that present the most risk. Examiners are always learning new skills in risk-focused supervision as a result of exposure to pertinent training. By employing this strategy, the banking sector, particularly commercial banks, are made more aware of the importance of having formal, documented risk management frameworks. Notably, the more specialized, concentrated, and controlled a risk type's management must be, the more complicated it is (Seppala, 2000; Matz & Neu, 1998; Ramos, 2000).

Improving credit risk management practices requires first assessing the current state of affairs. Thus, this study provides a baseline against which Ethiopian banks’ credit risk management performance can be compared.

The study contributes to the existing literature on credit risk management practices and their impact on bank financial performance. The literature review includes a synthesis of the studies that have been conducted in the field and what the findings have revealed.

1.2 Statement of the problem

Commercial banks play a vital role in driving economic growth by facilitating lending and investment activities. However, their success hinges on effectively managing credit risk, the risk of borrowers defaulting on loans. Numerous studies, including those by McMenamin (1999) and Hempelettal (1994), highlight the critical link between weak credit risk management and bank failures. These studies identified deficiencies in loan quality control as a recurring factor leading to bank insolvencies.

Profitability is essential for commercial banks in order to maintain financial stability, fuel growth, and support expansion. Lending is one of the core functions of these institutions, and loans represent their primary asset class, a key source of revenue, and a substantial portion of their overall risk exposure (Bessis, 2005). Ineffective credit risk management practices can significantly impact a bank's financial health, potentially leading to loan defaults, reduced profitability, and ultimately, bank failure. This not only endangers the stability of the individual bank but also has unfavorable consequences for the broader financial system and economic well-being.

While the importance of robust credit risk management is well-established, a critical gap exists in the literature regarding its impact on financial performance within the Ethiopian banking sector. The CAMEL rating system, a widely used framework that assesses a bank's Capital adequacy, Asset quality, Management efficiency, Earnings quality, and Liquidity, has been proposed as a proxy for credit risk management practices. However, existing studies employing the CAMEL framework in the Ethiopian context have yielded conflicting results. Rundassa and Batra (2016) found no significant influence of capital adequacy on the return on assets (ROA) of Ethiopian commercial banks, while Kuhil (2018) reported a positive correlation between capital adequacy and bank profitability.

This research aimed to address this empirical gap by examining the relationship between credit risk management, as measured by the CAMEL framework, and financial performance metrics (ROA, ROE) in a sample of five selected private commercial banks in Ethiopia. By investigating these linkages within the unique context of the Ethiopian banking system, the study provided valuable insights that contribute to the body of knowledge on credit risk management and its impact on bank performance. Additionally, the findings offer practical recommendations for Ethiopian banks to strengthen their credit risk management practices and enhance their financial stability.

1.4 Research Questions

The researcher creates the following study questions based on the problem statement above.

- ✓ How does credit risk impact the financial performance of private commercial banks in Ethiopia?
- ✓ How do the CAMEL components influence the credit risk management of private commercial banks in Ethiopia?
- ✓ Is the financial performance of private commercial banks in Ethiopia explained by the CAMEL factors?

1.5 Objectives of the Study

1.5.1 General objective

The general objective of this study is to investigate the effect of credit risk management practices on the financial performance of commercial banks.

1.5.2 Specific objective

According to the broad goal, the researcher suggests evaluating the following particular goals;

1. To determine if credit risk management impacts the financial performance of private commercial banks of Ethiopia.
2. To determine how the CAMEL components, influence the credit risk management of private commercial banks in Ethiopia.

3. To assess how the CAMEL components, affect the private commercial banks financial performance.

1.6 Significance of the Study

This study provides significant contributions to various stake holders in the Ethiopian banking sector. The findings of this study can provide valuable resources for developing a comprehensive framework to implement an effective credit risk management procedure for Ethiopian private commercial banks. By improving risk assessment and mitigation strategies, banks can improve their overall financial stability and optimize their lending strategies. By understanding the link between credit risk management practices and financial performance metrics, banks can also identify areas for improvement in order to achieve a balance between profitability and risk control.

The study's insights can inform the government and regulatory bodies about the effectiveness of current legislative frameworks related to credit risk management in Ethiopian banks. This knowledge can be used to refine existing regulations or introduce new policies that promote sound credit risk management practices within the banking sector.

This research also contributes to the existing body of knowledge on credit risk management practices in developing countries like Ethiopia. It provides valuable data for academics to further explore the relationship between credit risk management and bank performance. Further exploration can lead to development of improved risk management models and improved practices

1.7 Scope of the Study

This research focused on investigating the relationship between CAMEL and financial performance metrics in selected private commercial banks operating within Ethiopia. The study utilized a five-year timeframe, encompassing the period from 2018 to 2022. Data for the analysis was sourced from the audited annual financial reports of five chosen private commercial banks in Ethiopia.

1.8 Limitation of the study

While this study sheds light on credit risk management practices within Ethiopian banks, some limitations are worth acknowledging. The research relies on publicly available financial data, which might not capture the full picture compared to internal bank information. Additionally, the five-year timeframe may not fully encompass a business cycle. Focusing solely on ROE limits the perspective on bank health, and the unexpected finding with earning quality warrants further investigation into the specific metrics used within the Ethiopian context. These limitations open doors for future research to further explore the intricate relationship between credit risk management and bank performance in Ethiopia.

1.9 Organization of the paper

This section gives the structure of every chapter that was included in the thesis paper. The paper consists of five chapters. Chapter one presents an introduction part including; the background of the study, the background of banking in Ethiopia, the statement of the problem, the objectives of the study, and the significance of the study. Chapter two contains a review of pieces of literature. Chapter three discusses the research design and methodology. Chapter four analyses the findings of the study. Finally, chapter five concludes the study and provides recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The purpose of this literature review is to present a thorough examination of the current studies regarding the impact of credit risk management on the economic success of commercial banks. Credit risk management entails the identification, assessment, tracking, and regulation of potential losses that may arise from the non-payment or default of borrowers, counterparts, or other obligors. The effective management of credit risk is crucial for banks to maintain their financial stability, profitability, and endurance in an environment characterized by numerous uncertainties and unexpected events in the financial sector.

Commercial banks are profit-driven institutions that serve a critical role within the economy and society. Their core function lies in financial intermediation – acting as a bridge between savers and borrowers. Deposits from individuals and businesses (considered liabilities for the bank) are channeled into loans for various investment purposes. This efficient provision of deposit and loan products distinguishes banks from other financial firms.

Effective management is crucial for bank profitability. Deposits must be managed to ensure sufficient liquidity to meet withdrawal demands. Loan portfolios require careful assessment to minimize defaults and maximize returns. In essence, banks strive to balance profitability with risk management, a concept known as asset liability management.

Beyond core intermediation activities, many banks offer a wider range of financial services. However, the act of taking deposits and granting loans remains their defining characteristic (Rundassa & Batra, 2016). This financial intermediation exposes banks to various risks that can impact performance. Therefore, bank managers must carefully evaluate cash flows and associated risks when allocating resources across different investment opportunities (Alshatti, 2015). Their primary goal is to maximize shareholder wealth while ensuring the bank's long-term stability. Excellent as well efficient functional performance of the banking sector reflects excellent financial stability in a country (Serwadda, 2018). Financial Institutions (FIs) are very crucial to any

economy. Their role is similar to that played by blood arteries to human bodies simply because FIs pumps financial resources for economic growth from the stocks to where it is required. Commercial banks are FIs and are key providers of financial information to the economy. They play even a most critical role in developing economies where borrowers have no access to capital. markets. It has been indicated that well-functioning commercial banks create an environment for economic growth whereas poorly functioning financial institutions block economic progress and worsen poverty (Afriyie et al, 2018).

2.2 Theoretical Review

Effective credit risk management has always played a pivotal role in the triumph of commercial banks, irrespective of their diversification into other business domains. However, a substantial number of bank failures can be attributed to the presence of weakened loan portfolios. A notable instance is the case of Franklin National Bank, where significant losses incurred in foreign exchange dealings were accompanied by a multitude of unsound loans. Similarly, numerous failures of thrift and commercial banks in the United States throughout the 1980s were partially attributable to mismatches between assets and liabilities, as well as problematic loans. In Japan, the collapse of mortgage banks in 1995 served as a red flag, exposing major imbalances in the balance sheets of virtually all banks (Heffernan, 2005)

2.2.1 Meaning of Risk

According to Ralph (2000), risk encompasses the presence of uncertainty surrounding future outcomes. In the realm of economics, risk holds significant importance as individuals and organizations commit themselves to irreversible investments in areas such as research and product development, infrastructure, inventory, and human capital. However, there remains inherent uncertainty regarding whether the future cash flows generated by these investments will adequately reimburse both debt and equity stakeholders. If these tangible investments fail to yield the expected returns, the financial claims associated with these returns will experience a decline in value (Ralph, 2000)

2.2.2 Meaning of Credit Risk

Financial institutions are confronted with a diverse range of risks, namely interest rate risk, foreign exchange risk, market risk, liquidity risk, operational risk, and financial risk (Yusuf, 2003; Cooperman, Gardener, and Mills, 2000). The specific risk under consideration here is credit or counterparty risk, which refers to the probability that a debtor or issuer of financial instruments will be unable to fulfill their obligations for interest payment or principal repayment as specified in a credit agreement (Hennie van Greuning, 2003). In essence, credit risk entails the possibility of delayed or non-payment, consequently leading to cash flow issues and impacting liquidity (Hennie van Greuning, 2003).

To elaborate further, credit risk encompasses the potential for losses resulting from a debtor's failure to honor its obligations to the bank in a timely and complete manner (Raghavan, 2003). It centers on the likelihood of a bank borrower or counterparty failing to meet agreed-upon terms. Typically, credit risk is associated with the conventional lending activities of banks and can be succinctly defined as the risk of full or partial non-repayment of a loan (Hempel and Simonson, 1999).

Given this context, it is crucial for all banks to establish a comprehensive credit philosophy outlined in a formal written loan policy. This policy must be accompanied by an appropriate credit culture that is not only devised but also communicated effectively (Hempel and Simonson, 1999). A successful credit culture is achieved when all employees within the bank align their actions and decisions with the lending priorities set by management (Hempel and Simonson, 1999)

2.2.3 Types of credit risk

To avoid unnecessary fees and optimize loan recovery, it is essential for financial institutions to comprehend the various types of credit. There are four primary categories to be aware of:

- ✓ Service Credit: This type of credit involves monthly payments for utilities such as telephone, gas, electricity, and water. Typically, a deposit is required, and late payments may result in additional charges. (Graveline, 2010)
- ✓ Loans: Loans can be obtained for varying amounts and durations. They can be repaid either in a single lump sum or through regular installments until both the borrowed amount and

the associated finance charges are fully settled. Loans can be classified as secured (backed by collateral) or unsecured (without collateral). (Graveline, 2010)

- ✓ Installment Credit: This form of credit enables individuals to make purchases on credit through store financing or an easy payment plan. Commonly used for buying items like cars, major appliances, and furniture, installment credit involves signing a contract, making a down payment, and agreeing to pay the remaining balance in equal installments. The finance charges are included in these payments, and the purchased item may serve as security for the loan. (Graveline, 2010)
- ✓ Credit Cards: Credit cards are issued by various entities such as retail stores, banks, or businesses. When used responsibly, a credit card can function as an interest-free loan if the full amount owed is paid at the end of each billing cycle. (Graveline, 2010)

Understanding the distinctions among these different types of credit empowers financial institutions to make well-informed decisions regarding loan recovery, avoiding unnecessary expenses, and maximizing efficiency in managing financial matters.

2.2.4 Credit policies & procedures

A Credit Policy is not something that is only operated by the Credit and risk Department. All employees involved with customers, in any way, need to be aware of the credit policy and ensure that it is operated consistently. In order to be effective, credit policies must be communicated throughout the organization, implemented through appropriate procedures, monitored and periodically revised to take into account changing internal and external circumstances. (Ojeka, 2011)

Economic conditions and the firm's credit policies are the chief influences on the level of a firm's account receivable. Economic conditions, of course, are largely beyond the control of the financial manager. As with other current assets, however, the manager can vary the level of receivables in keeping with the tradeoff between profitability and risk. Lowering quality standards may stimulate demand, which, in turn, should lead to higher profitable receivables, as well as a greater risk of bad debt. (Ojeka, 2011)

The examination of certain policy variables implies that the competitive process is accounted for in the specification of the demand function as well as in the opportunity cost associated with taking on additional receivables. The policy variables include the quality of the trade accounts accepted; the length of the credit period, the cash discount, any special terms such as seasonal dating, and the collection program of the firm. Together, these elements largely determine the average collection period and the proportion of bad debt losses (Horne, 1995: 361).

2.2.5 Risks in Banking Business

A bank sources its funds via deposits from the public, borrowing on the interbank market, or by means of issuing debt instruments on the financial market. The main activity of the bank is represented by buying and selling financial products having profit and risk features, which are different one from another. This transformation from supplying to the demand side is not without risk. Banks get exposed to credit, market, operational, interest rate, and liquidity risk. Proper management of these risks is a key issue in reducing the earnings risk of the bank and minimizing the risk that the bank becomes illiquid and that the depositor is not able to be refunded (Rundassa & Batra, 2016). Commercial banks face varied risks which can be classified into three groups; credit risk, operational risk, and strategic risk.

These risks have diverse impacts on the performance of commercial banks (Afriyie et al, 2018). Financial institutions are subjected to a variety of risks including; interest rate risks, foreign exchange risks, and political risks, Among others, the risks of banks can be identified in composing as market risks, liquidity risks, operational risks, and credit risks (Mutava& Ali, 2016). Furthermore, Tekalagn, Anwen, and Bari (2015) have remarked that the banks' risks can be recognized under six types: credit risk, liquidity risk, market risk, operational risk, reputation risk, and legal risk. Each of these risks yielded harmful influences on the probability, value at market, liabilities, and shareholders' equity of the financial institution. Among them, credit risk would be one of the key influential factors in bank performance. In case risks in the banking sector are compared (credit, market, operational, liquidity) it is obvious that credit risk is the most important (Cibulskiene & Rumbauskaite, 2012).

2.2.6 Banking Performance

The prevailing assumption that underlies much of the research and discourse on financial performance is that enhancing financial performance will lead to an increase in organizational functions and activities (Al-Khatib, Hazeem B, and Al-Horani, 2012). Performance, in this context, refers to the outcomes or achievements measured within a specific time frame.

Financial institutions play a crucial role in a country's economic development and growth (A. Zaidanin et al., 2021). The banking sector, in particular, acts as an intermediary between surplus and deficit units, contributing to economic growth and development. It serves as a vital source of financing for the majority of companies, striving to maximize shareholder prosperity (Worku & Asmare, 2019).

Inadequate economic performance can result in individuals being burdened with loans and defaults, consequently leading to bank failures, as credit represents a significant component of a bank's financial well-being (Munangi & Sibindi, 2020). The rate of return on assets (ROA) serves as an analytical tool for evaluating a bank's financial performance. ROA measures the efficiency with which a company utilizes its entire asset portfolio by calculating the ratio of net income to total assets (Koroleva et al., 2021). An increasing ROA signifies the bank's effectiveness in generating profits.

Banks commonly employ two ratios to assess their profitability: Return on Equity (ROE), which reflects the level of profit generated from the capital invested to produce returns, and ROA, which measures the capacity of the bank's total assets to generate returns. These ratios provide insights into the bank's profitability and its ability to utilize existing assets effectively (Koroleva et al., 2021)

2.2.7 Credit Risk Theory

Credit risk represents a present and potential threat to a bank's earnings or capital, originating from the failure of a borrower to adhere to the terms and conditions stipulated in loan agreements during the loan processing and disbursement phase (Kargi, 2011). Within the context of banking, risk pertains to the perceived uncertainty associated with certain events. Due to their fundamental role as intermediaries, banks inherently face credit risk as primary risk exposure, and the success of their operations hinges largely on the accurate measurement and efficient management of credit

risk in comparison to other types of risk (Gieseche, 2004). Credit risk materializes whenever bank funds are extended, committed, invested, or otherwise exposed to a borrower (customer) through explicit or implicit contractual arrangements. Consequently, risks are influenced by various factors that may not be directly linked to the bank itself, such as macroeconomic indicators like unemployment rates, shifts in socioeconomic conditions, debtors' attitudes, and political considerations.

The primary challenge faced by banks in their role as credit intermediaries is the occurrence of credit defaults, whereby borrowers are unable to fulfill their loan repayment obligations to the banks (Coyle, 2000). Merton's credit risk theory, introduced in 1977, establishes a relationship between a firm's credit risk and its capital structure, considering factors such as equity and debt obligations. Undoubtedly, the failure of borrowers to meet their obligations impacts the capital structure of banks. Central banks confront the responsibility of ensuring that banks implement adequate processes and procedures to safeguard against delinquent loans through the issuance of periodic guidelines and the enforcement of sanctions in cases of guideline violations. These actions by central banks are intended to prevent upheaval within the financial system and foster mutual respect for terms and conditions specified in financial agreements between banks and their customers.

In light of potential default risks, banks are inclined to charge higher interest rates for credits with elevated levels of risk (Owojori et al., 2011). The financial performance of banks must be effectively balanced with the management of their credit risk exposures. It is therefore expected that bank management teams will employ suitable methodologies to manage their credit risk exposures while adhering to the prudential guidelines and code of corporate governance prescribed by their respective central banks (Almustafa et al., 2023)

2.2.8 Commercial Loans Theory

The theory known as the commercial loans theory or the real bills doctrine theory represents the oldest framework explaining the fundamental operations of banks. According to this theory, banks are expected to exclusively extend self-liquidating short-term loans and commercial papers to their clientele (Hosna & Manzura, 2009). This theory serves as a guiding principle for banks, enabling logical and persuasive decision-making regarding the lending process and overall economic undertakings

2.2.9 Liquidity theory

The proposition, initially put forth by Emery (1984), suggests that firms facing credit constraints rely more heavily on trade credit compared to those with unhindered access to financial institutions. The crux of this concept revolves around the notion that when a firm experiences financial limitations, the availability of trade credit can compensate for the reduced credit supply from traditional financial sources. In line with this perspective, financially secure firms with ample liquidity or superior access to capital markets may provide financial support to credit-constrained counterparts.

Various empirical approaches have sought to validate this assumption. For instance, Nielsen (2002) utilizes small firms as a representation of credit-constrained entities and discovers that during periods of monetary contraction, these firms respond by increasing their acceptance of trade credit. As financially unconstrained firms are less inclined to seek trade credit and more inclined to extend it, a negative correlation between a buyer's access to alternative financing sources and their utilization of trade credit is expected. This negative relationship has been substantiated by the findings of Petersen and Rajan (1997) and (Lillian, 2013)

2.2.10 Asymmetric Information Theory

Information asymmetry in a financial market emerges when a borrower, who seeks a loan facility from a bank, possesses superior knowledge regarding the anticipated risks and returns linked to the investment project for which the funds are sought (Edwards & Turnbull, 1994). Conversely, the lender may lack adequate information about the borrower. This theory asserts that banks encounter dual challenges of moral hazard, which entails monitoring the behavior of borrowers, and adverse selection, which involves making errors in lending decisions, during the processing of customers' loan applications.

According to Gatuhu's (2013) research, information asymmetry refers to a scenario where enterprise owners or managers possess more knowledge about the risks their business faces compared to the lenders (PWHC, 2002 as cited in Eppy, 2005). Information asymmetries arise

when acquiring information on the borrower's characteristics or behavior becomes costly for the financial institution. These information asymmetries give rise to issues in allocating loans to borrowers with undesirable qualities such as high levels of risk or the inability to properly utilize the loan (Lown & Morgan, 2003). The theory describes a situation in which all parties involved in a venture lack relevant information. In the context of a debt market, information asymmetry occurs when a borrower, who seeks a loan, typically possesses better insights into the potential risks and returns associated with the designated enterprise. On the contrary, the lender lacks sufficient information about the borrower (Edwards & Turnbull, 1994).

Binks et al. (1992) highlight that perceived information asymmetry poses two challenges for banks: moral hazard (monitoring entrepreneurial behavior) and adverse selection (making errors in lending decisions). Overcoming these problems becomes difficult for banks due to the uneconomical nature of allocating resources for appraisal and monitoring matters when dealing with relatively small loan amounts. This is mainly because banks do not have free access to the data necessary for credit application screening and borrower monitoring.

Banks encounter situations of information asymmetry during the evaluation of lending applications (Binks & and Ennew, 1996, 1997). The information needed to evaluate the competence, commitment of the entrepreneur, and business prospects either remains unavailable, uneconomical to obtain, or difficult to interpret. As a result, bankers face two types of risks: adverse selection occurs when banks lend to businesses that subsequently fail (type II error), or when they fail to lend to businesses that have the potential to succeed (type I error) (Altman, 1971)

2.2.11 Anticipated Income Theory

The Anticipated Income theory was first introduced by H.V. Prochanow in 1944 in response to the practice of granting term loans by commercial banks in the United States. In 1949, Prochanow conducted a comprehensive examination of loans and bank assets, leading to the development of a novel theory on loans known as the "Anticipated Income Theory." According to Soyibo et al. (2004), this theory primarily focuses on long-term loans and advances.

A study conducted by Afriyie and Akotey (2011) concluded that irrespective of the borrower's character and the nature of their business, banks intend to recoup borrowers' loan amounts through

their anticipated profits rather than liquidating or selling their assets, as suggested by the commercial loans theory or transferring/selling existing loans to other lenders.

2.2.12 Financial Distress Theory

The theory of financial distress put forth by Baldwin and Scott (1983) holds significant relevance to the operational and financial well-being of banks, as their ability to engage in financial intermediation depends on maintaining a healthy state. This theory highlights the looming threat of financial distress when banks exhibit signs of being unable to fulfill their financial obligations within specified due dates.

Banks must safeguard their financial health against vulnerable circumstances, such as systemic shocks stemming from events like the COVID-19 pandemic, as well as inadequate monitoring of risks and financial performance (Berger and Pukthuanthong, 2012, 2016; Proag, 2014; Wruck, 1990). While credit default poses a notable challenge for banks, the aftermath of credit defaults, particularly the potential inability to honor depositors' withdrawals due to liquidity issues, represents a more significant concern. Such circumstances may lead to a bank run, wherein depositors rapidly withdraw funds due to suspicions of the bank's impending bankruptcy or insolvency.

The occurrence of a bank run could severely impair a bank's liquidity position, cash reserve ratio, and capital adequacy ratio, ultimately leading to its collapse. The recent unfortunate collapse of Silicon Valley Bank (SVB) further underscores the paramount importance of this theory about credit risk management, financial performance, and the continuity of banks' operations as ongoing concerns.

2.3 CAMEL Model

The CAMELS rating system was initially introduced by U.S. supervisory authorities in the 1980s as a method for rating on-site examinations of banking institutions. This system evaluates banks based on five (now six) critical dimensions, known as component factors, which assess the bank's operations, performance, financial condition, and regulatory compliance. The components are capital, asset quality, management, earnings, liquidity, and sensitivity to market risk (added later) (Sangmi, 2010).

Each component is rated on a scale of 1 (best) to 5 (worst), representing the bank's performance and risk level. A composite rating, which is an overview of the component ratings, is assigned and serves as the primary indicator of the bank's current financial condition. The composite rating also falls on a scale of 1 (best) to 5 (worst). The assignment of ratings involves both quantitative and qualitative assessments, and each component's weight may vary depending on the specific situation (Kaur J, 2015).

The composite rating generally correlates closely with the component ratings but is not derived from a simple arithmetic average. The assignment of the composite rating considers factors that significantly impact the overall condition and soundness of the institution. The management component is given special consideration, as the ability of management to respond to changing circumstances and risks is crucial in evaluating the institution's overall risk profile. (Kaur J, 2015)

The management's ability to identify, measure, monitor, and control risks is considered when assigning ratings. It is recognized that management practices may vary based on the institution's size, complexity, and risk profile. Less complex institutions engaged in traditional banking activities may require relatively basic management systems and controls, while more complex institutions with a broader range of financial activities need more detailed and formal systems to address their specific risks. (Sangmi, 2010)

All institutions are expected to effectively manage their risks, but less complex institutions engaged in less sophisticated risk-taking activities may not require highly formalized systems to receive strong or satisfactory ratings for their components or composite ratings. (Sangmi, 2010)

The model was again revised in 1996 and added sensitivity and the other component of CAMEL to assessing banks.

NPLR, Loan default rate (LDR), Loan Provision to non-performing loans, and Percentage of classified loans (POCL) are different credit risk management indicators that are incorporated in the CAMEL model (Ali and Dhiman, 2019). The most relevant model for determining the factors that determine the effectiveness of credit risk management is CAMEL (Abdelrahim, 2013). CAMEL is widely accepted as a performance-monitoring tool by regulators to state variables and establish a relationship with performance. The existing relationship between bases and CAMEL

was established as common by regulators globally including the United States and National Bank of Ethiopia (NBE), the score for its components i.e., Capital Adequacy, Asset Quality, Management Efficiency, Earning, and Liquidity are taken into consideration (Kuhil, 2018). The study made by Fredrick (2012) showed that the CAMEL model could be used as a proxy when it came to credit risk management.

2.4 Determinants of Financial Performance

The evaluation of banks' financial performance is typically expressed through the lens of profitability, which can only be meaningful when it translates into an increment in net assets. Profitability reflects a company's capacity to generate a reasonable return on the capital invested by its owners (Buffett, 2005). The primary objective for the existence of most organizations is to generate profits, and profitability ratios provide insight into a company's overall efficiency and performance. These ratios can be categorized into two components: profit margin and returns. Marginal ratios demonstrate the firm's ability to convert revenue into profits during different stages of analysis, while return ratios measure the firm's overall effectiveness in generating returns for its shareholders (Bessis, 2005). Amongst the various metrics used to assess profitability, the most widely used include profit margin on sales, return on investment ratios, and return on equity.

C. Paramasivan and T Subramanian, (2008) described the most popular profitability measurement formulas as below:

Return on Asset = (Net Income / Total Assets) * 100

Return on Equity= (Net Income / Total Equity) * 100

Profit Margin= (Net Income / Net Sales) * 100

According to the research conducted by Waymond (2007), profitability ratios are frequently utilized as key metrics in credit analysis within banks, as they serve as indicators of management performance. The assessment of profitability is regarded as the most critical measure of business success, as highlighted by Mishkin (2002)

2.4.1 Internal Determinants of Bank Profitability

Internal determinants of bank profitability encompass various factors such as size, capital, risk management, and expense management. These factors have been studied extensively to understand their impact on a bank's financial performance.

Researchers such as Almazari (2014), Ramadan (2011), have also established a positive relationship between bank size and capital ratios, particularly for small to medium-sized banks. As the size of these banks increases, their profitability tends to rise. However, it is worth noting that some studies, such as Berger et al. (1987), suggest that there may be limited cost savings achieved by increasing the size of a banking firm. This implies that very large banks might eventually face scale inefficiencies.

Other internal factors, such as credit quality and liquidity, are considered bank-specific factors that are closely associated with risk management. Risk management is crucial in the banking sector due to the inherent nature of the business. Poor asset quality and low levels of liquidity are identified as major causes of bank failures, making credit and liquidity risks key areas of focus for researchers examining their impact on bank profitability. (Garcia, 2016)

In summary, internal determinants, including size, capital, risk management, and expense management, play significant roles in shaping a bank's profitability. Understanding these factors is essential for banks to make informed decisions, optimize their financial performance, and mitigate potential risks. (Garcia, 2016)

2.4.2 External Determinants of Bank Profitability

When examining the external determinants of bank profitability, various factors come into play. These factors can be categorized into control variables that describe the macroeconomic environment and variables that represent market characteristics. (Menicucci, 2016)

Control variables pertaining to the macroeconomic environment include inflation, interest rates, and cyclical output. These factors are believed to have an impact on a bank's profitability. Fluctuations in inflation rates and interest rates, for example, can affect borrowing costs, loan demand, and investment decisions, ultimately influencing a bank's profitability. Cyclical output,

which refers to the overall economic performance and business cycles, can also have an impact on banks' profitability as it affects credit demand and quality. (Garcia, 2016)

Market characteristics are another set of external determinants that can influence bank profitability. These characteristics encompass market concentration, industry size, and ownership status. Market concentration refers to the degree of competition within the banking sector. Higher levels of market concentration may lead to reduced competition and potentially higher profitability for banks. Industry size, on the other hand, reflects the overall size and scope of the banking sector in a particular market. The size of the industry can influence competition, market dynamics, and profitability. Ownership status refers to whether banks are privately owned, state-owned, or have other ownership structures. Different ownership structures may have varying effects on profitability due to differences in management practices, objectives, and regulatory environments. (Menicucci, 2016)

Understanding these external determinants is crucial for banks as they navigate the external environment and strive to optimize their profitability. By considering the macroeconomic environment and market characteristics, banks can adapt their strategies, risk management approaches, and operational decisions to mitigate potential challenges and capitalize on opportunities for sustained profitability.(Menicucci, 2016)

2.5 Empirical Literature Review

Credit risk management poses a significant challenge to the performance of banks, prompting numerous researchers to explore its impact on banks from various perspectives.

Saidov (2011), commercial banks play a pivotal role in sustaining and advancing the economy of a country. As key participants in the financial system and active contributors to the overall economic landscape, their significance cannot be overstated. One of the primary objectives of commercial banks is to generate profits by acting as intermediaries between depositors (savers) and borrowers (investors). Consequently, commercial banks across different countries employ various methods to evaluate their performance.

In addition to the conventional ratio analysis, banks utilize methodologies such as the CAMEL framework, GIRRAFE, EAGELS, and PEARLS. Uyen (2011) emphasizes that the CAMEL

framework, in particular, comprehensively assesses a bank's performance from various angles, serving as a valuable tool for discerning the safety and soundness of banks while mitigating potential risks that may lead to bank failures. Furthermore, Kouser (2012) notes that the CAMEL framework allows for performance evaluation, ranking, and assessment based on parameters such as capital adequacy, asset quality, management efficiency, earning ability, and liquidity position. It has become an essential instrument for examiners and regulators, ensuring the overall health and vitality of a bank by analyzing diverse information sources such as financial statements, funding sources, macroeconomic data, budgets, and cash flow (Dang, 2011).

However, it is important to acknowledge that Hirtle and Lopez (1999) stress the highly confidential nature of a bank's CAMEL rating, restricting its dissemination solely to senior management for strategic planning purposes and appropriate supervisory personnel

The field of credit risk management in financial institutions is an ongoing subject of research for scholars who aim to gain a deeper understanding of its various dimensions and its impact on financial performance. This is due to the crucial role that financial institutions play in economies. In their study, Dauda and Terzungwe (2018) examined the influence of credit risk on shareholders' value in Nigerian Deposit Money Banks (DMBs). Their sample consisted of nine banks and the study covered the period from 2004 to 2016. To analyze the data, the researchers utilized panel multiple regression techniques and applied the Generalized Least Square (GLS) estimators. The findings revealed that non-performing loans and loan loss provisions exhibited a significant negative impact on shareholders' value, as measured by market capitalization. Additionally, the study found that bank size had a significant positive effect on shareholders' value. However, contrary to expectations, the study also revealed that the capital adequacy ratio did not align with size in terms of its impact on shareholders' value; instead, it was found to have a detrimental effect.

It is worth noting that the continuous investigation of credit risk management in financial institutions is crucial for enhancing our understanding of this field and its implications for financial performance. Further exploration of these factors can contribute to the development of effective strategies and policies for managing credit risk and optimizing shareholders' value in financial institutions

In line with the research by Fredrick (2010), Jackson (2011) corroborates the use of CAMEL indicators as independent variables, with return on equity serving as a proxy for measuring banks'

performance. The findings of Jackson align with those of Fredrick, both affirming that the CAMEL model can effectively serve as a proxy for credit risk management. Additionally, Musyoki and Kadubo (2011) ascertain that credit risk management holds significant predictive power over a bank's financial performance. Their research concludes that the success of banks is intricately linked to their ability to manage credit risks.

Agegnehu's (2011) examination delves into the intricate dynamics of credit risk management and the performance of Ethiopian commercial banks. The primary objective of this study was to shed light on the interplay between credit risk and the overall performance of commercial banks within Ethiopia. To achieve this objective, a quantitative research approach was employed, primarily relying on documentary analysis. A meticulous analysis was conducted on panel data collected from seven carefully selected commercial banks, spanning over an eleven-year duration (2001-2011), with the analysis conducted within the framework of fixed effects. The noteworthy findings of this study unveiled a statistically significant negative relationship between non-performing loans and return on assets (ROA). These findings underscore the critical importance of effective credit risk management practices in mitigating the adverse impact of non-performing loans on the profitability and financial performance of commercial banks

Boahene, Dasah, and Agyei (2012) conducted a regression analysis to ascertain the existence of a significant correlation between credit risk and the profitability of banks in Ghana. In line with the approach adopted by Hosna, Manzura, and Juanjuan (2009), the researchers utilized the Return on Equity metric as a measure of a bank's performance, along with the ratio of non-performing loans to total assets as a proxy for credit risk management. Through their empirical investigation, they determined that credit risk management indeed impacts the level of profitability exhibited by Ghanaian banks. Furthermore, their study suggests that a higher capital requirement contributes positively to the profitability of banks.

Girma Mekasha (2011), it was observed that Ethiopian Commercial banks demonstrated a connection between their credit risk management policies, loan default ratios (bad loans), and interest income (profitability). The findings indicated that banks with strong credit risk management policies exhibited lower loan default ratios and higher interest income. Moreover, a significant relationship between bank performance, measured by return on assets, and credit risk management, assessed through loan performance, was identified. The researcher emphasized the

importance of implementing prudent credit risk management practices to safeguard the assets of banks and protect the interests of investors. The study further revealed that banks with greater profit potential were better equipped to absorb credit losses and consequently achieve superior performances. Additionally, a direct but inverse relationship between return on assets (ROA) and the ratio of non-performing loans to total loans (NPL/TL) and loan provision to total loans was observed

Furthermore, a study conducted by Hailu (2016) delved into the examination of the influence of credit risk on the profitability performance of certain public and private commercial banks in Ethiopia. The study drew upon secondary data derived from the annual reports of these chosen banks, and the findings revealed a discernible negative association between credit risk and the performance of commercial banks operating within Ethiopia

In their respective works, Tefera (2011) and Mekasha (2011) conducted investigations into the impact of credit risk management on the performance of commercial banks in Ethiopia. They utilized annual financial reports from commercial banks and administered surveys to bank managers and officers. Their findings revealed a discernible negative correlation between credit risk management and the financial performance of banks. Notably, as a contributing member of the Basel Committee, the National Bank of Ethiopia has implemented the adoption of the CAMEL framework as a tool for measuring credit risk. In doing so, the National Bank of Ethiopia has established guidelines about the desired levels of various CAMEL components.

2.6 Literature Gap

The existing empirical literature focusing on the analysis of credit risk management and financial performance exhibits a bias toward examining diverse methodologies and techniques utilized by institutions in credit risk management. These studies highlight the potential contribution of credit risk management to the financial performance of banks, but they do not establish a definitive and coherent relationship between credit risk management and financial performance. Instead, they merely acknowledge credit as one of the factors influencing financial performance. As a viable solution, the employment of the CAMEL approach has been proposed as the optimal tool for banks and supervisory bodies to assess their credit risk exposure comprehensively.

2.7 Conceptual Framework

A conceptual framework is a research tool that helps researchers develop an understanding of the situation they are studying. It is also a tool that can help researchers communicate their findings. When a conceptual framework is articulated, it can help researchers make sense of their findings and identify the relationships between variables. (Smith, 2004)

In this study, the conceptual framework model was used to guide the research. The model illustrated the interrelationships between the variables that were studied.

The diagram below depicts the key variables and their interrelationships. It presents the adopted conceptual framework, illustrating the variables considered in the study.

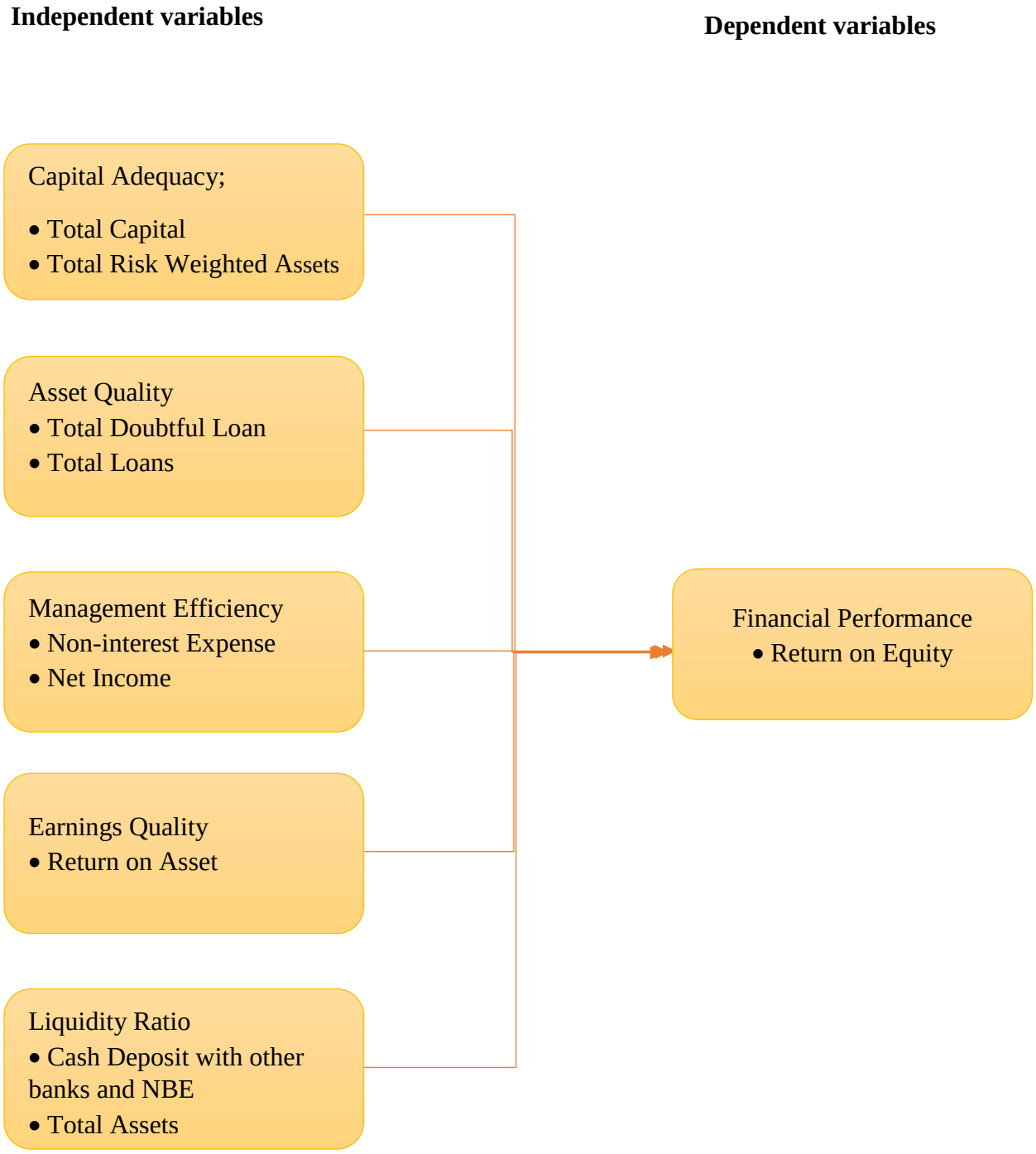

Figure 1 Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with how the research was conducted to achieve the stated objectives and it presents the research design and methodology that was used to carry out the research. It presents the research approach, research design, data type and source, research instruments, methods of data analysis, and regression model that was encountered during the research process.

3.2 Research Approach

The purpose of this study is to look into how credit risk management affects the financial performance of Ethiopian commercial banks. The researcher utilized a quantitative research approach to examine the relationship between credit risk management practices and financial performance in Ethiopian commercial banks.

Quantitative methods are well-suited for this investigation as they excel at analyzing relationships between measurable variables. Credit risk management practices can be quantified using metrics like capital adequacy ratios and non-performing loan ratios, while financial performance can be measured through indicators like return on assets (ROA) and return on equity (ROE). This approach allows for hypothesis testing and the identification of statistically significant relationships between these variables. (Holton, 2005)

3.3 Research Design

Numerous research activities need to go smoothly for research to be as effective as possible to yield the most knowledge with the least amount of work, time, and money spent. This is why research design is necessary (Mugenda &Mugenda, 2003).

The goal of this study was to determine how credit risk management affects the financial performance of private commercial banks in Ethiopia. To accomplish this, an explanatory research design involving the collection, analysis, and interpretation of data was employed.

3.4 Data Type and Source

A quantitative research approach was used for this investigation. In achieving the study objectives, secondary data was used by a researcher. The data have been collected from the audited annual financial reports of the selected private commercial banks and related documents. For the annual financial reports, the researcher used a five-year financial statement which was prepared in line with the international financial reporting standard (IFRS) from 2018-2022. These resources were used to gather and calculate the independent and dependent variables.

3.5 Data Analyzing Tools and Techniques

Multiple linear regression analysis was employed in the study to determine the relationship of one dependent variable to multiple independent variables. The regression outputs were obtained by using SPSS version 25.

3.6 Regression Model

To determine the relationship between factors, multiple regression was used to compare financial performance to credit risk management. The model used credit risk management as the independent variable and treated the financial performance of private commercial banks as the dependent variable. The dependent variable (financial performance) was determined by Return on Equity (ROE), whereas the independent variables were the CAMEL components of Capital Adequacy, which were determined by the ratio of Total Capital (TC) to Total Risk-Weighted Assets (TRWA), Asset Quality, which was determined by the total amount of Doubtful Loans to Total Loans, Management Efficiency, which was determined by the Non-Interest Expense to Net Income, Earnings, which was determined by the Return on Asset and Liquidity was measured by the Cash Deposits with other banks and National Bank of Ethiopia to Total Assets

The analysis model equation is represented in the regression model as follows:

$Y=\beta 0+ \beta 1X1+ \beta 2\ X2+ \beta 3\ X3+ \beta 4\ X4+ \beta 5\ X5+\epsilon$ Where:

Y = Dependent Variable

$\beta 0$ = Constant term

X1 = Capital Adequacy

X2 = Asset Quality

X3 = Management Quality

X4 = Earnings

X5 = Liquidity

3.6.1 Dependent variables

Due to the widespread usage of ROE and ROA in prior studies, the researcher has chosen to utilize them as the indicators of profitability in the regression analysis. First, ROE and RORAC (Profit after Tax/Risk Adjusted Capital) ratios are taken into account. We might have utilized RORAC (Return on Risk Adjusted Capital), a measure of the relative performance of the institutions, in our regression study. However, the researcher hasn't used RORAC because banks often use it with internally accessible data, like risk-adjusted capital, and in this case, the researcher doesn't have access to the necessary data. As a result, the researcher has chosen to employ ROE as the profitability metric.

3.6.2 Independent variables

Capital Adequacy, Asset Quality, Management Efficiency, Earnings, and Liquidity (CAMEL) are the five independent variables that the researcher chose since they are risk management indicators that have an impact on the profitability of banks. The researcher has gathered a series of numbers from the banks' annual reports' balance sheets.

3.6.3 Components of CAMEL Rating System

- ✓ **Capital Adequacy**

A bank's ability to fulfill its obligations is measured by the capital adequacy ratio (CAR). The ratio, also known as the capital-to-risk weighted assets ratio (CRAR), compares capital to risk-weighted assets and is monitored by regulators to ascertain the likelihood that a bank may collapse. In addition to promoting the global financial systems' stability and effectiveness, it serves to safeguard depositors (ADAM,2023).

- ✓ **Asset Quality**

The asset quality evaluation is based on existing circumstances and the potential for future deterioration or improvement in light of prevailing norms, trends, and economic situations. To calculate the proper component rating for Asset Quality, the examiner evaluates the credit union's credit risk management. The examiner assesses the impact of additional risks, including interest rate, liquidity, strategic, and compliance risks, in addition to credit risk. All significant assets' quality and trends must be considered while grading them. This covers any assets that could hurt a credit union's financial situation, such as loans, investments, other real estate owned (ORE0s), and other real estate (C. Paramasivan and T. Subramanin, (2008).

- ✓ **Management Efficiency**

Management is the most prognosticative sign of health and a major factor in determining whether a credit union can recognize and address financial stress. Examiners receive objective signs from the management component rather than just subjective ones. An evaluation of management is not based exclusively on the credit union's current financial situation and is not calculated as an average of the ratings for the other components. The board of directors and management's capacity to assess, monitor, and control the risks associated with the credit union's operations, ensure its safe and sound operations, and guarantee compliance with relevant laws and regulations is reflected in this component rating (C. Paramasivan and T. Subramanin, (2008).

- ✓ **Earnings**

A credit union's capacity to generate a reasonable return on its assets is essential to its ability to fund growth, maintain its competitiveness, and replenish and/or expand capital. Reviewing only

previous and present performance is insufficient for evaluating and grading earnings. Future performance, including performance in varied economic conditions, is of equal or greater worth. Examiners assess "core" earnings, which are a credit union's long-term earning capacity after discounting short-term changes in income and one-time expenses. For this reason, a review of the budget and underlying assumptions of the credit union should be conducted. Examiners also take into account the connections to other risk factors like credit and interest rates (C. Paramasivan and T. Subramanin, (2008).

- ✓ **Liquidity**

The practice of assessing, monitoring, and regulating balance sheet risk (including interest rate risk and liquidity risk) is known as asset and liability management (ALM). Strategic, financial, and net worth planning are all incorporated into an effective ALM process along with risk control. The following factors are examined by examiners: (a) interest rate risk sensitivity and exposure; (b) reliance on short-term, erratic sources of funding, including any undue reliance on borrowings; (c) availability of assets readily convertible into cash; and (d) technical expertise relative to ALM, including the management of interest rate risk, cash flow, and liquidity, with a focus on ensuring that the potential for loss in the activities is not excessive relative to its capital. ALM includes strategic and reputational risks in addition to interest rate and liquidity issues (C. Paramasivan and T. Subramanin, (2008).

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This section delves into the key findings of this study, examining the relationship between credit risk management practices, as measured by the CAMEL rating system components, and the financial performance of private commercial banks in Ethiopia. The analysis utilizes both Pearson correlation coefficients and multiple linear regression to provide a comprehensive picture of these relationships. The results highlight statistically significant associations between several CAMEL components and return on equity (ROE), the chosen measure of financial performance. We identify both expected and unexpected relationships, offering valuable insights into effective credit risk management strategies for Ethiopian banks. These findings contribute to the existing body of research on bank performance, specifically within the unique context of the Ethiopian banking industry.

4.1 Econometric Analysis

Prior to conducting the multiple linear regression analysis, a comprehensive examination of crucial assumptions was undertaken to ensure valid inference. Aligned with the framework outlined in Chapter 3, detailed assessments were conducted for normality, constant variance, multicollinearity, absence of error autocorrelation, and potential outlier influence.

4.1.1 Correlation Coefficients

Linearity, a crucial assumption for multiple linear regression, was evaluated between the dependent variable (ROE) and each independent variable (CAMEL components) using the Pearson correlation coefficient. Data on these variables for the five-year period from 2018 to 2022 was analyzed.

Table 1 Correlation Matrix

		ROE	CAR	AQ	ME	E	LQ
ROE	Pearson Correlation Sig (2 tailed)	1					
CAR	Pearson Correlation Sig (2 tailed)	-.145 .045	1				
AQ	Pearson Correlation Sig (2 tailed)	-.084 .034	-.352 .042	1			
ME	Pearson Correlation Sig (2 tailed)	-.119 .035	-294 .077	.239 .128	1		
E	Pearson Correlation Sig (2 tailed)	.575 .001	.385 .029	-.271 .095	-.525 .004	1	
LQ	Pearson Correlation Sig (2 tailed)	.358 .039	-.007 .488	.359 .039	-.219 .146	.014 .473	1

Source: Audited Financial Statement (2024)

The results from table 4.1 confirmed an approximately linear relationship between ROE and earning quality (E) with a statistically significant positive correlation of 0.575 (p=0.001). A moderate positive correlation was also observed between ROE and liquidity ratio (LQ) (0.358, p=0.039). These findings support the suitability of using multiple linear regression for further analysis. Banks with stronger earning quality, as indicated by profitability from core operations (E), tend to have higher return on equity (ROE). Similarly, maintaining adequate liquidity (LQ) appears to be beneficial for achieving higher returns, although the direction of causality might require further investigation.

Interestingly, the correlations between ROE and the other CAMEL components (capital adequacy ratio (CAR), asset quality (AQ), and management efficiency (ME)) were statistically significant at the 10% level, though not at the more conventional 5% level. While these correlations are weaker than those with E and LQ, they still suggest potential relationships between these factors and ROE. Specifically, a weak negative correlation exists between ROE and CAR (-0.145, p=0.045) and a weak positive correlation between ROE and AQ (-0.084, p=0.034). It's important

to note that these weak correlations and their significance levels near the 10% threshold warrant caution in interpreting their direction of influence.

4.1.2 Regression analysis model

A multivariate regression model was used to examine the relationship between credit risk management and the financial performance of commercial banks in Ethiopia. The linear regression model included the following independent variables: capital adequacy ratio (CAR), asset quality (AQR), liquidity ratio (LIQ), management efficiency (ME), and earnings quality (EARN). The dependent variable was return on equity (ROE).

Employing diverse statistical tools, the analysis yielded positive results for all assumptions. This indicates that normality of residuals and independent variables, homoscedasticity, lack of significant multicollinearity, non-autocorrelation of errors, and minimal impact of outliers are all observed in this study.

Table 2 Overall Model Adequacy Summary

Model	R	R squared	Adjusted R square	Std. Error of the estimate	Durbin-Watson
1	.853	.737	.688	1.859	2.263

Source: Audited Financial Statement(2024)

Table 4.2 above demonstrates the linear regression model provided a good fit for analyzing the relationship between the CAMEL components and return on equity (ROE) for the Ethiopian banks in the studied period (2018-2022). The R-squared value of 0.737 indicated that 73.7% of the variance in ROE was explained by the model, with an adjusted R-squared of 0.688 suggesting the model avoids overfitting.

Table 3 Analysis of Variance

	Sum of Squares	Df	Mean Square	F	P value.
Regression	184.04	5	36.808	10.648	.000
Residual	65.679	19	3.457		

Total	249.719	24

Source: Audited Financial Statement (2024)

The analysis of variance (ANOVA) result in Table 3 reveals a statistically significant relationship between the independent variables (CAMEL components) and the dependent variable (return on equity - ROE). The regression model explains a significant portion of the variance in ROE, with a mean square of 36.808 for the regression compared to 3.457 for the residuals. This is further confirmed by the F-statistic of 10.648 and a corresponding p-value of 0.000, which is well below the conventional significance level of 0.05. This indicates that the model effectively captures the influence of the CAMEL components on ROE, providing a good fit for analyzing the relationship within the context of Ethiopian banks during the study period

Autocorrelation test

The Durbin-Watson statistic (2.263) is a diagnostic test used to assess the presence of autocorrelation (serial correlation) in the residuals of the linear regression model. Autocorrelation occurs when the error terms in the model are not independent, meaning the error in one observation influences the error in subsequent observations. This can violate assumptions of regression analysis and lead to unreliable results.

In this case, the Durbin-Watson statistic of 2.263 falls within the generally accepted range (around 2), suggesting that there is no significant autocorrelation present in the residuals of the model. This is a positive finding, as it indicates the model meets a key assumption of linear regression and the estimated coefficients are likely to be reliable.

Normality test

Normality of residuals is an assumption of linear regression analysis. It implies that the errors (differences between predicted and actual values) are normally distributed. Two common tests for normality are the Kolmogorov-Smirnov (K-S) test and the Shapiro-Wilk test.

Table 4 Tests for normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	statistic	Df	Sig	Statistic	df	Sig

ROE	.122	25	.200	.957	25	.353

Source: Audited Financial Statement(2024)

In this study, both the K-S statistic (0.122) and the Shapiro-Wilk statistic (0.957) for the residuals of the model have p-values greater than 0.05 (0.200 and 0.353, respectively). Since a high p-value (typically greater than 0.05) suggests a failure to reject the null hypothesis of normality, these results indicate that we cannot reject the assumption of normality for the residuals at the 5% significance level. This suggests that the errors in the model are likely approximately normally distributed, which satisfies a key assumption of linear regression.

Homoscedasticity Test

Table 5 Breusch Pagan and Koenker test

Test	LM	Sig
BP	14.32	.018
Koenker	19.542	.09

Source: Audited Financial Statement (2024)

Based on the homoscedasticity tests, there is no strong evidence of violation of the assumption of homoscedasticity in the regression analysis. The Breusch-Pagan test statistic (14.32) has a p-value of 0.018, which is slightly above a stricter significance level of 0.01 that might be considered for larger samples. However, the Koenker test statistic (19.542) with a p-value of 0.09 further supports the notion of homoscedasticity, as the p-value is well above the commonly used threshold of 0.05. Overall, these results suggest that the variance of the residuals is likely consistent across the range of the independent variables, satisfying an important assumption of linear regression.

Multicollinearity test

Multicollinearity, a potential issue in regression analysis, occurs when independent variables are highly correlated with each other. This can make it difficult to isolate the unique effect of each variable on the dependent variable. To assess multicollinearity, we examined the Tolerance and Variance Inflation Factor (VIF) values for the independent variables (CAMEL components).

Table 6 Test for Multicollibearity

	Tolerance	VIF
CAR	.744	1.291
AQ	.695	1.440
ME	.641	1.560
E	.657	1.522
LQ	.767	1.305

Source: Audited Financial Statement (2024)

The Tolerance values in this study range from 0.641 (ME) to 0.767 (LQ), all exceeding 0.20. Similarly, the VIF values fall between 1.291 (CAR) and 1.560 (ME), all below a commonly used threshold of 5. These results suggest that multicollinearity is not a major concern in this analysis. There's no strong evidence of excessive correlation among the independent variables, indicating that their individual effects on ROE can be reasonably interpreted within the mode

Regression Coefficients

After confirming the assumptions of multiple linear regression analysis have been met, a linear regression model was used to examine the impact of credit risk management on the financial performance of commercial banks. The following section presents the regression coefficients obtained using SPSS. The regression analysis identified statistically significant relationships between several CAMEL components and return on equity (ROE) for Ethiopian banks during the studied period (2018-2022).

Table 7 Regression Coefficients

Model	Unstandardized Coefficients		Standardized coefficients	t	P-value
	B	Std Error	Beta		
Constant	7.813	7.142		-1.094	.288
Capital adequacy ratio	-456	0.131	-.466	-3.486	.002

Asset Quality	-1.218	.581	-.296	-2.099	.049
Liquidity ratio	.224	.085	.387	2.663	.016
Management efficiency	6.925	1.157	.869	5.987	.000
Earning Quality	.446	.112	-.534	3.975	.001

Source: Audited Financial Statement (2024)

A negative coefficient (-0.456) and a statistically significant p-value (0.002) for capital adequacy ratio (CAR) suggest that higher capital adequacy ratios are associated with lower ROE. This could be due to factors like increased regulatory requirements leading banks to hold more capital, which reduces their capacity for generating profits. While a positive relationship between capital adequacy and profitability is often expected (Demirguc-Kunt & Maksimovic, 1998), some studies suggest a potential "capital overhang effect" (Berger & Bouman, 1989). This effect posits that excessively high capital requirements can limit banks' ability to invest in profit-generating assets, potentially lowering ROE. Similarly, a negative coefficient (-1.218) and a significant p-value (0.049) for asset quality (AQ) indicate that poorer asset quality (higher non-performing loans) is associated with lower ROE. This finding is well-supported by existing research (Molyneux & Thornton, 1992). Banks with a higher proportion of NPLs face challenges in generating income due to reduced interest payments and potential loan write-offs. This ultimately leads to a decline in profitability, reflected in lower ROE.

The liquidity ratio (LQ) exhibited a positive coefficient (0.224) and a statistically significant p-value (0.016), implying that maintaining higher liquidity is associated with higher ROE. This suggests a potential benefit for banks in balancing liquidity needs with profitability. While managing liquidity is crucial for meeting short-term obligations (Demirguc-Kunt & Huizinga, 2004), maintaining excess liquidity can limit a bank's ability to invest in potentially high-yielding assets. However, some studies suggest that adequate liquidity can create a perception of safety among investors, potentially attracting deposits at lower costs and ultimately boosting profitability (Boyd & Ronson, 2005). This could explain the positive association observed in this study.

Management efficiency (ME), on the other hand, showed a strong positive coefficient (6.925) and a highly significant p-value (0.000), indicating that more efficient banks tend to have higher ROE.

Studies by Berger et al. (1993) and Bourke (1989) demonstrate a positive link between cost efficiency and bank profitability. Efficient banks can control operating expenses, minimize resource wastage, and potentially generate higher returns on their assets. This finding highlights the importance of efficient operations for banks to achieve strong financial performance.

Notably, earning quality displayed a negative coefficient (-0.446) despite a statistically significant p-value (0.001). This might seem counterintuitive, but it could be due to the way earning quality is measured. Traditional earning quality metrics often emphasize the sustainability and predictability of a bank's earnings (Chen et al., 2017). This perspective suggests that a higher reliance on non-core income sources, such as trading gains or fee income, might not translate into long-term profitability. These sources can be volatile and unpredictable, potentially inflating short-term ROE but not reflecting a sustainable earnings stream. Further investigation into the specific components of earning quality for Ethiopian banks might be needed to fully understand this relationship.

Overall, the regression analysis identified statistically significant relationships between several CAMEL components and return on equity (ROE). These findings lend support to the notion that effective utilization of the CAMEL rating system can contribute to improved financial performance for bank

4.2. Discussion of Results

Effective credit risk management practices are fundamental for ensuring the financial stability and profitability of banks. By identifying and mitigating potential loan defaults and other financial risks, banks can safeguard their assets, generate sustainable income, and contribute to the overall health of the financial system. This study investigated the relationship between credit risk management, as measured by the CAMEL rating system components, and the financial performance of private commercial banks in Ethiopia. This research fills a critical gap in the literature by providing insights into the specific factors influencing bank performance within the unique Ethiopian banking context. The findings offer valuable guidance for Ethiopian banks to strengthen their credit risk management practices and achieve sustainable financial growth.

This study aimed to investigate the relationship between credit risk management practices and the financial performance of private commercial banks in Ethiopia, with a specific focus on the following research questions:

1. Does credit risk management influence the financial performance of private commercial banks in Ethiopia?
2. Do the CAMEL components impact the credit risk management of private commercial banks in Ethiopia?
3. Is the financial performance of private commercial banks in Ethiopia explained by the CAMEL factors?

This study empirically examined the relationship between the CAMEL rating system components and return on equity (ROE) for Ethiopian banks during the period 2018-2022. The results confirmed the suitability of using multiple linear regression for further analysis, with significant correlations observed between ROE and earning quality (E) and liquidity ratio (LQ). This aligns with prior research highlighting the importance of both core profitability and adequate liquidity for achieving strong financial performance.

The findings from Pearson correlation coefficients and the multiple linear regression analysis yielded complementary yet nuanced insights into the relationships between CAMEL components and ROE. While both Pearson correlation and multiple regression analysis identified relationships between credit risk management and ROE, their findings regarding capital adequacy ratio (CAR) differed significantly. The Pearson correlation indicated a weak negative association between ROE and CAR, whereas the regression analysis revealed a statistically significant negative coefficient. This implies that after controlling for the influence of other factors (liquidity, asset quality, management efficiency, and earning quality), higher capital adequacy might be associated with lower ROE. A possible explanation for this difference lies in external factors not captured by correlation. Increased regulatory requirements could be forcing Ethiopian banks to hold more capital reserves, reducing the amount available for lending activities and potentially hindering profit generation. This highlights the importance of considering the broader economic context when interpreting relationships between financial metrics.

Interestingly, the correlations between ROE and the remaining CAMEL components (capital adequacy ratio, asset quality, and management efficiency were statistically significant at the 10% level. While weaker than the correlations with E and LQ, they suggest potential relationships between these factors and ROE. The negative correlation between ROE and CAR warrants further exploration, as it might be due to regulatory requirements impacting banks' profit-generating capacity.

The regression analysis strengthened the understanding of these relationships. The model demonstrated a good fit, explaining a significant portion of the variance in ROE. The findings of each CAMEL component is discussed in detail in the following paragraphs

Capital Adequacy Ratio (CAR)

The results for the capital adequacy ratio (CAR) presented an unexpected finding. The negative coefficient (-0.456) and statistically significant p-value (0.002) suggest that higher capital adequacy ratios are associated with lower ROE. This contradicts some existing literature, which emphasizes the importance of strong capital buffers for mitigating risk and promoting financial stability (Saidov, 2011; Kouser, 2012).

A possible explanation for this difference could lie in the specific regulatory environment in Ethiopia. Increased regulatory requirements might be pushing banks to hold more capital reserves, which reduces the amount of capital available for lending activities. This, in turn, could limit a bank's capacity to generate profits. It's important to acknowledge that this study relied on secondary data and cannot definitively establish causality. Further research could explore the specific regulatory requirements impacting capital adequacy in Ethiopia and how they influence bank profitability. Additionally, analyzing the risk profile of banks with varying CAR levels could provide a clearer picture of the relationship between capital, risk mitigation, and profitability.

Asset Quality (AQ)

The negative coefficient (-1.218) and significant p-value (0.049) for asset quality (AQ) align with expectations established in the literature review (Agegnehu, 2011; Girma Mekasha, 2011). This finding indicates that poorer asset quality, characterized by higher levels of non-performing loans, is associated with lower ROE. Banks with a significant amount of bad loans face challenges in collecting interest income and may have to make provisions for potential loan losses, both of which negatively impact profitability.

This finding underscores the importance of effective credit risk management practices for maintaining a healthy loan portfolio. By implementing stricter lending standards, closely monitoring loan performance, and taking appropriate action on delinquent loans, banks can minimize non-performing loans and improve their overall financial health.

Liquidity Ratio (LQ)

The liquidity ratio (LQ) exhibited a positive coefficient (0.224) and a statistically significant p-value (0.016). This implies that maintaining higher liquidity is associated with higher ROE**.** This finding aligns with the broader understanding of liquidity management in the banking sector. Banks need to maintain a balance between holding enough liquid assets to meet withdrawal demands and short-term obligations, and utilizing those assets to generate income through lending activities. The results suggest that Ethiopian banks which effectively manage this balance tend to achieve higher profitability.

This finding highlights the importance of striking a balance between liquidity and profitability. While excessive liquidity can reduce a bank's earning potential, insufficient liquidity can create solvency risks. Effective liquidity management strategies can help banks navigate this balance and achieve sustainable financial performance.

Management Efficiency (ME)

The strong positive coefficient (6.925) and highly significant p-value (0.000) for management efficiency (ME) indicate that more efficient banks tend to have higher ROE. This finding aligns with the broader literature on bank performance, which emphasizes the importance of operational efficiency (Fredrick, 2010). Streamlined processes, cost-effective operations, and a skilled workforce can contribute to a bank's ability to generate profits.

The positive association between management efficiency and ROE underscores the need for continuous improvement in operational effectiveness. Ethiopian banks can benefit from investing in technology, streamlining procedures, and optimizing resource allocation to achieve higher levels of efficiency and, consequently, improved profitability.

Earning Quality (E)

The negative coefficient (-0.446) for earning quality (E), despite a statistically significant p-value (0.001), presents a counterintuitive finding. This result contrasts with studies by Fredrick (2010)

and Jackson (2011) who suggest a positive association between earning quality and financial performance.

A possible explanation for this difference might lie in the specific way earning quality is measured in Ethiopia. If the metric places a significant weight on non-core income sources like trading gains, it might not necessarily reflect a bank's core business activities of lending and interest income generation. The negative association between earning quality (E) and ROE could potentially be due to a focus on short-term profit generation strategies at the expense of long-term sustainability. A heavy reliance on non-core income sources like trading gains might provide a temporary boost to profitability but could mask underlying weaknesses in core lending activities. This could lead to a situation where banks prioritize risky investments or engage in aggressive lending practices to meet short-term profit targets, ultimately jeopardizing long-term financial health. While non-core income can provide short-term profits, it may not be sustainable in the long run and could mask underlying weaknesses in core lending activities. Further investigation into the breakdown of core and non-core income components within the earning quality metric could shed light on this possibility.

This study highlights a limitation in the understanding of how earning quality is measured and interpreted in the Ethiopian context. Further research is needed to delve deeper into the specific components of earning quality metrics used in Ethiopia and how they relate to long-term profitability. A more granular analysis of core and non-core income sources within the earning quality measure could provide a clearer picture of this relationship.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATION

5.1 Introduction

The outcomes of the data analysis and the study's discussion section were covered in the preceding chapter. The study's findings provide the basis for the conclusions presented in this chapter, which also includes recommendations based on the findings. Based on the researcher's newfound understanding of the study's findings, conclusions are examined.

5.2 Summary of key Findings

This study examined the relationships between the CAMEL rating system components and return on equity (ROE) for Ethiopian commercial banks. While a negative association was observed between higher capital adequacy ratios and ROE, this could be due to the "capital overhang effect" which means excess supply of capital relative to profitable investment opportunities in the market. As expected, poorer asset quality, reflected by higher non-performing loans, leads to lower ROE. Interestingly, maintaining adequate liquidity was associated with higher ROE, suggesting a potential benefit from balancing liquidity needs with investment opportunities. Furthermore, efficient operations significantly contribute to profitability. Finally, the negative relationship between earning quality and ROE necessitates a nuanced perspective. This might be due to an overreliance on volatile non-core income sources that inflate short-term ROE but not long-term profitability. Overall, these findings emphasize the value of using the CAMEL framework to promote effective resource management and sustainable financial performance in Ethiopian banks.

5.3. Conclusion

In conclusion, this study explored the interplay between credit risk management practices and the financial performance of private commercial banks in Ethiopia using the CAMEL rating system

components. The investigation focused on their impact on return on equity (ROE), a key metric of financial health. The findings offer valuable insights into effective strategies for sustaining financial stability within the Ethiopian banking sector.

Significant correlations emerged between several CAMEL components and ROE. Notably, efficient management practices positively correlated with ROE, indicating that streamlined operations and effective resource allocation contribute to higher profitability. Additionally, maintaining sufficient liquidity was associated with improved ROE, emphasizing the importance of balancing liquidity management with income generation capabilities. Conversely, higher levels of non-performing loans negatively affected ROE, underlining the detrimental impact of poor asset quality on profitability.

Unexpectedly, the study found a negative relationship between capital adequacy and ROE in the Ethiopian banking context. This surprising result may be attributed to stringent regulatory requirements, which necessitate higher capital reserves, potentially limiting lending capacity and thereby hindering profit generation. This underscores the complexity of interpreting financial metrics within specific economic and regulatory frameworks.

Furthermore, contrary to expectations, earning quality exhibited a negative correlation with ROE. This suggests that an over-reliance on non-core income sources or short-term profit strategies might undermine long-term profitability. Further investigation into the components comprising earning quality in the Ethiopian context is warranted to elucidate this relationship.

In summary, this research contributes valuable insights into the dynamics of credit risk management and financial performance in Ethiopian private commercial banks, offering practical implications for enhancing sustainable financial health in the sector.

5.4. Recommendations

This study highlights several key recommendations for Ethiopian banks to strengthen their credit risk management practices and achieve sustainable financial performance:

- **Optimizing Capital Adequacy:** Private commercial banks should engage with policymakers to ensure that regulatory requirements regarding capital adequacy strike a balance between mitigating risk and enabling sufficient capital for lending activities.

- **Enhancing Asset Quality:** Central regulatory bodies like Ethiopian national bank should implement stricter lending standards, closely monitor loan performance, and take appropriate action on delinquent loans in order to manage asset quality and minimizing non-performing loans.
- **Maintaining Liquidity:** The private commercial banks need to develop effective strategies to balance liquidity needs with profitability. This involves managing short-term obligations while ensuring sufficient resources for lending activities.
- **Improving Management Efficiency:** Commercial banks should invest in technology, streamline operations, and enhance workforce skills so that they can contribute to improved efficiency and, consequently, higher profitability.
- **Scrutinizing Earning Quality:** Ethiopian commercial banks and regulatory bodies should work together to define earning quality metrics that accurately reflect core business activities and sustainable profitability, potentially by placing a greater emphasis on core income sources within the earning quality measurement framework.

By implementing these recommendations and fostering a focus on long-term sustainable growth, Ethiopian commercial banks can leverage credit risk management practices as a strategic tool for achieving financial stability and contributing to the overall health of the Ethiopian banking industry.

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Appendices

Appendix I

Raw data collected from annual reports of the selected private commercial banks from 2018-2022