ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING AND FINANCE

THE EFFECT OF CREDIT RISK ON FINANCIAL PERFORMANCE IN COMMERCIAL BANK OF ETHIOPIA

(CAMEL Approach)

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DECLARATION

I, Buzuayehu Wubu, solemnly affirm that the research paper entitled “Effect of Credit Risk on the Financial Performance of the Commercial Bank of Ethiopia” is a product of my individual effort. This paper has not been submitted for any academic qualification or assessment at any other university or educational institution. I have appropriately recognized all the sources consulted during the preparation of this paper.

This document encapsulates my personal contributions and discoveries in the specified area of research. The analyses and deductions presented herein are primarily derived from my work, except in instances where it has been clearly indicated otherwise. I am fully aware of the ethical responsibilities associated with academic integrity and hereby declare that this manuscript is a testament to the highest principles of honesty and academic discipline.

By: Buzuayehu Wubu

Signature ----------

Date----------

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List of Abbreviation

CBE Commercial bank of Ethiopia

CAR Capital Adequacy Ratio

LOTA log of total asset (bank size)

LGR Loan growth rate

MIS Management Information System

NBE National Bank of Ethiopia

NIM Net interest margin

NPLTL Nonperforming loan to total loan

ROA Return on Asset

TLTD Total loan to total deposit

TESNI Total employee salary to net income

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ABSTRACT

This study investigates the effect of credit risk on the profitability, measured by the Return on Assets, of the Commercial Bank of Ethiopia. The research utilized secondary data sourced from the audited financial reports of the CBE, the National Bank, and the CBE's portal page, covering the period from 2009 to 2023. Analysis was conducted using STATA 15 software, employing descriptive statistics and time series data to conduct linear regression. The findings reveal a substantial and inverse correlation between ROA and Non-Performing Loans , Capital Adequacy Ratio, Bank Productivity and Net Interest Margin. Conversely, ROA shows a positive correlation with Loan Growth Rate. The recommendations from this study suggest that the Commercial Bank of Ethiopia should enhance its credit risk management capabilities. Additionally, it is advised that the bank should manage staff-related expenses more effectively and ensure that economical profitability is considered alongside financial profitability for each branch. To maximize profitability (ROA), the CBE should prioritize credit risk management strategies to minimize non-performing loans.

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the study

Commercial banks, as financial institutions, have the primary function of collecting funds from the society and investing them in the valuable profitable sectors. These deposits, in the form of credit creation, generate income through interest. This process not only increases the income of individual commercial banks but also contributes to economic growth. However, when assets fail to generate expected income and repayments in a timely manner, it signifies credit risk. Such an increase in credit risk can negatively impact banks' performance and loss of faith and customer confidence often accompany weakened bank assets by Kasana and Naveed (2016).

The importance of commercial banks in financing economic activity cannot be overstated, as a strong and profitable banking sector can have a positive impact on the overall economy. It is crucial for banks to be able to withstand negative shocks and contribute to the stability of the financial system. This has led to a significant interest in understanding the factors that influence bank performance. In developing nations, the ability to efficiently gather and allocate domestic resources is vital for supplying the necessary funds for development to both public and private sectors, which in turn can lead to a rise in the nation's GDP (Teferi, 2016). The financial success of a bank is subject to a range of influences. Factors external to the bank, like industry norms and broader economic circumstances, are outside its influence. However, internal elements such as the bank's financial health, its reputation for fulfilling financial obligations, and the effectiveness and efficiency of its management do fall within its sphere of control (Rampersaud, 2014). Credit risk poses a significant role in commercial banks financial performance since a large portion of their revenue comes from interest-bearing loans, interlinked with interest rate cost for customer deposit and also the total amount of deposit according to Drehman et al. (2008). Effective credit risk management is essential for maximizing banks' risk-adjusted returns and maintaining acceptable credit risk exposure, as discussed by Kargi (2011). The level of loans and advances, non-performing loans, and level of deposits inversely affects the profitability of banks, exposing them to liquidity and distress.

Credit risk is a significant factor that affects the financial health of banks. It is influenced by a variety of elements such as the quality of bank management, the bank's market presence, the size of the institution, the capital adequacy ratio, the scale of the firm, the total assets, liquidity levels, the growth of the GDP, the rate of interest spread, and the rate of inflation. These factors collectively impact the financial outcomes of commercial banks. This has been explored in studies by Khan and Ali (2016), Abdullah and Jahan (2014), Antwi and Apau (2015), Raza et al. (2013), and Musah et al. (2018). Therefore, it's crucial to comprehend how credit risk, along with these specific bank-related factors, influences the financial results of commercial banks.

Credit risk is regarded as one of the most prominent risks faced by commercial banks, considering the importance of generating profits through facilitating credit. The quality of credit is a fundamental measure of a bank's financial stability and soundness. The presence of poor credit or loan quality significantly contributes to instances of bank failures (Boahene, et al., 2012).According to the Basel Committee on Banking Supervision (2012), credit risk refers to the possibility that a borrower or a financial counterparty might not fulfill their financial commitments as per the terms of the agreement. This type of risk is linked to the chance that a bank may incur financial losses if a borrower or a counterparty does not repay their debt

According to the national bank of Ethiopia regulation SSB/57/2014 the total loan and advance considering that not more than 85% of the total deposit mobilized and in July 2023 the National Bank has issued a significant announcement regarding a "Credit Ceiling" policy. As outlined in the press release, a specific loan growth cap of 14 percent has been placed exclusively on all commercial banks. This measure is intended to carefully manage and regulate the rate at which loans are extended within the banking sector.It is in the form of loans and advances, and interest income serves as a major source of revenue, it becomes evident that credit risk poses the most significant risk to the bank. As such, it becomes necessary to assess the impact of credit risk management on the bank's financial performance, recognizing the crucial role it plays in the bank's operations.

In recent years, there has been significant growth in loan disbursement due to the increasing demand for credit. Regarding to commercial bank of Ethiopia the total outstanding loans and advances had reached Birr 330.3 billion which is the growth rate increaseloan and advance from

birr 19.3 bill since 2009. While the bank has experienced an overall growth in profit during this period, the rate of increase has declined.

Despite the global prevalence of credit risk as a major concern for banks (Basel 2012), the Commercial Bank of Ethiopia (CBE) faces similar challenges regarding credit values, worthiness, and regulatory rules, macro and micro economy of the country. In response to the dynamic business environment, CBE has implemented a new business model since 2020/21 to enhance financial performance (source CBE portal). This new business model emphasizes customer-centric value, proactive identification, measurement, monitoring, and control of major credit risk factors before the bank is exposed to risks and to address loan demand from affiliate customer. Therefore, this research aims to examine the effect of credit risk on the financial performance of the Commercial Bank of Ethiopia by considering, Return on asset (ROA) is regressed with nine different explanatory variables. The findings make know that some of credit risk variables has a significant negative or positive effect on the financial performance of commercial bank of Ethiopia. And the subsequent sections literature review, summarize findings, describe the research methodology, present the analysis results and conclude considering both before and after the implementation of the new business model.

1.2 Statement of the Problem

Even with the adoption of numerous policies and strategies for managing credit risk, commercial banks continue to encounter issues with non-performing loans. These problematic loans adversely impact the banks' financial results and their ability to generate profits, as noted by Charles and Kenneth (2013).

This involves analyzing how credit risk affects the profitability, liquidity, and asset quality of commercial banks. The study will seek to identify the main factors contributing to credit risk in commercial bank of Ethiopia and evaluate the effectiveness of existing risk management strategies employed by bank to mitigate credit risk. Ultimately, the study aims to provide intuitions into the optimal identify credit risk variables and make a management strategies that CBE could adopt to improve their sustainable financial performance and stay in their computation with in the business.This study examined the effect of credit risk on the financial health of commercial bank of Ethiopia. It aims to pinpoint the primary elements that drive credit

risk within CBE and assess how well current risk management approaches are at minimizing credit risk. The ultimate goal is to offer insights into the best ways to identify credit risk factors and develop management strategies that the Commercial Bank of Ethiopia (CBE) can implement to enhance its long-term financial stability and maintain a competitive advantage than privet banks in the market.

Credit risk is a major concern for commercial banks in Ethiopia. This is because the commercial banks extend loans and credit facilities to both individuals and businesses, and the repayment of these loans is not always guaranteed and CBE now a day aggressively address the loan and advance in 2009 to customer 19.3 billion, in 2016 increase to 137 billion, in 2020 increase to 232 billion and now 2023 reach to 331 billion. After the business model and customer segmentation implement in 2020/2021 the affiliated customer those have a one million and above average deposited per annum the loan request for consumer and businesses customer both conventional and CBE NOOR those loan bearing risk of default may have a significant effect on the financial performance of the bank. (Source: CBE portal)

The effect of credit risk management on the financial performance of commercial banks in Ethiopia have a significant value for sustainability in the business. High levels of non-performing loans can negatively impact a bank's profitability, liquidity, solvency and NBE determine their non-performing loan ratio within the required ceiling of 5 percent and all other financial indicators revealed the safety and soundness of the sector (NBE's directive No. SBB/69/2018) according to annual report of NBE 2019 up to 2022 in the case of CBE the amount of NPL increases to 4.45 in 2023. This can result in reduced lending activity, higher default rates, and loss of market share and according to NBE report now CBE market share has decrease to 51 % in 2023 compare to 68 % share from 2009. Regarding to the market share and the loan disbursement share in 2023, 51% and 54 % accordingly and to assess the impact of credit risk of CBE may have a huge share on the banking industry and the finding of this have a mirror reflation of the bank industry. The commercial bank of Ethiopia, one of the leading financial institution in the country, has recently implemented a new business mode, commencing in 2020/2021 by the aid of the big business advisory and consulting firms called Makenzie based in USA. This shift in operations has a potential to significantly infuse the bank's performance .however, an important consideration in this regard is the impact of credit risk on bank's overall

finical health.New business model will brought in the commercial bank of Ethiopia increase the efficiency and effectiveness on business cycle and promote profitability by associate with cost reduction and sustainability growth of income and also promote economically profitability of among the branches and while a new idea may has an effect credit risk in positive or negative ways.While some models can help reduce credit risk exposure, others may increase credit risk and require more robust risk management strategies. In the meantime in what level the credit risk affect the business financial performance in commercial bank of Ethiopia before and after the new business model.(CBE portal)

Commercial bank of Ethiopia it has a mixed nature business which is in one hand the commercial bank to expect to make a business and to enhance a sustainability of the business profit in the other hand the Government owned public bank and it must finance the grand project initiated by the government by a minimum interest rate. In most county the public banks have various role in to enhance the country economy and to aid the national development and it must be measured in financial performance.

According to CBE announcement on portal page credit memo 2021, CBE the credit interest rate was similar throughout the loan product before three year and since the 2020/2021 the credit department amend the interest rate attached with the level of risk in each loan product.

In summary, profitability is a critical issue for commercial bank of Ethiopia and we will measure effective credit risk management entire the business and external environment is essential for maintaining the financial performance of the bank.

1.3 Research question

Credit risk faced by the commercial bank of Ethiopia can be measured using various metrics and indicators, including:

1. What is the effect of provision to Non-performing loans (NPL) on ROAof CBE?
2. How the bank's capital adequacy ratios (CAR) affect the ROA of CBE?
3. What effect does of bank size (BS)has on ROA of CBE?
4. In what level the effect of Solvency ratio (TLTD) affect ROAof CBE?
5. What is the effect of bank productivity on ROA of CBE?
6. In what level loan growth rate affect the ROA of CBE?
7. In what level net interest margin affect the ROA in CBE?

1.4 Objective of study

General objective

General objective of this study to finding in what level the effect of credit risk on financial performance in commercial bank of Ethiopia.

Specific objective

The specific study of this paper

1. To evaluate the effect of NPL on ROA in Commercial Bank of Ethiopia
2. To assess in what level capital adequacy affect the ROA in commercial bank of Ethiopia
3. To assess the effect ofthe bank size on ROA in commercial bank of Ethiopia
4. To evaluate in what level Solvency ratio affect the ROA in commercial bank of Ethiopia
5. To evaluate the productivity of the bank on ROA in commercial bank of Ethiopia
6. To assess in what level the loan growth rate effect on ROA in commercial bank of Ethiopia
7. To evaluate the net interest margin on affect ROA in commercial bank of Ethiopia.

1.5 Hypothesis

Based on the objective the study, the researcher built and to test the following seven hypotheses to evaluate the effect of credit risk on financial performance on commercial bank of Ethiopia using CAMEL model.

Ho1: Non-Performing Loan has a significant and negative effect on ROA in Commercial Bank of Ethiopia.

Ho2: capital adequacy rate has significant and positive effect on ROA in commercial bank of Ethiopia.

Ho3: Bank size has significant and positive effect on ROA in commercial bank of Ethiopia.

Ho4: solvency ratio has significant and positive effect on ROA in commercial bank of Ethiopia.

Ho5: Bank productivity has significant and positive effect on ROA in commercial bank of Ethiopia.

Ho6: loan growth rate has significant and positive effect on ROA in commercial bank of Ethiopia.

*Ho7:*Net interest margin has significant and positive effect on ROA in commercial bank of Ethiopia.

1.6Significant of the study

The findings of this study underscore the pivotal role of credit risk management in bolstering the financial performance of commercial banks. By identifying the key factors that contribute to credit risk and evaluating the efficacy of risk mitigation strategies, this research offers valuable insights for commercial bank of Ethiopia. It provides a roadmap for enhancing profitability, ensuring liquidity, increasing sustainable financial adequacy and increasing the competitive advantage with in banking industry. Moreover, the study's implications extend to policy formulation, presenting evidence based recommendations that can shape regulatory measures. The significance of this research is further magnified by its potential to guide future inquiries into the complex dynamics of credit risk and also a source of literature for other researchers, thereby contributing to the stability and prosperity of the financial sector in the country.

1.7The scope of the study

This study aims to evaluate the influence of credit risk on the financial outcomes of the Commercial Bank of Ethiopia over the period from 2009 to 2022/2023. During this time, the CBE introduced a new business model in the 2020/2021 fiscal year. The analysis will involve a comparison of the bank's financial performance before and after the implementation of this new model, utilizing data from annual financial reports. For the case of unbalance period of evaluation before and after implementation we are customize the period by evaluate the overall CBE level of credit risk over the performance of the financial performance for fifteen years and also the researcher compare the period for the implementation of the new business model before three year and after three year .To resolve the problem of unbalanced period of data the researcher use ANCOVA (Analysis of Covariance): Use ANCOVA to compare means between the "before" and "after" groups while controlling for covariates. And also by create line plots or bar charts to visualize the trends over time.Highlight the change point (2021) and observe how metrics shifted by Visualization method.

1.8Limitation of the paper

This study on the effect of credit risk on the financial performance of CBE has several limitations that should be acknowledged. The research was confined to a single financial institution, CBE, which may not represent the broader banking sector in Ethiopia. Future studies could expand the sample to include multiple commercial bank, development banks and micro finance to enhance the generalizability of the findings. The data collected was limited to from the year 2009 up to 2023 and after change of business model limited to three years and longer time series data could provide more insights into the trends and long-term effects of credit risk on financial performance the study primarily used quantitative methods. Incorporating qualitative approaches could offer a more nuanced understanding of credit risk management practices. The study did not account for external economic factors such as inflation and regulatory changes, which could also influence the bank's financial performance and also limited on ROA as only parameter for profitability

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Theoretical study

2.1.1Risk

Risk in banking is the probability that actual outcomes may differ from those that are expected. It encapsulates the potential for actual returns to stray from projected returns. Within the banking industry, risk is seen as the collective potential dangers that persist until a borrower has settled their debts and obligations. Banks, in their quest to generate profits and enhance shareholder value, partake in activities that may expose them to a variety of risks. The Basel Committee on Banking Supervisionidentified three primary types of bank risk: credit risk, operational risk, and market risk. Among these, credit risk pertains to a borrower's inability to meet their loan obligations and is considered the most significant risk faced by banks due to its potential impact on their financial stability Basel (2001)

2.1.2Credit risk

Credit risk involves the potential for a bank to incur losses if a debtor does not fully honor their financial commitments under the agreed terms. This type of risk carries the most weight in banking activities due to the possibility that a significant portion of the bank's assets, particularly loans, could reduce in value or become entirely worthless. Banks typically have a small amount of owner's equity compared to the total value of their assets, for instance in 2023 the commercial bank of Ethiopia has 1.3 trillion of the total asset where as the owner equity has 74 billion only, and meaning that even a minor fraction of defaulted loans could jeopardize the bank's financial stability.

Defined as the chance that the actual returns on investments or loans will not meet expectations, credit risk is also known as default risk, performance risk, or counterparty risk. These terms all describe the potential negative impact on a firm's transactions due to credit issues. According to experts like Koehn and Santomero (2006) and Geletaw (2016), credit risk is the risk of loss when credit customers are unable or unwilling to fulfill their payment obligations on time. This risk, also referred to as counterparty risk, can lead to significant distress for a bank if not properly managed. Effective credit risk management is essential for optimizing a bank's risk-adjusted rate

of return and keeping credit risk exposure within acceptable limits, which is crucial for understanding the influence of credit risk management on a bank's profitability.

The Basel Committee on Banking Supervision (BCBS) in 2001 described credit risk as the danger that a bank's borrower or counterparty might not comply with the agreed terms. Credit risk arises from the unpredictability of the counterparty's ability to repay the bank's dues promptly. It encompasses two aspects: the likelihood of the counterparty defaulting on the bank's credit exposure and the potential loss the bank could face in the event of such a default. Defaults often result from insufficient income or business failure, but they can also be intentional if the counterparty chooses not to meet its obligations despite having the means. Credit risk also reflects the decrease in the value of credit assets before default, which can occur due to a decline in the credit quality of the portfolio or individual borrowers.

As per the risk management protocols of the National Bank of Ethiopia, credit risk takes precedence in the bank's risk hierarchy. To manage this risk, the bank adopts a multifaceted approach that includes setting operational limits to minimize exposure to credit risk, defining indicative thresholds to manage the concentration of credit and the share of unsecured loans, and ensuring collateral is provided for credit transactions. The bank also sets specific operational conditions to reduce the risk of payment defaults. (NBE revised bank supervision 2010)

Ongoing risk monitoring activities are conducted, and reports are generated for the Credit Committee, bank management, and other pertinent departments. The bank assesses both regulatory and economic capital requirements to cover operational risks and confirms their sufficiency. Additionally, the bank undertakes hedging strategies to offset risks and enforces stringent internal controls across its departments to ensure adherence to operational standards and risk evaluation procedures. (NBE 2010)

Credit risk, as outlined by the Basel Committee on Banking Supervision (BCBS) in 2001, is the risk that a bank's borrower or counterparty may not honor their financial commitments as per the agreed terms. Known also as default risk, it stems from the unpredictability of the counterparty's repayment of the bank's claims in a timely manner. Credit risk encompasses two main aspects: the potential for default by the counterparty affecting the bank's credit exposure, and the extent of loss the bank could incur in the event of such a default. Defaults typically result from

insufficient income or business failures, but can also be intentional if the counterparty chooses not to fulfill their obligations despite having the means. Additionally, credit risk indicates a reduction in the value of credit assets prior to default, which can occur due to a deterioration in the credit quality of the portfolio or individual borrowers.

2.1.3Creditadministration process

In the realm of banking, the evaluation of credit risk is a critical component that involves compiling documents for credit administration and assessment. By comprehending the intricacies of each element, financial institutions can devise optimal strategies for loan recovery and minimize the incidence of non-performing loans within their portfolios.

2.1.3.1 Credit Management Process

The credit management process initiates with a thorough evaluation of the creditworthiness and business sustainability of potential customers. This step is vital, especially when the institution considers offering credit lines or revolving credit facilities to select clients. Effective credit management entails establishing precise eligibility criteria that customers must satisfy to qualify for the proposed credit terms.

2.1.3.2 Credit Policies & Procedures

A credit policy is not exclusively the domain of the Credit and Risk Department. It is imperative that all staff members interacting with customers are conversant with the credit policy and apply it uniformly.

2.1.3.3 Credit Analysis

Credit analysis serves as the cornerstone for mitigating credit risk associated with loan applications. It encompasses assessing the financial robustness of loan applicants, gauging the likelihood of default, and diminishing the risk of non-repayment to a manageable level.

2.1.3.4 Credit Information

Obtaining sufficient and prompt information is essential for an accurate appraisal of a borrower's creditworthiness when applying for a bank loan. Sound lending decisions, predicated on a comprehensive understanding of the borrower's financial standing, are fundamental to maintaining the fiscal stability of banking institutions.

2.1.4 Credit Risk Management

Approach Credit risk management involves a series of defined procedures designed to oversee credit risk, spanning from the issuance of credit to the collection process. These procedures include the identification, measurement, evaluation, mitigation, and monitoring of risk. The initial phase is to pinpoint the risks inherent in the credit operation, followed by quantifying the risk by assessing the potential repercussions if it remains uncontrolled.

Risk Grading It is recommended that all banks implement a credit risk grading system. This system should delineate the risk profiles of borrowers to ensure that account management, structural arrangements, and pricing strategies are aligned with the associated risks. Risk grading is a crucial indicator of a bank's asset quality; therefore, it is essential to maintain a rigorous grading methodology.

2.1.5How to measurement credit risk

Credit risk, as outlined by Coyle (2000), is the potential for financial loss when borrowers do not repay their debts in full and on time. The primary factors contributing to credit risk encompass a range of institutional and operational weaknesses, such as limited capacity, unsuitable credit policies, unstable interest rates, ineffective management, inadequate legal frameworks, insufficient capital and liquidity, indiscriminate issuance of bank licenses, subpar loan underwriting, irresponsible lending, and deficient credit evaluation. Other issues include the absence of non-executive directors, lax credit assessment procedures, flawed lending practices, governmental intrusion, and lackluster regulatory oversight by the central bank. To mitigate these risks, it's essential to have a robust financial system with well-funded banks that cater to a diverse clientele, share borrower information, maintain stable interest rates, and work towards reducing non-performing loans. Enhancing bank deposits and extending more credit to borrowers are also vital steps. It's crucial to lower the rates of loan defaults and non-performing loans to ensure financial stability.

From a theoretical standpoint, loans may underperform for various reasons, including economic downturns, high interest rates, inflation, overly generous credit terms, a focus on credit, rapid growth in credit issuance, a high appetite for risk, and inadequate oversight. Bercoff et al. (2002)

attribute the causes of non-performing loans to specific banking practices as well as broader economic conditions.

Credit risk management in banking is fundamentally about the likelihood that a bank's borrower or counterparty might not adhere to the agreed terms of their financial obligations. Adams and Mehran (2004) describe credit risk as such, while Boateng (2004) emphasizes that managing this risk effectively is key to optimizing a bank's risk-adjusted returns, suggesting that keeping credit risk exposure within a default rate of less than 3% is now a global standard. Banks are encouraged to manage not only the credit risk present across their entire portfolio but also the risk in individual transactions, considering how credit risk interplays with other types of risks.

Machiraju (2004) highlights that adept credit risk management is vital for the comprehensive risk management strategy of a bank and is crucial for its enduring success. The Basel Committee on Banking Supervision has set forth guidelines that serve as the gold standard for managing credit risk, focusing on establishing a proper credit environment, executing a reliable credit granting process, maintaining sufficient control over credit risk, and enforcing protective covenants.

Fotoh (2005) advises that credit risk strategies and policies must be clearly communicated and understood within the entire banking organization, holding all personnel accountable for adherence. The board of directors should ensure that senior management is competent in managing credit operations within the approved risk strategy and policy parameters. Additionally, the board is responsible for regularly approving the bank's credit-granting criteria and the organizational structure of credit-granting functions, including independent reviews of credit management and the overall loan portfolio.

The firm Characteristics Theories by Godlewski and Ziane (2008) suggest that smaller, high-quality firms with less transparency and more constraints will have fewer borrowing relationships. Robert and Gary (1994, as cited in Hamisu 2011) observed that failed banks are often characterized not by inefficiency but by a high proportion of non-performing loans, which are frequently linked to regional economic issues. DeYoung and Whalen (1994, as cited in Hamisu 2011) found that the distinguishing factor between failed banks and those that survived or recovered was the quality of management. Exceptional managers not only operate their banks efficiently, yielding higher profits compared to their counterparts, but they also implement superior loan underwriting and monitoring practices, leading to improved credit quality.

2.1.6 Theory of loan

Loan theory incorporates a range of economic concepts and frameworks that detail the processes of loan issuance, administration, and settlement. These theories are crucial for banks, financial entities, and regulatory authorities to guide their decision-making in loan-related operations

A. Loan Pricing Theory

Stiglitz and Weiss (1981) argue that banks cannot uniformly impose high interest rates due to the challenges of adverse selection and moral hazard. Predicting borrower behavior at the outset is challenging, and elevated interest rates might attract high-risk borrowers who are more likely to engage in risky ventures, leading to moral hazard issues. This suggests that bank interest rates may not always align with the borrower's risk level.

B. Theory of Multiple-Lending

Research indicates that banks should be cautious about joint lending in markets with robust equity sectors. External equity and consolidations can boost a bank's lending capacity, reducing the need for diversification and monitoring through shared lending.

C. Theory of Credit Market

Ewert (2000) presents a neoclassical credit market model where credit terms balance supply and demand. If collateral and covenants are fixed, interest rates serve as the sole pricing mechanism. Higher borrower risk leads to increased interest premiums. This model is adapted from Patnaik and Vasudevan (1998), considering an economy's openness and the impact of internal and external factors on interest rates in a semi-open economy like Nigeria. In a closed economy scenario, where capital flows are non-existent, the demand for money correlates with real output for transactional purposes.

2.1.7 Risk in Banking

Banking risk pertains to the potential for financial losses due to unforeseen events. These risks, which can arise from financial or operational issues, are measured by the potential fluctuation in asset values or security prices. Factors influencing banking risk include economic downturns, policy shifts, interest and exchange rate fluctuations, and equity market declines. Risk involves

both the uncertainty of an adverse event occurring and the severity of its impact. It's a collective attribute of transactions, with only some resulting in actual losses for the bank.

Bessis (2005) emphasizes that the primary objective of any banking institution is to operate with profitability to ensure stability and foster growth. In commercial banking, lending is central to the business, with loans constituting the largest asset class, contributing significantly to income, and posing the most substantial risk. Inadequate credit risk management has been identified as a leading cause of failures in commercial banks. Research by Tesfaye Mulugeta (2018), McMenamin (1999), and Hempeletetal (1994) has consistently shown that poor credit risk management systems are a common factor in these failures.

Commercial banks inherently deal with various financial risks as part of their service provision. Over the past decade, there has been a significant enhancement in our comprehension of commercial banks' roles within the financial sector. Market participants rely on these institutions for their expertise in market knowledge, transactional efficiency, and funding capabilities. Typically, banks act as principals in transactions, utilizing their balance sheets to facilitate deals and absorb associated risks.

2.1.8 Evaluation of Banks' Financial Performance

A study conducted in 2012 in Kenya by Ogilo Fredrick, titled "The Impact of Credit Risk management On Financial Performance of Commercial Banks in Kenya," investigated the effect of credit risk management on the financial health of commercial banks. It also sought to determine the relationship between credit risk management factors, using CAMEL indicators, and the financial performance of these banks, measured by Return on Assets (ROA). The study employed a causal research design, utilizing secondary data from the Central Bank of Kenya's banking sector surveys. Multiple regression analysis was used to interpret the data, with results presented in tables and equations. The findings indicated a significant correlation between the CAMEL components and the financial performance of commercial banks, suggesting that the CAMEL model is an effective proxy for credit risk management.

A study by AraHodna and colleagues in 2009 titled "Credit Risk Management and Profitability in Commercial Banks in Sweden" explored the influence of credit risk management on bank profitability. The research aimed to quantify the impact of credit risk management on the

financial success of four Swedish commercial banks. The study employed Return on Assets (ROA) as the measure of profitability, with Non-Performing Loan Ratio (NPLR) and Capital Adequacy Ratio (CAR) serving as indicators of credit risk management. A quantitative approach and regression analysis were used to analyze data from the banks' annual reports and risk management documents spanning 2000 to 2008. The results indicated that credit risk management significantly affects profitability, with NPLR having a more pronounced impact on ROA than CAR.

Banks, like any business, generate profits by earning more than their expenses. A substantial part of a bank's income is derived from service fees and interest from assets, while interest on liabilities constitutes a major expense. A bank's primary assets are its loans and securities, and its main liabilities include deposits and borrowed funds from other banks or the money market. The study also examines the profitability of commercial banks in Ethiopia, using ROA as the metric for financial performance, which is the focus of the research byFesha Birhanu (2018)**.**The profitability, as the outcome variable, is assessed in relation to the banks' ability to manage credit risk effectively.

The link between credit risk management and bank performance is widely acknowledged, with credit risk being the most substantial in terms of potential financial losses. Given that lending is a fundamental aspect of banking operations, managing credit risk has become a central focus for banks. Effective risk management can lead to improved bank performance, as it suggests that banks are operating with reduced risk and minimized conflicts of interest with association of the corporate governance of banking sector.Corporate Governance, Risk Management, and Bank Performance does Type of Ownership Matter"joteTandelilin, Kaaro, Mahadwartha, and Supriyatna" (in 2007)

Enhanced risk management practices are associated with improved bank performance, which can elevate a bank's standing and perception in the public eye and financial markets. This improvement can provide banks with more opportunities to grow their asset base, thereby increasing profitability, liquidity, and solvency. Consequently, robust credit risk management is an indispensable part of a bank's overall risk management framework and is crucial for its long-term prosperity and the assurance of ongoing profits.

The Basel Committee on Banking Supervision defines credit risk as the risk of partial or total loss of an outstanding loan due to credit-related events such as default. These events can range from bankruptcy to non-payment, repudiation, moratorium, changes in credit rating, and restructuring. The BCBS also states that credit risk arises when there is a risk that a bank's borrower or counterparty may not fulfill their contractual obligations.

2.1.9 New business model and credit risk

The introduction of a new business model can significantly influence credit risk management within banks. Here's an overview of the potential impacts:

A. Variation in Risk Profile: Adopting a new business model might alter the types of products or services a bank offers, which could change the bank's risk profile. For instance, providing loans to higher-risk clients or venturing into sectors with elevated credit risks may increase the bank's overall exposure to credit risk.
B. Improved Risk Evaluation: Banks may need to create innovative approaches and tools for credit risk assessment with a new business model. This could involve collecting more data or employing different credit scoring methods to assess borrower creditworthiness.
C. Broader Diversification: A new business model could allow banks to broaden their loan portfolio across various industries or customer groups, thereby diluting concentration risk and distributing credit risk more widely.
D. Operational Adjustments: Implementing a new business model may bring operational challenges, necessitating updates to credit risk management practices. Banks might have to modify credit policies, train employees, and invest in new technologies to manage new credit risks effectively.
E. Regulatory Compliance: A new business model could lead to regulatory revisions or increased oversight. Banks will need to ensure they adhere to relevant regulations and risk management standards that apply to the new business model.
F. Innovation Opportunities: New business models can open doors for innovation in credit risk management. Banks might leverage advanced technologies like artificial intelligence and machine learning to improve credit risk evaluation and devise more robust risk management strategies.

In essence, the effect of a new business model on credit risk management in banking hinges on several factors, such as the model's specifics, the intended market, and the bank's tolerance for risk. Banks must meticulously evaluate and manage the credit risks tied to any new business model changes to ensure ongoing financial stability and effective risk management.

2.2 Empirical study

Research by Liyugi (2007) indicated a negative correlation between credit risk and liquidity and their impact on bank performance. Similarly, Endaweke (2015) discovered that liquidity and operational risk management negatively affected bank performance. Studies by Li and Zou (2014), as well as Afriyie and Akotey (2012), also found a significant negative relationship between liquidity ratios and return on equity.

The banking sector is particularly vulnerable due to its reliance on credit extended to customers for income generation, as noted by Jeoitta Colquitt (2007). This lending activity subjects banks to considerable credit risk, potentially leading to financial losses. Developed nations like Japan, Sweden, and the United States have experienced crises related to non-performing loans, as Campbell (2007) points out.

Catherine and Yussof (2009) emphasize the significance of credit risk management in the realm of banking. The prosperity of financial entities is largely dependent on their proficiency in evaluating, reducing, and controlling risks. Nonetheless, the task of managing credit risk presents numerous challenges, including regulatory demands, political influence, operational hurdles, economic limitations, and a volatile business climate, which can all negatively impact the fiscal reliability of borrowers. The main objective of managing credit risk is to maximize a bank's returns on risk while maintaining credit risk at manageable levels. This aspect of risk management is crucial for the superior functioning of commercial banks around the world, and this holds especially true for Ethiopia. The study in question investigates the impact of credit risk management on the performance of Ethiopian private commercial banks during a period extending from 2000 to 2013. Psillaki et al. (2010) propose that adept management of credit risk can bolster a bank's stability, profitability, and judicious allocation of resources. Similarly, Oke et al. (2012) acknowledge the pivotal role of the banking sector in maintaining a nation's fiscal wellness. Hempell (2002) also underscores the importance of a bank's profitability in fostering its capacity for innovation, expansion, and competitive edge

While banks cannot completely eliminate credit risk, they can mitigate it through robust credit risk management, which encompasses the entire lending process from initial borrower inquiry to loan repayment (Hagos, 2010). Effective credit management can reduce the amount of capital tied up with debtors and lessen its impact on financial performance.

Research by Aduda and Gitonga (2011) found no significant link between the quality of assets, measured by non-performing loans, and banks' return on equity. However, studies by Boahene, Dasah, Agyei (2012), Afriyie and Akotey (2013), and Charles and Kenneth (2013) identified a positive and significant relationship between asset quality and return on equity.

The primary goal for banks is to operate profitably to ensure stability and facilitate growth (Aduda & Gitonga, 2011). The research topic on the impact of credit risk management on the profitability of Ethiopian private commercial banks was chosen due to a perceived gap in previous research and new regulations from the National Bank of Ethiopia that could affect bank performance.

Tefera (2011) assessed the effect of credit risk on the profitability of six private banks and the state-owned Commercial Bank of Ethiopia. Using return on equity as a performance metric and non-performing loan ratio and capital adequacy ratio as credit risk measures, the study analyzed data from annual reports through descriptive, correlation, and regression methods. The results indicated that credit risk management significantly influences the profitability of these commercial banks.

Boahene et al. (2012) conducted research on the relationship between credit risk and bank profitability, focusing on selected government banks. Their findings suggest that despite high exposure to credit risk, banks in Ethiopia continue to be profitable. They posit that credit risk, while being the most significant risk for banks due to their primary income coming from credit issuance, does not necessarily diminish bank profitability.

In their study of six Ghanaian banks from 2005 to 2009, Boahene et al. found that credit risk indicators such as the non-performing loan rate, net charge-off rate, and pre-provision profit relative to net loans and advances positively correlate with profitability metrics like Return on Equity (ROE) and Return on Assets (ROA).Conversely, Musyoki (2012) analyzed various credit

risk management factors and their impact on bank financial performance, discovering a negative effect.

Kolapo et al. (2012) examined the influence of credit risk on the financial performance of five Nigerian commercial banks over an eleven-year period (2000-2010). They used ROA as the profitability measure and considered credit risk variables such as the ratio of non-performing loans to loans and advances (NPL/LA), the ratio of total loans and advances to total deposits (LA/TD), and the ratio of loan loss provision to classified loans (LLP/CL). Their panel model analysis revealed that these credit risk variables significantly affect financial performance: non-performing loans and loan loss provisions negatively impacted ROA, while loans and advances had a positive effect.

Abdelrahim's 2013 research concluded that there isn't a discernible link between the efficiency of bank management and the financial outcomes of the banks. Salas and Saurina (2002) argue that banks with inefficient management are likely to struggle with loan issuance and monitoring, potentially leading to a decline in credit quality and an increase in problematic loans.

Profitability is a crucial measure of success for all businesses, including banks. To gauge their financial performance, banks often use the CAMEL (Capital Adequacy, Asset Quality, Management, Earnings, and Liquidity) framework. This model helps banks to evaluate and manage various risks effectively. Financial ratios are a traditional tool used by researchers to assess a bank's financial health. The CAMELS rating system is also employed by banks to scrutinize their financial status and performance, as noted by Rozanni & A. Rahman (2013). The current research incorporates CAMEL components and other factors like the ratio of non-performing loans and loan loss provisions to examine their correlation with the bank's financial performance or profitability.

Afriyie and Akotey's 2013 study focused on the impact of credit risk on the profitability of rural and community banks in Ghana's Brong Ahafo Region. Using a panel regression model for the period from 2006 to 2010, they found that non-performing loans significantly positively affected profitability as measured by Return on Equity (ROE), while capital adequacy had a negligible effect.

Credit risk in banks can stem from internal issues such as management inefficiency, which can impact liquidity and lead to a rise in non-performing loans, as Mwaurah (2013) points out. The non-performing loan (NPL) ratio, which compares the total non-performing loans to the total gross loans, is a key indicator on a bank's balance sheet. A bank's performance concerning credit risk is influenced by both internal factors, which are specific to the bank, and external factors, which relate to the economic environment, as cited by Naceur and Omran (2011) in Mwaurah (2013). Effective credit management is essential for the stability and sustained profitability of any financial institution.

Ogboi and Unuafe (2013) analyzed the influence of credit risk and capital adequacy on the financial outcomes of Nigerian banks, using data from 2004 to 2009. Their study, which employed a panel data model, found that while credit risk management and capital adequacy positively affected bank performance, the amount of loans and advances negatively impacted profitability.

Engdawork (2014) focused on the effect of credit risk on bank financial performance, using Return on Assets (ROA) as the sole indicator, but did not consider external factors. Girma (2011) concentrated on risk management, examining ratios such as Loan Provision to Total Asset and Non-Performing Loan to Total Loan.Iwedi and Onuegbu (2014) explored the impact of credit risk on the performance of five banks over fifteen years (1997-2011). Their findings, based on panel data analysis, indicated that non-performing loans ratio and the ratio of loans and advances to total deposits both positively affected financial performance.

Fan (2014) highlighted the critical role of credit risk management in influencing a bank's financial health and growth. Adeusi et al. (2014) assessed the effects of various risks on the financial performance of ten Nigerian banks from 2006 to 2009. Their results showed that credit risk had a negative impact on financial performance, while capital risk and managed funds had a positive impact.

Shibiru and Mebratu (2014) evaluated the impact of credit risk management on the performance of six private commercial banks in Ethiopia over a period of 14 years (2000-2013). Using panel data regression, they discovered that factors such as capital adequacy ratio, total loan ratio, non-

performing ratio, bank size, and liquidity ratio significantly influenced the banks' performance, as reflected in ROA and ROE.

Uwalomwa and colleagues (2015) utilized panel linear regression to evaluate the effect of credit risk on the financial performance of banks listed from 2007 to 2011. Their research indicated that the ratio of non-performing loans and bad debt significantly adversely affected bank financial performance, whereas the ratio of secured to unsecured loans had a negligible impact.

Endaweke (2015) discovered that the capital adequacy ratio had a positive but statistically insignificant effect on bank performance. Similarly, Boahene, Dasah, and Agyei (2012) found that a higher capital requirement could positively influence bank profitability. Conversely, Abdelrahim (2013) reported no significant link between the capital adequacy ratio and return on equity, while Mwangi (2012) identified a significant negative correlation between the two.

Noman et al. (2015) conducted a study to determine the impact of credit risk on the profitability of banks in Bangladesh, using data from 18 private commercial banks between 2003 and 2013. The study employed various credit risk indicators, such as NPLGL, LLRGL, LLRNPL, and CAR, and profitability indicators like ROAA, ROAE, and NIM. The analysis, which included OLS random effect model, GLS, and system GMM, revealed a strong negative and significant effect of NPLGL and LLRGL on all profitability indicators, and a negative impact of CAR on ROAE. The study also found that the implementation of Basel II had a positive effect on NIM but a negative effect on ROAE.

The research highlighted the effectiveness of credit risk management in Bangladeshi banks and provided a solid basis for examining how credit risk management practices can enhance profitability and long-term viability. Gizaw, Kebede, and Sujata (2015) investigated the effect of credit risk on the profitability of eight Ethiopian commercial banks from 2003 to 2014. They found that credit risk, as measured by non-performing loans, loan loss provisions, and capital adequacy, significantly influenced profitability as measured by ROA.

Banks employ various methods and technologies to monitor debtors and enforce credit agreements, aiming to protect depositor funds and maximize profitability. This process involves loan pricing, lending, and managing the overall loan portfolio. Studies on credit risk management have shown mixed results, with some indicating a positive relationship between bank

profitability and credit risk management, while others suggest a negative relationship, as noted by Alshatti (2015).

A study analyzing data from nine Ethiopian commercial banks over six years (2009-2014) aimed to explore the connection between credit risk and bank performance metrics. Utilizing panel data regression and descriptive statistics, the research measured performance through ROA and ROE, while credit risk was assessed using ratios like CAR, NPLR, LPTLR, LPNPLR, LPTAR, and NPLTLR. The findings indicated that CAR and NPLR were negatively correlated with both ROA and ROE, whereas LPTLR, LPNPLR, and LPTR showed a positive association with these performance indicators.Further research by Hiwot Zemedkum (2019) using time series data from 2000 to 2018 found a negative and significant link between Non-Performing Loans (NPL) and bank profitability, as measured by ROA and ROE, in the Commercial Bank of Ethiopia.

Literature on the Ethiopian banking sector, including works by Alemayehu (1991), Mekonen (2012), Mekasha (2011), Tefera (2011), and Million (2014), has highlighted credit risk and non-performing loans as significant challenges to bank performance. These studies have investigated the impact of credit risk on the profitability of selected Ethiopian commercial banks by analyzing ROA and NPL rates.

Financial performance analysis in commercial banks is crucial for assessing credit risk and mitigating the negative effects of credit defaults. According to Ferreti (2017), long-term profitability and success in banking depend on sound risk management practices.

In Ethiopia's banking sector, credit risk arises from various sources, such as insufficient credit information, weak loan appraisal systems, poor loan collateralization, and limited credit access for SMEs. Regulatory challenges also play a role in banks' ability to manage credit risk effectively.

The influence of credit risk on the financial health of Ethiopian commercial banks is substantial. Elevated non-performing loans can adversely affect a bank's profitability, liquidity, and solvency, leading to decreased lending, higher defaults, and market share loss. On the flip side, proficient credit risk management can bolster a bank's financial standing by reducing loan losses and ensuring adequate capital levels.

The study conducted by Silaban (2017) aimed to determine the health of banks in terms of profitability by analyzing the effects of capital adequacy ratio (CAR), net interest margin (NIM), and non-performing loans (NPL). The research included data from both state and private banks listed on the Indonesian Stock Exchange, encompassing a total of 40 banks, and covered the period from 2012 to 2016. The results suggested that CAR did not have a noticeable influence on the profitability of banks. In contrast, NIM was found to have a positive impact on profitability, likely due to the inclusion of net interest in its calculation. On the other hand, NPLs were shown to have a detrimental effect on bank profitability.

Dang's 2019 study examined the influence of loan expansion on Vietnamese banks' operations, specifically regarding credit risk, profitability, and solvency, from 2006 to 2017. The analysis, utilizing both static and dynamic panel data models, suggested that loan growth has a considerable effect on bank performance. Notably, an increase in lending is associated with a rise in loan loss provisions over the following two to three years and a reduction in the bank capital ratio in the subsequent year. However, loan growth also positively impacts bank profitability in both the short and long term. The robustness of these findings was confirmed through various estimation methods. The research underscores the need for banks to exercise prudence when expanding their lending and highlights the implications for risk management and capital allocation strategies.

A study focusing on Kosovo's banking system analyzed time series data from 2006 to 2013 to determine factors affecting bank profitability. Utilizing a linear regression model, the research assessed the impact of various financial ratios on three key profitability metrics: ROA, ROE, and NIM. The findings indicated that these ratios significantly influence the profitability of banks in Kosovo.

In Southeast Asia, a study involving 79 banks from five countries over the period 2006 to 2019 employed a simultaneous equations model with the generalized method of moments to explore the connection between bank profitability and loan growth. The results revealed a positive association between the two, offering valuable insights for bank regulators, policymakers, and managers.(Dat T Nguyen 2022)

2.3 Research Gap

Based on theoretical and empirical evidence, the researcher has evaluated the existing studies and developed a unique framework. Previous research primarily focused on the private banking sector, as seen in the works of Shibiru and Mebratu (2014), Zewde (2011), Mekonen (2012), and Mekasha (2011). These studies did not fully represent the results by omitting the significant market share held by the Commercial Bank of Ethiopia (CBE), which assessed the impact of credit risk management on the performance of private commercial banks in Ethiopia. Conversely, some authors, including Tefera (2011) and Million (2014), have examined selected commercial banks, including CBE, and their findings disproportionately reflect the large share of CBE, failing to represent the results of all banks within the entire group. On the other hand, Hiowt Zemedkune (2018) investigated the effect of credit risk on the financial performance of CBE using two dependent variables: Return on Equity (ROE) and Return on Assets (ROA). A significant oversight of this study is that CBE, being a government-owned bank, aims to drive the country's economy by providing sustainable finance for government and national development aid projects. Therefore, the primary evaluation of financial performance for publicly owned banks should be ROA rather than ROE. Additionally, while Zemedkune's assessment included various independent variables, it overlooked a major cost-driving variable: employee salaries, which measure bank productivity.

Shibiru and Mebratu (2014) assessed the impact of credit risk management on the performance of six private commercial banks in Ethiopia over 14 years (2000-2013) using panel data regression. However, they missed a crucial variable affecting bank profitability: the loan growth rate and bank productivity. Based on the knowledge of the researcher most of the research paper on the effect of credit risk on commercial bank of Ethiopia has not seen recently done after 2019 and addressing the identified gaps, this study aims to evaluate the effect of credit risk on the profitability of the Commercial Bank of Ethiopia by incorporating additional independent variables, such as bank productivity associated with employee salary expenses, and focusing on ROA as the primary performance metric for government-owned banks and also use recent years data including until 2023.

2.4 Conceptual Framework

The study will construct a visual framework to illustrate the hypothesized links between the credit risk management practices at the Commercial Bank of Ethiopia (independent variables) and the bank's financial outcomes (dependent variables), taking into account intervening factors. The bank's financial performance is subject to credit risk, which is shaped by various elements. It's crucial to assess the level of risk tied to each specific factor, including Non-Performing Loans (NPL), Capital Adequacy, bank size, solvency, operational efficiency, loan growth rate, and Net Interest Margin (NIM). The objective of the research is to analyze how these factors influence the bank's financial well-being. Additionally, the study will employ Return on Assets (ROA) as a trusted measure for evaluating performance, a practice frequently used for state-owned banks. The conceptual framework formulated by the researcher based on defines conceptual framework as a concise picture of occurrence under study accompanied by a graphicalor visual understand

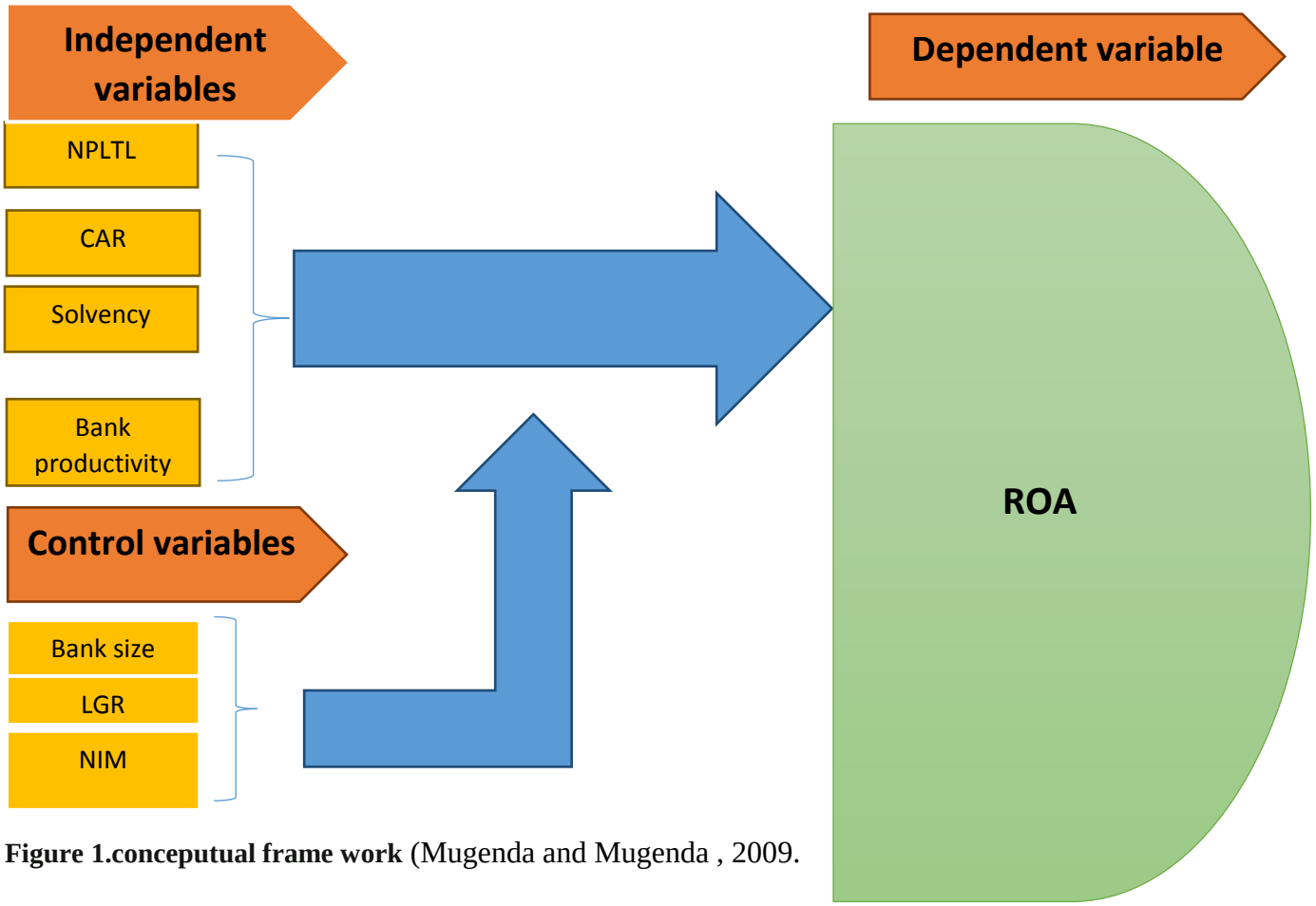

Figure 1.conceptual frame work (Mugenda and Mugenda , 2009.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 Research approach

The research methodology outlines the framework for how data will be collected, including the sampling and gathering methods, as well as the creation of tools for data analysis (Bryman & Bell, 2011). Additionally, the research methodology serves as a detailed plan for conducting the investigation in a way that ensures research questions are answered (Cooper & Pamela, 2014). Essentially, it provides the steps required to gather the necessary information to address the issues being studied. Various research methodologies are applied in the exploration of business-related issues (Hair et al., 2014). The approach for this research paper will be a descriptive study, which is a more formalized type of research characterized by well-defined hypotheses or research questions.

According to (Cooper & Pamela, 2014), in business research, quantitative methodologies usually measure consumer behavior, knowledge, opinions, or attitudes. Such methodologies answer questions related to how much, how often, how many, when, and who. Although the survey is not the only methodology of the quantitative researcher, it is considered a dominant one. And of qualitative research is based on researcher interest in the phenomenon to be studied, gathering data which provide a detailed description of events, situations and interaction between people and things.

And finally the researcher will be used both qualitative and quantitative approach that means mixed used approach

3.2 Sample selection

Commercial Bank of Ethiopia has two dimension it is government owned bank and in the other hand a profit making organization. Credit approval and disbursement priority for government project and since 2020 after the new business model implemented it also focus on for privet sector aid for national development sectors.

According to (Cooper & Pamela, 2014), sampling techniques have two border approach first non-probability samples, researchers confirm these myths using the number of subgroups, rules of thumb, and budget considerations to settle on a sample size. Second probability sampling, how large a sample should be is a function of the variation in the population parameters under study and the estimating precision needed by the researcher. Regarding to the study the research focus on commercial bank of Ethiopia for year 2009 up 2023 the researcher use purposive sampling techniques for a given period.

Sample size refers to the count of individual units selected from a total population for analysis. This particular research study is based on an examination of audited financial statements covering a period of 15 years.

3.3 Data source &data instrument

To fulfill the study's goals, secondary data will be utilized, which consists of documents published by credible external sources or created internally by management and verified by independent third-party organizations. The data collection will involve gathering audited financial statements from the Commercial Bank of Ethiopia's portal, the Management Information System (MIS) department, and the National Bank of Ethiopia, encompassing a 15-year period from 2009 to 2023. The research will employ time series data and analyze it using STATA 15 software. The quantitative data will be examined through descriptive statistical methods, including frequency distribution tables, percentages, and averages, as well as measures of variability like variance and standard deviation. The study relies on secondary data sourced from the audited annual financial reports of strategically chosen state-owned banks and the reports published by the National Bank of Ethiopia (NBE)

3.4 Data interpretation

According to (Cooper & Pamela, 2014), Data analysis usually involves reducing accumulated data to a manageable size, developing summaries, looking for patterns, and applying statistical techniques. Scaled responses on questionnaires and experimental instruments often require the analyst to derive various functions, as well as to explore relationships among variables.

The researcher after data collection analyze using descriptive statistics, correlations and multiple linear regression analysis based on collected data. According to (Cooper & Pamela, 2014) data can track trends in attitudes toward issues or products, product adoption or consumption behavior, and a myriad of other research interests. Descriptive statistics used to analyze the general trends of the data fromYear 2009-2023 based on commercial bank of Ethiopia.The researcher employed various statistical techniques to explore the relationship between dependent variables (such as financial performance) and explanatory variables. The researcher used a correlation matrix to examine the associations between dependent and independent variables. A simple linear regression model was utilized to assess the relative importance of each independent variable in influencing the financial performance of the bank over a 15-year period. The study evaluated the effect of credit risk before and after the implementation of a business model. To address unbalanced data, the researcher employed rate ratios. Specifically the researcher compared pre- and post-change. The mean value and covariance were considered when comparing before and after changes. Finally, an OLS regression approach, along with its assumptions, was conducted using STATA 15 econometric software. This analysis aimed to test the effect of credit risk on the bank's financial performance. In summary, this comprehensive research methodology allows for a thorough investigation of credit risk's influence on the bank's overall financial performance.

3.5 Model Specification

The general mode of the study can be represented as follows using Brook (2008) as cited in Aredu (2014):

Equation 1.

$$ROAt=\beta0+\beta1(CARit)+\beta2(LGRit)+\beta3(NPLit)+\beta4(TLTDit)+\beta5(NIMit)+\beta6(TETIit)+\beta7(lnTAit)+eit$$

Variable description:

NPLTL= Non-Performing Loan to Total Loan,

CAR =Capital Adequacy Ratio

LOTA= Natural Log of Total Asset (bank size)

TLTD) =Total loan outstanding to total deposit (solvency)

TESNI =total employee salary to net income (productivity)

LGR = loan growth rate

NIM = Net interest margin

3.6 Operationalization of the research topic

3.6.1 Dependent variable

Return on Assets (ROA): This ratio measures the profitability of a public bank by comparing its net income to its average total assets. A higher ROA indicates better financial performance.

3.6.2 Independent variable

A. Loan Growth: Measuring the growth rate of the bank's loan portfolio is essential. A positive trend in loangrowth suggests demand for credit, increased lending activity, and potential recovery in the market. However, it is important to balance growth with prudent lending practices to avoid excessivecredit risk.

B**.** Non-Performing Loan Ratio (NPLR) **:** The Non-Performing Loan Ratio (NPLR) is a financial metric used to assess the health of a bank’s loan portfolio. It is defined as the proportion of loans that have defaulted or are overdue in payments relative to the overall loan portfolio. A lower NPLR indicates a higher caliber of the bank’s loans, reflecting stronger asset quality and financial stability. Essentially, the NPLR measures the percentage of loans that are not accruing their scheduled payments out of the total loans issued, with a smaller ratio signifying a more robust loan portfolio.

C. Capital adequacy ratio is defined as the ratio of capital to the risk-weighted sum of bank‟s assets (Hyun & Rhee, 2011). It shows the financial soundness of a bank, its capacity of covering the eventual losses due to some risk. CAR measures the proportion of a public bank's capital to its risk-weighted assets and is used to assess its ability to absorb potential losses. A higher CAR indicates a safer position and better financial stability.

D. Net Interest Margin (NIM):

NIM reflects the difference between interest income generated from loans and investments and interest expenses paid to depositors and creditors. A higher NIM may indicate stronger revenue generation and profitability for public banks

E. bank size.

The concept of bank size is indicative of the overall capacity and reach of a banking entity, which is commonly gauged by its total assets**.** Financial institutions with larger asset bases typically operate on a wider scale, serve a more diverse clientele, and wield more clout within the financial marketplace. The assessment of a bank's size frequently hinges on its asset portfolio. Moreover, the dimension of a bank plays a pivotal role in systemic riskthe potential for a single bank's failure to trigger a ripple effect that adversely affects the entire banking system. The natural logarithm of total assets serves as a metric for quantifying bank size. Generally, a positive correlation is anticipated between the size of a bank and its profitability.

F. Solvency ratio (liquidity) (total loan outstanding to total deposit)

The solvency ratio is a measure of a public bank's ability to meet its debt obligations, particularly its loan obligations, using its customer deposits. The calculation for the solvency ratio involves dividing the sum of all loans that have yet to be repaid by the aggregate of deposits made by customers. When this ratio is on the higher side, it signifies that the bank's loan allocations are substantial in relation to the deposits it holds. This scenario could heighten the bank's vulnerability to risks since a larger share of its financial resources is tied up in loans.

G. productivity (total employee in salary to net profit)

The productivity of a public bank measures how efficiently it utilizes its human resources, specifically in relationto its net profit. It is calculated by dividing the total salary expenses of the bank's employees by its net profit. A higher productivity ratio indicates that the bank is generating more profit per employee, which suggests a higher level of efficiency in utilizing its workforce.

3.7 Validity Test

Validity refers to how accurately scores from a measurement represent the intended variable. It is determined through a holistic evaluation of different forms of evidence. This evidence includes factors such as the reliability of the measurement, whether it measures the intended construct, and whether the obtained scores are correlated with relevant variables while being distinct from unrelated variables. The determination of reliability and validity cannot be solely based on a single study, but rather requires an examination of results from multiple studies. Assessing the reliability and validity of a measurement is an ongoing process, constantly evolving over time. (Chant A.Jhangiani and Paul 2020)

CHAPTER FOUR

4. DATA ANALYSIS, PRESENTATION AND INTERPRETATION

This chapter is structured to address the research questions, utilizing a time series dataset spanning from 2009 to 2023 from the commercial bank of Ethiopia. The primary aim is to evaluate the effect of credit risk on financial performance throughout this entire timeframe. Furthermore, it seeks to compare the financial performance before and after the implementation of a new business model. To ensure balance in the analysis, adjustments are made to account for period, aiming to normalize the mean values of each variable.

4.1 Descriptive statistics

SUM

Variable	OBS	Mean	Std. Dev.	Min	Max
YEAR	15				
ROA	15	3.22	1.48	1.23	5.4
NPL	15	3.02	1.24	1.74	5.4
CAR	15	18.69	7.17	9.2	29.7
BANK SIZE	15	26.42	3.31	18.78	30.01
SOLVENCY	15	0.42	0.048	0.33	0.49
BANKPROD	15	0.64	0.41	0.23	1.45
LGR	15	19.97	5.19	8.27	29.77
NIM	15	4.46	0.28	4.09	4.9

Table 1 source STATA 15 output

Return onAssets (ROA) serves as a key metric reflecting a bank's efficiency in leveraging its assets to generate profits prior to meeting financial obligations. The average ROA value of 3.06% signifies the bank's efficiency in profit generation through asset utilization it indicates how efficiently the bank generates profits relative to its total assets. The range between the minimum and maximum ROA values reveals the spectrum of income generated relative to invested assets in the sector, with the lowest percentage recorded in 2023 at 1.09% and the highest in 2012 at 5.4%. The standard deviation of 1.56% over the five-yearperiod suggests that

the bank's profitability vise verse its assets exhibits minimal variability. In other words, the bank's returns on assets (ROA) remain relatively consistent during this time frame.

Anon-performing loan is a loan where the borrower is in default, failing to make scheduled principal or interest payments for a particular period. In the banking sector, commercial loans are classified as nonperforming if payments are overdue beyond a set timeframe. The average NPL rate of 3.51% reflects the proportion of non-returning loan amounts compared to the total loan disbursements during the given period. The range between the minimum and maximum NPL values highlights the range of unrecovered loan amounts relative to total disbursements in the sector, with the lowest percentage recorded in 2012 at 1.74% and the highest in 2021 at 6.1%. The standard deviation of 1.22% across the study period suggests that the commercial bank of Ethiopia's non-performing loans concerning total loan disbursements demonstrate minimal variability.

Capital adequacy serves as a key indicator of a commercial bank's financial health, reflecting its capacity to shoulder potential financial risks. It acts as a safeguard against economic instability. The Capital Adequacy Ratio (CAR), with an average of 18.71% and a standard deviation of 6.79%**,** ranged from a low of 9.2% in 2012 to a high of 29.7% in 2017. Regulatory bodies set the minimum CAR to ensure stability; globally, the Basel Accord mandates a minimum of 8%**,** a standard also adopted by the National Bank of Ethiopia as per directive No SBB/24/99 for local banks.

Bank Size (BS) is a dependent variable with a mean value natural logarithm of the bank's total assets is 26.44, indicating the overall scale of a bank. It is quantified by taking the natural logarithm of the bank's total assets. The data reveals that bank size fluctuated between 18.78% and 30.01%, with a standard deviation of 3.33 during the observed period.

The solvency ratio, another dependent variable, varied from 0.13 to 0.48, averaging at 0.35. This ratio experienced a standard deviation of 0.09 from the mean, suggesting a considerable spread among the independent variables. Willem (2013) noted that while there is no universal standard for solvency ratios, certain nations have established mandatory thresholds.

The ratio of the employee salary and benefit to the net income is the most commonly used measure of bank productive on a main driving expense force of the banks. In most public bank measures how efficiently it utilizes its human resources, specifically in relationto its net profitemployee productivity ratio the mean value of the total employee salary and benefit over the net income of the bank is 0.75 it is indicate that for each value of 1 birr of net income is incurred 0.75 birr for employee salary and on the other hand 0.23 and 1.76 the minimum and maximum value of respectively with the standard deviation of 0.58.

A positive trend in loangrowth suggests demand for credit, increased lending activity, and potential recovery in the market and also increasing the profitability of the bank. Based on the a table the loan growth in commercial bank has a mean value of 0.167 and the minimum and the maximum of 0.05 and 0.26 respectively with the standard deviation of 0.56

NIM reflects the difference between interest income generated from loans and investments and interest expenses paid to depositors and creditors

4.2 Correlation Analysis test

In this section, we present and analyze the correlation among various variables, including return on assets, nonperforming loans, capital adequacy, liquidity, and bank size. A correlation matrix is utilized to assess the relationships between these explanatory variables as well as the dependent variable. According to Cooper (2009), a correlation coefficient exceeding 0.8 between explanatory variables indicates a potential issue of multicollinearity that should be addressed. Conversely, Mashotra (2007) argued that a correlation coefficient above 0.75 might also warrant attention. Hair (2006) further suggested that a correlation coefficient below 0.9 may not necessarily lead to serious multicollinearity problems. Therefore, we present and discuss the results of the correlation coefficients in this study based on the concepts mentioned above.

	ROA	NPL	CAR	BANKSIZE	SOLVENCY	EMPOYEE PROD	LGR	NIM
ROA	1							
NPL	-0.5844	1						
CAR	-0.907	0.461	1					
BANKSIZE	-0.7366	0.4187	0.7028	1				
SOLVENCY	0.8038	-0.5643	-0.7599	-0.5338	1			
BANK PROD	-0.7801	0.5309	0.7696	0.7902	-0.7532	1		
LGR	0.1545	-0.2691	-0.1253	-0.2177	0.3644	-0.3783	1	
NIM	0.3874	-0.6318	-0.356	-0.4299	0.4463	-0.5616	0.1233	1

Table 2 STATA 15 output

4.3 Multicollinearity Test

Multicollinearity occurs when an independent variable in a model is redundant, as its impact is already accounted for by other variables. Such a variable doesn't provide additional value to the model's predictions and could be omitted. This situation arises when explanatory variables exhibit a high degree of linear correlation. In cases of perfect multicollinearity, one explanatory variable can be exactly predicted from the others, which is generally simple to prevent. The presence of multicollinearity inflates the variances and standard errors of the coefficient estimates, leading to lower t-statistics.

(Obs=15)

	NPL	CAR	BANK SIZE	SOLVENCY	BANK PRD	LGR	NIM
NPL	1						
CAR	0.461	1					
BANKSIZE	0.4187	0.7028	1				
SOLVENCY	-0.5643	-0.7599	-0.5338	1			
BANK PROD	0.5309	0.7696	0.7902	-0.7532	1		
LGR	-0.2691	-0.1253	-0.2177	0.3644	-0.3783	1	
NIM	-0.6318	-0.356	-0.4299	0.4463	-0.5616	0.1233	1

Table 3 STATA 15 out put

Beyond the correlation matrix, the Variation Inflation Factor is also employed to detect multicollinearity. It is understood that if the average VIF is below 10**,** it indicates that multicollinearity is not a significant concern within the model.

VIF

VARIABLES	VIF	1/VIF
EMPLOYEE PRD	5.77	0.173163
CAR	4.21	0.237525
SOLVENCY	3.62	0.276023
BANK SIZE	3.10	0.322166
NIM	2.13	0.469120
NPL	2.06	0.484355
LGR	1.49	0.672141
Mean VIF	3.2	

Table 4 STATA 15 out put

4.4 Normality test

The Normality Test is a statistical procedure that verifies the assumption of normal distribution by analyzing the residuals. It specifically checks if the skewness coefficient is zero, indicating symmetry, and if the kurtosis coefficient is three, signifying normal "tailedness" of the distribution. Skewness assesses the asymmetry of the distribution around the mean, while kurtosis gauges the thickness of the tails. According to Brooks (2008), it's essential to confirm that the explanatory variables are normally distributed, as residuals that deviate from normality typically stem from a non-normal distribution of outcomes. Descriptive statistical analysis in Stata has shown that the standardized residuals form a bell-shaped curve, suggesting normal distribution, which is consistent with Brooks' assertion that a normally distributed histogram will take the shape of a bell curve.(result annex)

4.5 Hetroscedastic Test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity on the variable ROA, the null hypothesis states that constant variance (homoscedasticity) is present in the residuals.In other words, the residuals have equal variance across different levels of the predictor variable and the alternative hypothesis suggests that heteroskedasticity is present in the residuals. Heteroskedasticity means that the residuals do not have equal variance. As a result the chi-squared test statistic is calculated as 0.11 and Prob> chi2 associated with the chi-squared test statistic is 0.7404.

Since this p-value is greater than the common significance level we are fail to reject the null hypothesis.Therefore, there is insufficient evidence to conclude that heteroskedasticity is present in the regression model. In summary, based on the Breusch-Pagan / Cook-Weisberg test, we do not find significant evidence of heteroskedasticity in the residuals of the regression model for the variable ROA. This suggests that the assumption of constant variance (homoscedasticity) holds for this model.

. estat hettest
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of roa
chi2(1) = 0.11
Prob > chi2 = 0.7404

Table 4 STATA 15 out put

4.6 Interpretation of the model

Reg ROA, NPL,CAR,Bank Size, Solvency,Bank Employee productivity, LGR, NIM

Source |		SS	df	MS	Number of obs	15
					F(7, 7)	29.06
Model |	2 9	600642	7	4.22866315	Prob > F	0.0001
Residual |	1 . 1	845195	7	.145493136	R-squared	0.9667
					Adj R-squared	0.9335
Total |	3 0	619094	14	2.18707814	Root MSE	0.38144

ROA	|	Coef.	Std. Err.	t	P>|t|	[95% Conf	. Interval]
NPL		-0.3014382	.1180384	-2.55	0.038	-0.5805547	-0.0223217
CAR		-0.0689539	.0291577	-2.36	0.05	-0.1379009	-6.85E-06
BANK SIZE		0.0025241	.0541819	0.05	0.964	-0.1255957	0.1306438
SOLVENCY		4.293292	3.967067	1.08	0.315	-5.087332	13.67392
BANK PROD		-2.219902	.595479	-3.73	0.007	-3.627986	-0.8118176
LGR		0.0586407	.0239561	-2.45	0.044	-0.115288	-0.0019935
NIM		-1.443898	.5306869	-2.72	0.03	-2.698773	-0.1890225
CONS		12.59502	3.302287	3.81	0.007	4.786347	20.40368

Table 5 STATA 15 out put

This model aims to predict the Return on Assets (ROA) based on several independent variables. Here are the key points:

The model explains a significant amount of variability in the dependent variable (ROA).The R-squared value of 0.9667 indicates that approximately 96.67% of the variation in ROA can be explained by the independent variables.The Adjusted R-squared value of 0.9335 accounts for the number of predictors and provides a more conservative estimate of model fit.ANOVA Table assessment on the F-statistic tests whether the overall model is statistically significance or not and the F value of 0.0001 indicates that the model is significant ($p < 0.05$).This suggests that at least one of the independent variables has a significant effect on the dependent variable(ROA).Each coefficient represents the change in the dependent variable (ROA)

associated with a one-unit change in the corresponding independent variable, while holding other variables constant.Based on result the coefficients for each predictor,NP (Non-Performing Loans)Coefficient: -0.3014indicate that for every one-unit increase in non-performing loans, ROA decreases by approximately 0.3014 units and statistically significant (p = 0.038).Capital Adequacy Ratio Coefficient of -0.0689indicate that for every one-unit decrease in capital adequacy ratio, ROA decreases by approximately 0.0689 units.It is marginally significant (p = 0.050).Bank Size Coefficient of 0.0025it indicate that bank size has a negligible effect on ROA and also not significant at 5% which has a p-value equal to 0.964.Solvency RatioCoefficient is 4.2933it indicate that for every one-unit increase in solvency ratio, ROA increases by approximately 4.2933 units and alsonot significant at 5% (p-value 0.315). The employee productivitycoefficient is -2.2199and it indicate that higher bank employeeproductivity is associated with a decrease in ROA and statistically significant p-value 0.007.The Loan Growth Rate Coefficient is -0.0586and it indicate thatfor every one-unit decrease in loan growth rate, ROA decreases by approximately 0.0586 and significant p-0.044). TheNet Interest MarginCoefficient is 1.4439it indicate that a wider net interest margin is associated with a decrease in ROA and statistically significant at 5%p-value 0.030.Cons (Intercept)Coefficient is 12.5950it indicate that the expected ROA when all other predictors are zero and statistically significant (p = 0.007).Root Mean Square Error (RMSE)The RMSE (Root MSE) of approximately 0.3814 indicates the average deviation of observed ROA from the predicted values.(un necessary but we need for explain).In summary, this model suggests that non-performing loans, capital adequacy ratio, bank employee productivity, loan growth rate, and net interest margin significantly influence on ROA. However, bank size and solvency do not have a significant impact.

Finding result and hypothesis test

The regression analysis and hypothesis testing have led to the following interpretations:

Non-Performing Loans (NPL) have a negative correlation with Return on Assets (ROA), with an associated p-value of -0.038, falling below the 0.05 significance level. This supports the significant link between NPL and ROA, corroborated by Kolapo et (2012), who observed that

credit risk factors, including non-performing loans and loan loss provisions, negatively affect ROA.

The relationship between CAR and Bank Size on ROA is inversely related, with a p-value of -0.050, which is on the threshold of significance. Caution is advised due to its marginal significance. Contrasting studies, such as those by Endaweke (2015) and Boahene and Agyei (2012), suggest a positive yet statistically insignificant impact of CAR on bank performance, while Mwangi (2012) found a significant inverse relationship between CAR and ROE.

The Solvency Ratio's coefficient indicates a positive relationship with ROA, but with a p-value of 0.315, it is not significant at the 5% level. Hence, no significant relationship exists between the Solvency Ratio and ROA. However, other researchers like Liyugi (2007) and Endaweke (2015) identified a negative and significant impact of credit risk and solvency on bank performance.

Employee productivity has been shown a negatively which is the salary related expense increase without increase of the net income and significantly affect ROA, with a coefficient of -2.2199, suggesting productivity down may lead to a reduction in ROA. The significance of this impact is confirmed by a p-value of 0.007. In contrast, a study on Albanian banking from 2009-2014 indicated a positive long-term relationship between bank profitability and staff salaries among the top three banks.

The Loan Growth Rate (LGR) has a coefficient of 0.0586, implying a positive influence on ROA, with a p-value of 0.044 (marginally significant). Thus, LGR has a significant effect on ROA. Research by Dat T Nguyen, Tu DQ Le (2022) and Dang V. (2019) suggests that bank profitability and loan growth share a positive relationship, which is relevant for bank supervisors, policymakers, and managers, especially in the context of Vietnam from 2006 to 2017.

The analysis indicates that a higher Net Interest Margin (NIM) correlates with an increase in Return on Assets (ROA), with a significant p-value of 0.030. This suggests that NIM has a notable positive effect on ROA, a finding supported by other researchers like Silaban (2017), who observed that NIM contributes positively to bank profitability. Similarly, a study by Noman

et al. (2015) on Bangladeshi banks from 2003 to 2013 found a significantly positive impact of NIM on ROA.

Regarding bank size, the coefficient is small yet positive in relation to ROA, but with a p-value of 0.964, it implies no significant connection between bank size and ROA. However, contrasting studies by Shibiru and Mebratu (2014) suggest that bank size does significantly influence the performance metrics ROA and ROE for private commercial banks. They found a negative correlation between profitability and asset volume. Additionally, research by Kosimod et (2005) indicated that smaller banks tend to outperform larger ones in terms of profitability.

Hypothesis test

Based on the data provided and the results of the statistical tests, here's the conclusion for each hypothesis:

Ho1: Non-Performing Loan has a significant and negative effect on ROA in Commercial Bank of Ethiopia. Reject Ho1. The data indicates a significant negative effect of NPL on ROA, with a p-value of 0.038, which is below the significance level of 0.05.

Ho2: Capital adequacy rate has a significant and positive effect on ROA in Commercial Bank of Ethiopia. Accept Ho2. Although the effect is negative, the p-value of 0.050 is at the threshold of the significance level, suggesting marginal significance.

Ho3: Bank size has a significant and positive effect on ROA in Commercial Bank of Ethiopia. Accept Ho3. The effect of bank size on ROA is negligible and not statistically significant, with a p-value of 0.964.

Ho4: Solvency ratio has a significant and positive effect on ROA in Commercial Bank of Ethiopia. Accept Ho4. The solvency ratio has a large positive coefficient, but it is not statistically significant with a p-value of 0.315.

Ho5: Bank productivity has a significant and positive effect on ROA in Commercial Bank of Ethiopia. Reject Ho5. The data shows a significant negative effect of employee productivity on ROA, with a p-value of 0.007.

Ho6: Loan growth rate has a significant and positive effect on ROA in Commercial Bank of Ethiopia. Reject Ho6. The loan growth rate has a negative effect on ROA, which is significant with a p-value of 0.044.

Ho7: Net interest margin has a significant and positive effect on ROA in Commercial Bank of Ethiopia. Reject Ho7. The net interest margin has a significant positive effect on ROA, with a p-value of 0.030.

In summary, the hypotheses Ho2, Ho3, and Ho4 are accepted, indicating that the data does not provide enough evidence to reject these hypotheses. However, for Ho1, Ho5, Ho6, and Ho7, the hypotheses are rejected based on the statistical evidence provided, meaning that the data supports the alternative hypotheses for these cases. It's important to note that the acceptance of Ho2, Ho3, and Ho4 does not necessarily mean that these variables have a positive effect on ROA.

4.7 Comparative way of the result before and after the business model

To resolve the problem of unbalanced period of data the researcher use ANCOVA (Analysis of Covariance) to compare means between the "before" and "after" groups while controlling for covariates .An **ANCOVA** is an extension of an ANOVA in which we'd like to determine if there is a statistically significant difference between three or more independent variables In this case the researcher consider using ANCOVA with ROA, NPL, CAR, and other relevant covariates.The null hypothesis is that there is no significant difference in means after adjusting for covariates.As a result and based on the data and compare the "before" and "after" periods based on the provided financial metrics focus on the changes starting from 2021.

According to the result before a new business model (2009-2020)Return on Assets generally higher and aftercommenced the new business modelthere is a decline, indicating reduced profitability.Focus on improving loan underwriting standards to reduce NPLs and enhance profitabilityNPL (Non-Performing Loans)as a mean value of 2.55 lower before 2021.After 2021 (2021-2023)NPLmean value an increase to 4.95, signifying a rise in risky assets or bad loans. Risk ManagementAddress the increase in NPLs by managing risk exposure.CAR (Capital Adequacy Ratio)17.24 lower before 2021 after the new business model 2021 increased, to 24.49 indicating increase capital adequacy to cover risks.Capital Adequacy strengthen the capital base to improve CAR and solvency.Bank Size is smaller mean value 25.56 before 2021 and after implemented the new business model bank Size increaseda mean value to 29.84 slightly but not significantly. Solvency Ratios is in generally higher 0.44 before 2021 and after implementation the solvency value decreased to 0.36, suggesting increased financial risk or leverage. Bank

employee productivity generally lower is 0.54 before 2021 and after implementation 1.09 which is the salary payment increase but not increase the value of net income accordingly and operational efficiency to lack ROA.

CHAPTER FIVE

5.SUMMARY,CONCLUSION AND RECOMMENDATION

5.1 summary

The researcher utilized data spanning from 2009 to 2023, revealing an average Return on Assets (ROA) of 3.06%, which indicates the bank's proficiency in generating profits through asset utilization. This figure surpasses the global ROA benchmark of 1 to 2%, with observed minimum and maximum ROA values of 1.23% and 5.4%, respectively, and an average ROA of 3.31%. The range of Non-Performing Loans (NPL) values, with a minimum of 1.74% in 2012 and a maximum of 6.1% in 2021, exceeds the standard threshold of 5% for that year. According to Basel regulations, which mandate a minimum Capital Adequacy Ratio (CAR) of 8%—a standard adopted by the National Bank of Ethiopia under directive No SBB/24/99—CBE consistently maintained a CAR above this level throughout the years. The data also shows fluctuations in bank size between 18.78% and 30.01%, with a standard deviation of 3.33 during the period under review. The solvency ratio, another key metric, averaged at 0.35. The bank's human resource utilization, particularly concerning the net profit to employee productivity ratio, had a mean value of 0.75. A positive trend in loan growth, with a mean value of 0.167, suggests a healthy demand for credit, while the net interest margin ranged from a minimum of 0.05 to a maximum of 0.26.

Cooper & Schindler (2009) state that a correlation coefficient above 0.8 among explanatory variables may indicate multicollinearity. In this study, ROA exhibited multicollinearity with CAR and bank solvency. However, with an average Variance Inflation Factor (VIF) of 3.2, the study does not present serious multicollinearity concerns.

The analysis revealed a significant inverse relationship between CAR and ROA. NPLs were negatively correlated with ROA, with a p-value of -0.038, which is below the significance threshold of 0.05. The Solvency Ratio's coefficient suggested a positive link with ROA, but with

a p-value of 0.315, it was not statistically significant at the 5% level. Employee productivity showed a negative trend, indicating that salary-related expenses increased without a corresponding rise in net income, significantly impacting ROA with a coefficient of -2.2199. This suggests that a decrease in productivity may lead to a reduction in ROA. The Loan Growth Rate (LGR) had a coefficient of 0.0586, implying a marginally significant positive effect on ROA. Lastly, a higher Net Interest Margin (NIM) was associated with an increase in ROA, indicating a notable positive impact on the bank's financial performance.

5.2Conclusion

This research primarily explores the influence of credit risk on the financial performance of the Commercial Bank of Ethiopia. Utilizing 15 years of time series data and STATA 15 for analysis, the study draws from audited financial statements available on the bank's website, its management information system department, and the National Bank of Ethiopia's website, covering the period from 2009 to 2023. The investigation assesses the bank's profitability, measured by Return on Assets (ROA), against various factors including Non-Performing Loan ratio (NPL), Solvency Ratio, Capital Adequacy Ratio (CAR), Total Assets (reflecting bank size), Employee Productivity, Loan Growth Rate, and Net Interest Margin (NIM).

Profitability is crucial for business sustainability, and in the banking sector, it underpins financial strength and contributes to economic stability. Therefore, it's imperative for bank executives and policymakers to pinpoint the factors affecting profitability. This study on the effect of credit risk on the Commercial Bank of Ethiopia's financial performance by evaluating ROA and examining the performance shifts since the introduction of a new business model in 2021.

The findings reveal that an increase in NPL correlates with a decrease in ROA, signifying a substantial negative impact of NPL on the bank's financial performance. Conversely, a higher CAR is positively and significantly related to ROA, suggesting that a robust capital buffer can mitigate risk and support financial performance by reducing funding costs.

Bank Size is positively linked to ROA, indicating that larger banks, possibly due to economies of scale, can enhance financial performance by extending more loans and advances. However, a higher Loan Growth Rate is associated with a negative effect on ROA, though the impact is

marginally significant, implying careful consideration is needed. The study also finds no significant relationship between the Solvency Ratio and ROA.

Furthermore, an increase in NIM is associated with an uptick in ROA, affirming NIM's positive contribution to bank profitability. In contrast, higher Employee Productivity is shown to negatively affect ROA, suggesting that productivity gains do not necessarily translate into higher profitability for the bank. Overall, these insights are vital for bank supervisors and highlight the complex interplay between various financial indicators and bank performance.

5.3Recommendation

The study's outcomes have led to the following recommendations. It was discovered that CAMEL factors, along with capital adequacy, employee productivity, loan growth, solvency, NPL, and NIM, are crucial for the profitability (ROA) of the Commercial Bank of Ethiopia.

- The bank should promptly update and address any deficiencies in its Credit Policy & Procedures by regularly assess the effectiveness of existing policies and identify any gaps or deficiencies. Consider factors such as loan quality, concentration risk, and compliance with lending standards. It is essential to implement a strong monitoring system to ensure strict compliance with these policies and procedures. This includes assessing whether the risks associated with the new business model are inherent. Additionally, the CBE should establish a competent credit risk management department. To enhance ROA, the focus should be on minimizing non-performing loans through improved credit risk management, intensified loan recovery initiatives, and better asset quality.
- There is also a need for banks' management to diversify their source of income base like investing a joint venture in profitability organization, now a day CBE get rent income from a new building by leasing some portion of floorExplore opportunities for generating non-interest income, CBE has a good human resource development center with capable trainer in financial sectors and it makes fees from advisory services, wealth management, or investment advisory. This is because over-reliance on interest incomefrom loans and advances may not produce adequate returns necessary to compensate providers of capital sector.

- Regarding to Bank productive CBE loss year to year because of the salary expense increasing rate is more than the rate of change of net income of the bank. Salary expense is not only the problem but every employee must have equal contribution on maximizing of mobilizing resource and contributing of net profit. So CBE must be evaluate each branch economical profitability rather than accounting profitability by make a standard weight of measurement for evaluating the branch and an additional assessment of each employee's productivity should be conducted to determine their contribution to incremental net income. Subsequently, if a branch is not economically profitable, the bank should consider closing it or downgrading its level. Such actions would benefit the bank by reducing operational expenses, particularly those related to employee salaries and benefits
- In the near future the capital market will commenced in Ethiopia financial market and CBE may have be a challenge for deposit mobilization and it must be precaution their policy and procedure align with the capital market to protect their market share on loanable funds and loan and advance to the customer.

5.4 Further research direction

- The research aimed to explore the effect of credit risk on the financial outcomes of commercial banks in Ethiopia. Nonetheless, not all risk management variables that could influence bank performance were accounted for in the statistical evaluation. Future studies should consider a comprehensive range of banking risk factors, including those from external sources, as well as the extent to which capital market levels, exchange rate fluctuations, and inflation may impact the banking sector. Moreover, this study was limited to the use of secondary data. It is advisable for subsequent research to broaden its approach by including primary data sources.
- The study was conducted to evaluate the effect of credit risk on the financial results of commercial banks in Ethiopia. However, the statistical analysis did not cover all potential risk management variables that might affect the performance of banks. Future research should include a comprehensive range of risk factors affecting banks, such as external risks, the effects of capital markets, variations in exchange rates, and inflation risks.

Additionally, future research should expand its methodology to incorporate primary data, as this study was based only on secondary data sources.

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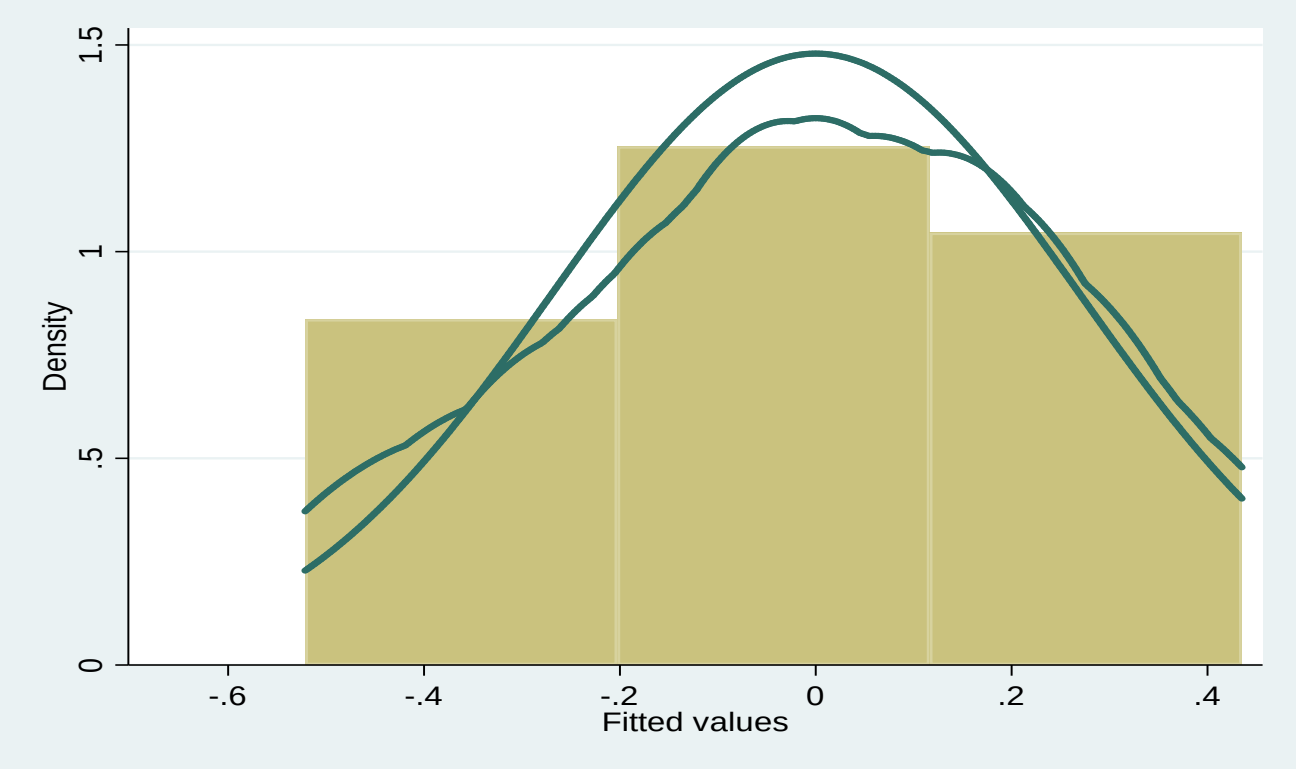
ANNEX- Graph



Graph 1 STATA 15 out put

ANNEX- ROW DATA

YEAR	ROA	NPL	CAR	BANK SIZE	SOLVENCY	BANK PRODUCTIVITY	LGR	NIM
2009	4.5	3.48	14.3	18.78	0.45	0.23	18.2	4.6
2010	3.8	2.74	13.2	21.36	0.42	0.25	26.03	4.5
2011	4.4	1.86	11.5	23.86	0.4	0.28	19.03	4.9
2012	5.4	1.74	9.2	24.56	0.48	0.29	14.18	4.6
2013	4.8	2.23	13.3	24.92	0.47	0.3	17.31	4.6
2014	4.4	2.5	12.9	25.02	0.46	0.37	29.77	4.1
2015	5.1	1.78	13.9	26.63	0.48	0.38	23.3	4.4
2016	3.4	2.45	11.5	27.16	0.49	0.55	21.8	4.9
2017	2.2	2.5	29.7	27.91	0.42	0.48	24.4	4.8
2018	1.23	2.03	27.6	28.52	0.38	1.45	19.76	4.39
2019	1.79	2.56	27.4	28.97	0.37	0.84	20.5	4.48
2020	1.83	4.7	22.4	29.02	0.4	1.02	15.4	4.09
2021	2.13	5.4	23.75	29.65	0.39	0.9	22.6	4.19
2022	1.42	4.9	24.83	29.86	0.37	1.13	19.12	4.23
2023	1.94	4.45	24.9	30.01	0.33	1.24	8.27	4.09

Row data ratio extract from financial statement