

An Internship report on “Analysis of Bank-Specific and Macroeconomic Factors on Non-Performing Loans: A Study of commercial Banks in Bangladesh” submitted in partial fulfillment of the requirement for the Degree of Master of Business Administration (MBA)



SUPERVISED BY

Md. Al-Amin

Assistant Professor

Department of Finance and Banking

Comilla University, Cumilla

PREPARED BY

Farzana Aktar

Class ID: 22317013

Session: 2022-23

Program: MBA

Department of Finance and Banking

Comilla University, Cumilla.

DATE OF SUBMISSION

26 May, 2025



Department of Finance and Banking

Comilla University, Cumilla

Letter of Transmittal

26 May, 2025

Md. Al-Amin

Assistant Professor

Department of Finance and Banking,

Comilla University, Cumilla

Subject: Submission of the internship report on “**Analysis of Bank-Specific and Macroeconomic Factors on Non-Performing Loans: A Study of Commercial Banks in Bangladesh.**”

Honourable Sir,

I hope this letter finds you well. It is with great pleasure and a sense of accomplishment that I submit my internship report, titled Analysis of Bank-Specific and Macroeconomic Factors on Non-Performing Loans: A Study of commercial Banks in Bangladesh,” as a partial fulfillment of the requirements for the Master of Business Administration (MBA) program.

The report is based on the knowledge and experience I gained during my internship at Sonali Bank Limited, as well as secondary data analysis. I have made every effort to present the findings in a comprehensive and logical manner. This report explores the major bank-specific and macroeconomic factors influencing the level of non-performing loans (NPLs) in the commercial banking sector of Bangladesh, a matter of growing concern for the financial system.

I sincerely hope and pray that any inaccuracies in the report can be forgiven. I urge you to give this report your kind consideration.

Sincerely Yours,

Farzana Aktar

ID: 22317013

Session: 2022-23

Program: MBA

Department of Finance and Banking

Comilla University, Cumilla

Acknowledgment

I am sincerely grateful to the Almighty for providing me the courage and grace to thoroughly and accurately analyze and finish my report. It has been an honour to prepare this report, “Analysis of Bank-Specific and Macroeconomic Factors on Non-Performing Loans: A Study of Commercial Banks in Bangladesh,” which is required for fulfilling the requirements of the Master of Business Administration (MBA) programme.

My supervisor, Md. Al-Amin, an Assistant Professor in Comilla University's Department of Finance and Banking, has my sincerest gratitude. His guidance, expertise, and valuable feedback have been essential during the development of this report. His ongoing oversight at every phase of the project greatly aided in its successful completion.

Farzana Aktar

ID: 22317013

Session: 2022-23

Program: MBA

Department of Finance and Banking

Comilla University, Cumilla

Declaration

I, Farzana Aktar, a student of the Department of Finance & Banking, Comilla University, declare that the internship report titled “**Analysis of Bank-Specific and Macroeconomic Factors on Non-Performing Loans: A Study of Commercial Banks in Bangladesh**” is my original work. I affirm that all content is authentic, and appropriate references have been included. This report has not been previously submitted for any academic purpose, and it adheres to ethical standards.

.....

Farzana Aktar

ID: 22317013

Session: 2022-2023

Program: MBA

Department of Finance and Banking

Comilla University, Cumilla

Certificate of Supervision

This is to certify that Farzana Aktar, a student of the Department of Finance and Banking, Comilla University, has satisfactorily completed her internship under my supervision on the topic **“Analysis of Bank-Specific and Macroeconomic Factors on Non-Performing Loans: A Study of Commercial Banks in Bangladesh.”**

I have reviewed and guided Farzana Aktar throughout her internship, and I am confident in the quality and originality of her work. I hereby grant permission for Farzana Aktar to submit her internship report on the specified topic for evaluation.

I wish her the best in the submission and assessment process.

.....

Md. Al-Amin

Assistant Professor

Department of Finance and Banking

Comilla University, Cumilla

Executive Summary

The banking sector plays a vital role in Bangladesh's economic development by mobilizing savings and financially productive investments. However, the persistent rise in Non-Performing Loans (NPLs) poses a serious threat to the stability, profitability, and efficiency of commercial banks. Despite numerous policy interventions by the Bangladesh Bank, NPL ratios in Bangladesh remain the highest in South Asia, indicating structural weakness in the banking system. The main objective of the study is to empirically investigate the impact of both bank-specific and macroeconomic factors on the level of NPLs in 15 commercial banks listed in the Bangladesh Bank over the 10 period 2014-2023. Key bank specific variables include Return on Assets (ROA), Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), Bank Size and Cost to Income Ratio (CIR), while macroeconomic indicators encompass GDP growth rate, Inflation Rate (IFR), and Interest rate Spread (IRS). The study uses secondary data collected from annual reports, regulatory publications, and financial databases. A panel data regression approach is employed, and based on the Hausman test, both Fixed Effects and Random Effects Models are considered. After Several diagnostic tests, such as descriptive statistics, normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test, are conducted to ensure model robustness. The findings reveal that ROA, CAR, and LDR have a significant negative relationship with NPLs, implying that greater profitability, stronger capitalization, and efficient loan utilization reduce credit risk. Conversely, bank size and CIR exhibit a positive association with NPLs, suggesting that larger banks and those with higher operational costs may face greater loan defaults. Among macroeconomic variables, GDP growth and interest rate spread show a weak positive influence on NPLs, while inflation and exchange rates appear insignificant. The study recommends enhancing bank profitability, maintaining strong capital buffers, improving cost efficiency, and adopting counter-cyclical lending practices. Regulatory authorities are urged to strengthen oversight, promote sound governance, and tailor monetary policies to support credit risk mitigation. These insights are crucial for developing resilient banking practices and ensuring long-term financial stability in Bangladesh.

Table of Contents

1. Introduction	9
1.2 Background of the Study	10
1.2 Scope of the Study	11
1.3 Problem Statement	11
1.4 Research Question	12
1.5 Research Objectives	13
1.6 Limitations of the Study	13
2. Literature Review	15
2.1 Hypothesis	17
3. Methodology	19
3.1 Research Type	19
3.2 Sample and Sources	19
3.3 Variable Identified	20
3.4 Econometric Model	22
3.5 Conceptual Framework	23
4. Company Overview	25
5. Analysis and Findings	29
5.1 Analysis and Discussion	29
5.2 Findings	35
6. Recommendations and Conclusions	39
6.1 Recommendations	39
6.2 Conclusions	40
References	42
Appendix:	45

Chapter - 01

Introduction

1. Introduction

By mobilizing savings and directing them toward profitable investments, the banking industry plays a vital role in Bangladesh's financial system and greatly boosts economic growth. The performance and stability of Bangladesh's banks have a significant impact on the country's financial health because it is a developing nation with an increasing demand for credit. Nonetheless, the high frequency of non-performing loans (NPLs) is one of the most enduring and concerning issues facing the banking industry. Non-performing loans (NPLs), which are defined as loans that are in default or nearly in default because they have not been paid, not only reduce a bank's profitability but also erode public trust and jeopardize the stability of the financial system as a whole.

Over the years, Bangladesh has witnessed a concerning rise in NPL ratios, despite various policy measures and regulatory reforms introduced by the Bangladesh Bank. As of recent statistics, the country's NPL ratio remains among the highest in South Asia, significantly exceeding international benchmarks. This indicates a deeper structural issue within the banking system, calling for an empirical assessment of the factors influencing loan defaults. Several underlying causes have been suggested, including weak credit assessment procedures, political influence in lending, poor governance, and economic shocks. Nonetheless, a holistic understanding of how both bank-specific factors (such as capital adequacy, asset quality, profitability, and efficiency) and macroeconomic variables (such as GDP growth, inflation, and interest rate) affect NPLs in the Bangladeshi context is still underdeveloped.

While international research has highlighted multiple drivers of NPLs, the empirical evidence specific to Bangladeshi banks, especially those listed on the Dhaka Stock Exchange (DSE), remains sparse. Most existing studies have either relied on outdated data, overlooked bank-level operational variables, or failed to integrate both microeconomic and macroeconomic perspectives. Since publicly listed banks operate under stricter reporting and regulatory compliance, analysing these institutions provides a more transparent and reliable dataset for empirical investigations.

Therefore, this study aims to fill this gap by conducting an in-depth analysis of the factors influencing NPLs among 15 commercial banks in Bangladesh over 10 years (2014–2023). By employing robust econometric techniques and integrating both internal bank performance indicators and external macroeconomic variables, this research seeks to identify the key determinants of NPLs and offer meaningful policy recommendations. Understanding these

relationships is critical not only for improving credit risk management within banks but also for strengthening the overall financial stability and sustainability of Bangladesh's economic development.

1.2 Background of the Study

The banking sector of Bangladesh serves as the backbone of the country's financial system. It plays a pivotal role in the mobilization of savings, allocation of capital, facilitation of trade and commerce, and overall economic development. As an emerging economy with growing industrialization, urbanization, and investment needs, Bangladesh relies heavily on the efficient functioning of its banking sector to maintain financial stability and promote sustainable growth.

However, one of the persistent and critical challenges facing the banking sector in Bangladesh is the rising volume of Non-Performing Loans (NPLs). NPLs are loans for which the borrower has not made principal or interest payments for a predetermined amount of time, typically 90 days or longer. In addition to decreasing a bank's profitability, a high non-performing loan (NPL) ratio also erodes investor trust, limits access to credit, and raises systemic risk in the financial system (Mondal, T.2016).

Bangladesh has grappled with a high and often rising level of NPLs over the last decade. According to Bangladesh Bank data, the NPL ratio in the country's banking system has consistently remained above the international benchmark. This alarming trend is particularly noticeable in state-owned commercial banks (SOCBs), but it is also a growing concern among some private commercial banks (PCBs) and specialized financial institutions. The situation worsened due to the COVID-19 pandemic, which disrupted economic activities and created challenges in loan recovery across various sectors.

Multiple factors contribute to the accumulation of NPLs in Bangladesh. On the bank-specific level, factors such as poor credit risk management, inadequate monitoring, political interference in lending decisions, insufficient capital adequacy, low profitability, and lack of operational efficiency are often cited. On the macroeconomic level, low GDP growth, rising inflation, interest rate volatility, and depreciation of the exchange rate can adversely affect borrowers' repayment capacity and increase default rates. Despite regulatory initiatives, loan rescheduling schemes, and various policy reforms, the problem of NPLs persists.

Given the crucial role of listed commercial banks in the country's financial system and capital market, it is essential to understand the root causes and determinants of NPLs specifically within this segment. This study aims to examine both bank-specific and macroeconomic factors

affecting NPLs in commercial banks, contributing to the development of evidence-based policy solutions.

1.2 Scope of the Study

This study focuses exclusively on some commercial banks listed on the Bangladesh Bank over ten years (2014–2023). These banks represent a significant segment of the formal financial system and are subject to both regulatory oversight from Bangladesh Bank and disclosure requirements under the DSE. The study investigates how **bank-specific factors** such as Return on Assets (ROA), Capital Adequacy Ratio (CAR), Loan-to-Deposit Ratio (LDR), Bank Size, and Cost to Income Ratio (CIR) and **macroeconomic indicators** including GDP growth rate, inflation, and interest rate spread affect the NPL ratio of these banks.

The analysis will be conducted using panel data econometric methods, allowing for the control of unobserved heterogeneity and the identification of causal relationships. Data will be sourced from annual reports of selected Commercial banks, Bangladesh Bank publications, and international financial databases such as the World Bank.

By concentrating on a specific segment of the banking sector i.e., listed commercial banks this study aims to provide targeted insights for regulators, investors, and policymakers. The findings will help develop more effective strategies for NPL reduction, risk management, and overall banking sector stability in Bangladesh.

1.3 Problem Statement

Even though the banking industry is a big part in Bangladesh's economy, regulators, investors, and politicians are very concerned about the ongoing rise in non-performing loans, or NPLs. A bank's financial position is weakened by high non-performing loan (NPL) levels since they lower interest revenue, raise provisioning needs, and eventually reduce shareholder value. Even more concerning is the potential for systemic NPL accumulation to harm the whole credit system by restricting access to funding for profitable ventures and decelerating economic expansion.

The problem is particularly complex in Bangladesh due to a combination of structural inefficiencies, weak governance, inadequate risk assessment, and external macroeconomic shocks. While Bangladesh Bank has introduced several measures to reduce NPLs, such as rescheduling facilities, stricter loan classification guidelines, and new credit risk management

frameworks, the problem continues to persist. The COVID-19 pandemic further amplified repayment difficulties across all economic sectors.

Although there are studies that analyze individual aspects of the NPL problem, few provide a holistic view by evaluating both **bank-specific** and **macroeconomic** factors within a unified empirical framework. Even fewer studies have focused specifically on the listed banks of Bangladesh, which are more transparent, better governed, and subject to market forces due to their public ownership structure.

In this context, there is an urgent need to assess how both internal (bank-level) and external (macroeconomic) factors contribute to the incidence of NPLs in Bangladesh's commercial banks. Without such an empirical understanding, policy interventions may remain ineffective or misdirected.

1.4 Research Question

1. Does higher profitability reduce non-performing loans in Bangladeshi banks?
2. How does capital adequacy ratio influence the level of non-performing loans?
3. Does an increase in the loan-to-deposit ratio lead to higher non-performing loans?
4. Do larger banks face more or fewer non-performing loans compared to smaller banks?
5. How does management efficiency influence the accumulation of non-performing loans?
6. Does economic growth rate mitigate the amount of non-performing loans in the banking sector?
7. How does rising inflation affect the ability of borrowers to repay loans?
8. Does a wider interest rate spread contribute to more loan defaults?

1.5 Research Objectives

The main goal is to empirically examine how bank-specific and macroeconomic factors affect non-performing loans (NPLs) in commercial banks listed in Bangladesh Bank.

Specific Objectives:

- To investigate the relationship between listed banks' non-performing loans and profitability (ROA).
- To examine how capital adequacy (CAR) affects commercial banks' non-performing loans.
- To determine the influence of loan-to-deposit ratio (LDR) in non-performing loans.
- To determine whether bank size affects the quantity of non-performing loans.
- To investigate the relationship between loan defaults and management efficiency (CIR).
- To investigate how GDP growth affects non-performing loans.
- To look into how borrowers' capacity to repay loans is affected by inflation.
- To examine how interest rate spreads affect loan defaults.

1.6 Limitations of the Study

This study, while comprehensive, has several limitations. **Firstly**, due to time constraints, the analysis was limited to a 10-year period (2014–2023) and focused on 15 listed commercial banks, which may not fully represent the entire banking sector of Bangladesh. **Second**, the study only uses secondary data, and the validity of the findings may be impacted if consistent or comprehensive data for particular factors is not available. Furthermore, data limitations prevented the inclusion of several crucial variables, such as corporate governance procedures, borrower-specific indicators, and credit risk management programs. Future research using such variables could produce more precise and insightful findings.

Chapter-02

Literature Review

2. Literature Review

Limon, A. (2025) suggests that a high level of operational inefficiency significantly influences NPLs, whereas ROA and CAR act as mitigating factors for credit risk. Conversely, aggressive lending practices, as indicated by an increased LDR, are associated with higher NPLs. Islamic banks face significant institutional flaws, and agency costs reflect deeper governance issues that cannot be ignored.

According to Alamgir et al. (2023), macroeconomic factors like our nation's GDP growth rate (GDPR) and inflation rate (INFR) are not statistically significant and have no effect on the NPL of the banks, even though bank-specific factors like loan growth rate and lagged NPL have a positive impact on the NPL of banks.

Armen Hakobyan (2023) found that the primary findings of this study may be helpful for managing loan portfolios and bank stability. He also demonstrated that the NPL ratio cannot be explained in a multidimensional way by the capital adequacy ratio, return on assets, liquidity ratio, and return on equity, yield curves, or national currency from macroeconomic factors. However, the NPL ratio is negatively impacted by the consumer price index, the economic activity index, and the non-resident loans ratio. The NPL ratio is positively impacted by the fuel price, operating efficiency, unemployment rate, and USD/AMD exchange.

Ahmed et al., (2021) regressed balanced panel data on 20 Pakistani banks from 2006–2018, treating Pakistan as an emerging economy. They found political risk, credit growth, NIM, loan loss provision, diversification, interest rate, and exchange rates to be inversely related to NPL. They also found a significant relation between operating efficiency, ROA, Bank size and GDP growth with the NPL.

Amin et al. (2021) calculate the effects of bank-specific and external factors on the non-performing loan (NPL) of 24 scheduled commercial banks in Bangladesh between 2008 and 2019. They discover that while inflation and ROA have a negative effect on NPL, the GDP growth rate significantly positively correlates with Bangladesh's NPL ratio. "During periods of economic expansion and private sector credit expansion, a portion of loans disbursed may inevitably be given to borrowers who are overestimated," they wrote in reference to the positive correlation between NPL and GDP growth rate (p. 103). Nonetheless, they suggested more investigation to determine if this positive correlation results from poor credit risk management or ineffective management.

Khanam et al. (2021) also found significant inverse relationship of NPL with CAR, liquidity and profitability and a positive impact of operating inefficiency on the NPL ratio analyzing data on 20 commercial banks in Bangladesh for the period 2009-2019. They argued that their finding on the capital adequacy supports the ‘moral hazards’ hypothesis. Regarding inefficiency, they noted that better management was essential to improve credit quality.

Rezina et al. (2020) make a comparison between Islamic and conventional banks in terms of the causes of NPL. They analyzed 5 years’ secondary panel data for 2014-2018 on 7 conventional banks and 3 Islamic banks. They run pooled OLS for all the banks and found only one significant variable, bank size, to be statistically significant and negatively correlated with NPL ratio.

Similarly, Ghosh et al. (2019) examined the impact of only bank-specific factors on the NPL of 28 DSE listed private commercial banks of Bangladesh for the period of 2012-2016. They found an inverse relationship of bank size with NPL. They also reported that banks having larger profit generated from interest income had lower NPL. They also found that older banks had higher NPL than the new banks. The comparative studies mentioned above is, however, done either based on political territory such as Bangladesh and India or based on functional principles of banks such as Islamic and conventional banking or based on ownership pattern of bank companies such as public and private banks.

For example, Waqas et al. (2017) conduct empirical research on the macro and bank-specific determinants of NPL of banks of Bangladesh, India, and Pakistan. They find that factors external to the banks and bank-specific factors impact the credit risk of a bank.

Sava et al. (2012) estimated the impact of real GDP per capita, interest rate and total loans on non-performing loans ratio of US banking sector for the period 1985 to 2010 using OLS method. They found a significant inverse relationship of real GDP per capita and interest rate with the NPL ratio and a positive association between total loan and NPL ratio.

Similarly, Bock and Demeaners (2012) discover substantial relations between asset quality, private credit, and macroeconomic aggregates in 25 emerging markets including China, India, Russia, and Turkey for a period 1996 to 2010. They find that NPL falls during cycle upturns and rises in recessions. They also find that terms of trade and exchange rate appreciation are negatively associated with NPL with almost similar strength.

Nkusu (2011) investigated the linkages between NPL and macroeconomic performance from a sample of 26 advanced economies during 1998 to 2009 and confirmed that adverse

macroeconomic conditions were associated with rising NPL. He argued that slower economic growth, higher unemployment rate and decrease asset prices were associated with lower debt service capacity reflected into higher NPL

Previous studies have highlighted various factors influencing NPLs, with mixed results. Bank-specific factors such as poor credit risk management, weak governance, and insufficient capital adequacy ratios have been identified as key determinants. Additionally, macroeconomic variables like economic downturns, inflationary pressures, and high-interest rates have been found to exacerbate loan default rates. This study builds upon existing literature by focusing on 15 commercial banks in Bangladesh and employing econometric modelling to identify significant determinants.

2.1 Hypothesis

In this study, the model is used to examine the impact of bank-specific and macroeconomic factors on Non-Performing Loans (NPLs) in commercial banks listed in Bangladesh Bank. The hypothesis are given below:

H1: There is no significant relationship with return on assets (ROA) and NPL

H2: There is no significant relationship with capital adequacy (CAR) and NPL.

H3: There is no significant relationship with loan-to-deposit ratio (LDR) and NPL.

H4: There is no significant relationship with bank size and NPL.

H5: There is no significant relationship with cost to income ratio (CIR) and NPL.

H6: There is no significant relationship with GDP growth rate and NPL.

H7: There is no significant relationship with inflation rate (IFR) and NPL.

H8: There is no significant relationship interest rate spread (IRS) and NPL.

Chapter -03

Methodology of the Study

3. Methodology

This study examines the macroeconomic and bank-specific factors that contribute to Bangladesh's commercial banks' non-performing loans. Utilizing a certain approach, the study is completed utilizing the data gathered from the annual report, World Bank websites and Bangladesh Bank websites.

In order to gather data and information for this study and to prepare the report, the following technique was used.

3.1 Research Type

This research is quantitative and explanatory in nature, focusing on analyzing the impact of both bank-specific and macroeconomic factors on Non-Performing Loans (NPLs) in 15 listed commercial banks in Bangladesh. The study applies a panel data approach covering a ten-year period from 2014 to 2023, enabling a comprehensive investigation across both time and entities.

3.2 Sample and Sources

Secondary data is the primary source of information used in this study. Because the chosen banks are well-established in the financial sector and adhere to legal disclosure standards, their financial data is more trustworthy and transparent. For ten years, from 2014 to 2023, I gathered information on fifteen commercial banks that were listed on Bangladesh Bank. These are from official records, newspapers, periodicals, journals, websites, and the annual report of the NBL, the monthly declaration, and other manual data.

Panel regression analysis is the study's primary analytical technique. Either a Fixed Effects Model (FEM) or a Random Effects Model (REM) will be used to estimate the connection between the variables, depending on the type of data and the Hausman Test results. Which factors have a statistically significant impact on non-performing loans (NPLs) and to what degree will be ascertained with the aid of the regression model. By using this methodology, the study seeks to empirically demonstrate how the accumulation of non-performing loans in the banking industry of Bangladesh is influenced by both internal banking operations and external economic situations.

3.3 Variable Identified

The study's primary variables are divided into independent and dependent variables. The Non-Performing Loan (NPL) ratio, which shows the percentage of non-performing loans compared to total loans, is the dependent variable. The independent variables are separated into two categories: bank-specific and macroeconomic factors. The return on assets (ROA), capital adequacy ratio (CAR), loan-to-deposit ratio (LDR), bank size (as determined by the natural logarithm of total assets), and cost-to-income ratio (CIR), which measures management effectiveness, are among the bank-specific indicators. The macroeconomic variables are the interest rate spread (IRS), inflation rate (IFR), and GDP growth rate.

The following is a list of all the dependent and independent variables utilized in the analysis. Furthermore, expected relationship has been developed based on economic theory

Table 1: Description of Variables included in empirical result of the paper

Serial No.	Variable Name	Definition	Sources
Dependent Variable			
1.	Non-Performing Loan (NPL)	NPLs are the risk of credit associated with a debtor who has failed to pay off loan obligations for two months or more, or who has been delinquent for more than 90 days	Prawira, et al (2020)
Bank Specific Independent Variables			
2.	Return on Total Assets (ROA)	ROA is used to measure the profitability of the banks and measured as the net income to total assets	Khan,M. et al(2020)
3.	Capital Adequacy Ratio (CAR)	“CAR is the capital ratio that shows the bank's ability to provide back-up funds if the bank experiences difficulties and the bank management's ability to identify, measure, supervise and control risks that	Swandewi et al (2021)

		arise which can affect the amount of capital.	
4.	Loan to Total Deposit Ratio (LDR)	The loan-to-deposit ratio (LDR) reflects the liquidity and lending aggressiveness of a bank. Excessively high LDRs indicate lending risk, which can increase NPLs.	Rajha, (2016)
5.	Bank Size (Size)	In the case of bank size, defined as the natural logarithm of total assets, this measure has previously had both positive and negative effects on NPLs.	(Morshed Bhuiya et al., 2023)
6.	Cost to Income Ratio (CIR)	In the banking sector, the cost-to-income ratio, or CIR, is a vital financial metric that is used to assess a bank's operational productivity. A high CIR could be a sign of poor management and governance, which would enhance NPL ratios.	Messai & Jouini, (2013)
7.	Gross Domestic Product (GDP)	Since economic growth promotes higher living standards, more tax receipts, and the creation of new jobs, it is a crucial macroeconomic goal.	Economicshelp, (2017)
Macroeconomic Independent Variables			
8.	Inflation Rate (IFR)	When the general level of prices in an economy grows quickly, persistently, and significantly, leading to a general decline in purchasing power of currency, this is referred to as inflation. For producers, investors, consumers, and the government, inflation is a major source of discomfort.	(Asogu, 1990)
9.	Interest Rate Spread (IRS)	Interest Rate Spread is a commonly used financial metric that refers to the difference between the interest rate a financial	Xuan Ngo, et al (2025)

		institution charges borrowers (lending rate) and the interest rate it pays to depositors (deposit rate).	
--	--	--	--

3.4 Econometric Model

To examine how these factors affect NPLs, a panel data regression model will be used. The Hausman test will determine whether the fixed-effects or random-effects model is used. A number of tests, including those for heteroscedasticity, normality, multicollinearity, and descriptive statistics, will also be included in this study.

$$\text{NPL} = \beta_0 + \beta_1\text{ROA} + \beta_2\text{CAR} + \beta_3\text{LDR} + \beta_4\text{SIZE} + \beta_5\text{CIR} + \beta_6\text{GDP} + \beta_7\text{IFR} + \beta_8\text{IRS} + \varepsilon$$

Where

β_0 = Constant

ROA= Return on Assets

CAR= Capital Adequacy Ratio

LDR= Loan to Deposit Ratio

Size= Bank Size

CIR= Cost to Income Ratio

GDP= Gross Domestic Product growth

IFR= Inflation Rate

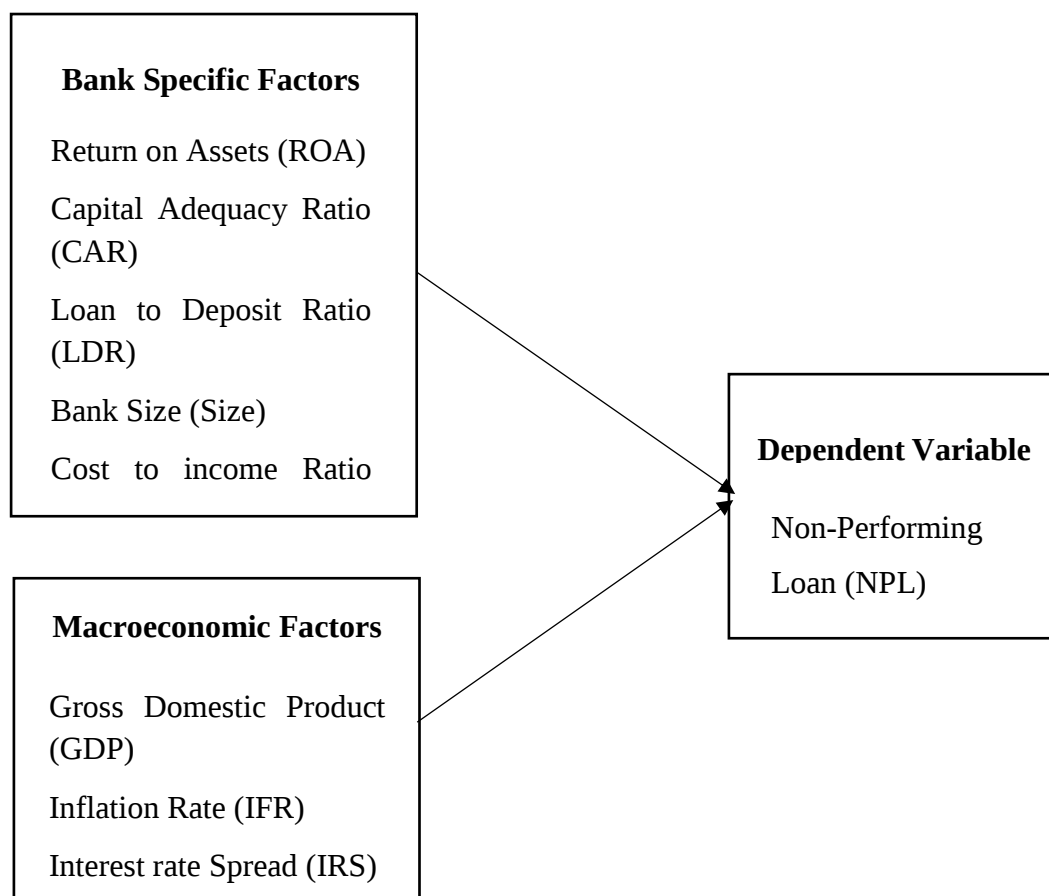
IRS= Interest Rate Spread

E = Error term

Panel econometric approaches is used in this study, which blend cross-sectional and time-series data to increase the analysis's robustness, to examine the link between NPLs and the factors that were chosen. First, the data's attributes, such as mean, median, standard deviation, and range, are compiled using descriptive statistics. The trustworthiness of the regression results is then confirmed by a number of diagnostic tests. These include the heteroscedasticity test using the Breusch-Pagan or White test, the multicollinearity test using the Variance Inflation Factor (VIF), and the normality test to verify the data distribution.

3.5 Conceptual Framework

To investigate the causes influencing Non-Performing Loans (NPLs) in Bangladesh's listed commercial banks, a clear conceptual framework that explains the link between the dependent and independent variables is essential. This method serves as the foundation for the empirical study and provides a structured view of how bank-specific and macroeconomic factors may affect the quantity of non-performing loans (NPLs). Based on theoretical understandings and empirical findings from the corpus of recent literature, this study combines internal bank performance indicators (ROA, CAR, LDR, CIR, and bank size) with external macroeconomic variables (such as GDP growth, inflation, interest rate spread, and exchange rate).



Chapter-04

Company Overview

4. Company Overview

4.1. Background of Sonali Bank PLC

The biggest major state-owned public commercial bank in Bangladesh is Sonali Bank PLC. It was founded by assuming control of the National Bank of Pakistan, Bank of Bhawalpur, and Premier Bank branches that operated in East Pakistan until 1971. The (Nationalization) Order of 1972 led to its nationalization. On June 3, 2007, the bank started operations as Sonali Bank Limited, taking over all of Sonali Bank's assets, liabilities, and activities after being converted to a public limited company, of which the government owns 100%. After the bank was corporatized, its management was given the autonomy they needed to improve the bank's operational effectiveness and competitiveness.

The establishment of a subsidiary company named "Sonali Investment Limited" was done in order to grow the banking industry and entice the people to invest. Merchant banking has been in operation since September 14, 2009, and it is contributing to Bangladesh's economic expansion. By keeping an eye on the establishment of the "Sonali Foundation," Sonali Bank PLC is fulfilling its corporate social responsibility obligations.

Sonali Bank PLC now operates 1224 branches, 1222 of which are domestic and two of which are overseas. Out of the nation's 1226 branches, 523 are located in cities and 701 are in rural areas. Sonali Bank Limited uses 45 branches, also known as authorized dealers or AD branches, to carry out international commercial operations. The two foreign branches of Sonali Bank Limited are situated in West Bengal, India. These two abroad branches are located in Siliguri and Kolkata, respectively. To manage its commercial and administrative operations, Sonali Bank Limited has sixteen regional offices, forty-six principal offices, and eleven general manager's offices. The head office's 47 divisions are responsible for overseeing Sonali Bank PLC's overall banking operations.

4.2. Corporate Profile

Chairman	Mohammad Muslim Chowdhury
Managing Director and CEO	Md. Shawkat Ali Khan
Company Secretary	Mr. Tauhidul Islam
Legal Status	Public Limited Company
Genesis	Emerged as Nationalised Commercial Bank, in 1972
Date of Incorporation	03 June 2007
Date of Commencement	03 June 2007
Registered Office	35-42,44 Motijheel Commercial Area, Dhaka, Bangladesh
Year-end Accounting Period	December 31
Authorized Capital	Tk. 6000 Crore
Paid-up capital	Tk. 4530 Crore
Branches	1224
Number of Employees	21839
Credit Rating Company	Credit Rating Information and Services Limited (CRISL)
SWIFT Code	BSONBDDH
E-mail:	info@sonalibank.com.bd.
Website	www.sonalibank.com.bd

4.3 Vision, Mission, Motto & Corporate Culture of Sonali Bank PLC

Vision:

Sonali Bank's primary vision is socially committed leading banking institution with global presence. At Sonali Bank, we draw our inspiration from the distant stars. Our vision is to assure a standard that makes every banking transaction a pleasurable experience.

Our endeavour is to offer you supreme service through accuracy, reliability, timely delivery, cutting edge technology and tailored solution for business needs, global reach in trade and commerce and high yield on your investments.

Mission

Dedicated to extend a whole range of quality of products that support divergent needs of people aiming at enrich their lives. Creating value for the stakeholders and contributing towards socio-economic development of the country.

Slogan: Your trusted partner in innovative banking.

Corporate Culture: Employees of Sonali Bank Limited share certain common values that helps Sonali Bank Limited to maintain a corporate culture-

- ✓ Giving service to the largest amount of customer in Bangladesh
- ✓ Professional excellence is one of the main priorities
- ✓ Ability to quick decision making
- ✓ Encouraging creativity
- ✓ Flexible in response

4.4 Strategic Objectives

- Their goals are to operate a business in a transparent, high-quality manner using market mechanisms while adhering to the social and legal framework that is outlined in our purpose and represented in our vision.
- Their first priority is to consistently supply high-quality, innovative, and efficient items to our clients through an exceptional delivery system.
- Their mission is to increase fair returns to our shareholders while generating profit with Quality Company as a sustainable, ever-growing firm.
- As corporate citizens, they are dedicated to our community, and as part of their corporate social responsibility, they help advance the country.
- Their backbone is their workforce. They support their well-being by offering an alluring benefits package and boosting employee morale through career planning, training, and development.
- They work to fulfill their obligations to the government by paying all taxes and duties and following all other regulations.
- They are cautious about environment and climatic change and dutiful to make our homeland a green and clean soil.

Chapter-05

Analysis and Findings

5. Analysis and Findings

5.1 Analysis and Discussion

To analyze and interpret the numerical data in this study, STATA 64 software was utilized. The analysis began with the use of descriptive statistics and a correlation matrix to understand the basic characteristics and relationships among the variables. Following this, a regression model was employed to determine the most appropriate and statistically significant results relevant to the research objectives. To check for multicollinearity, a specific test was conducted to ensure that the independent variables were not highly correlated. The Breusch-Pagan test was applied to detect heteroscedasticity, and autocorrelation was assessed within the model. The Hausman test was then used to determine whether a fixed effects or random effects model was more suitable. Based on the test result, a random effects regression model was selected to estimate the influence of individual bank-specific and macroeconomic factors across the panel data.

1. Summary Statistics:

The mean and standard deviation of all the variables used for the study, derived from the data gathered between 2014 and 2023 of 15 commercial bank of Bangladesh, are displayed as the descriptive statistics of the variables employed. The table below displays the 150 observations' summary statistics.

Table 2: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	max	Median	skewness	kurtosis
Non-performing Loan (NPL)	4.73	1.533	2.460	7.81	4.685	.359	2.289
Return on Assets (ROA)	.883	.343	0.160	1.42	.895	-.374	2.455
Capital Adequacy Ratio (CAR)	13.625	1.986	10.31	17.28	13.58	.167	2.223
Loan to Deposit Ratio (LDR)	87.349	9.447	70.88	103.28	87.225	-.014	1.974
Bank Size (Size)	13.405	3.498	10.92	25.81	12.615	3.156	11.41

Cost to Income Ratio (CIR)	52.607	8.107	38.17	67.81	52.18	.154	2.273
Gross Domestic Product (GDP)	6.478	1.167	3.450	7.88	6.765	-1.541	4.87
Inflation Rate (IFR)	6.438	1.349	5.510	9.88	5.7	1.621	4.479
Interest Rate Spread (IRS)	2.765	.954	1.052	4.21	2.887	-.233	2.119

Table 2 shows the results of the descriptive statistics of the examined variable, where data is employed from 15 commercial banks in Bangladesh from 2014 to 2023. Here, the mean, standard deviation, median, minimum, maximum, skewness and kurtosis are shown for all the variables used in this study. The mean Non- Performing Loans (NPL) is 4.73, whereas standard deviation is 1.533. on the other hand, mean value of Bank Specific factors are, Return on Assets (ROA), Capital Adequacy Ratio (CAR), Loan to deposit ratio0 (LDR), Bank Size(Size), Cost to Income ratio (CIR) are respectively 0.883, 13.625, 87.349, 13.405 and 52.607 respectively. The mean value of macroeconomic factors for Gross Domestic Product Growth Rate (GDP), Inflation Rate (IFR), and Interest Rate Spread (IRS) are 6.648, 6.438 and 2.765 respectively. In this table, it also shows the skewness and kurtosis values for the given variables. Skewness indicates the asymmetry of the distribution, while kurtosis measures the "tailedness." Besides Bank Size, most variables show values close to the normal range (skewness ≈ 0 , kurtosis ≈ 3), suggesting a roughly normal distribution.

2. Diagnostic Test:

Diagnostic tests are a set of statistical checks used to confirm that a regression model's assumptions hold true. They include the multicollinearity test (e.g., VIF) to detect highly correlated predictors; the heteroskedasticity test (e.g., Breusch–Pagan) to ensure constant error variance; and the autocorrelation test (e.g., Durbin–Watson) to verify independent residuals and for panel data, the Hausman test help guarantee that the model is correctly specified and its estimates are reliable.

I. Multicollinearity Test:

Table 3: Variance Inflation Factor

Variable	VIF	1/VIF
Interest Rate Spread (IRS)	3.007	.333
Inflation Rate (IFR)	2.283	.438
Capital Adequacy Ratio (CAR)	1.563	.64
Return on Assets (ROA)	1.481	.675
Loan to Deposit Ratio (LDR)	1.435	.697
Cost to Income Ratio (CIR)	1.372	.729
Bank Size(Size)	1.115	.897
Gross Domestic Product (GDP)	1.103	.907
Mean VIF	1.67	

The table indicates that among all the independent variables included in the analysis, Interest Rate Spread (IRS) and Inflation Rate (IFR) have the highest Variance Inflation Factor (VIF) values, recorded at 3.007 and 2.283 respectively. While these values are higher relative to the other variables, they still fall well below the commonly accepted threshold of 5, which is often used as a benchmark to indicate potential multicollinearity issues. Furthermore, the mean VIF for the overall model is 1.67, which is considerably low. This suggests that, on average, the independent variables in the model are not highly correlated with one another. Therefore, it can be confidently concluded that multicollinearity is not a concern in this regression analysis, and the results derived from the model are reliable in terms of variable independence.

II. Heteroskedasticity test:

Table 4: Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Models	NPL
chi2(1)	0.24
Prob > chi2	0.624

To verify whether the variance of the error terms in the regression model is constant (i.e., homoscedastic), the Breusch-Pagan test for heteroskedasticity was conducted. Here, the null

hypothesis (H0) refers there is no constant variance. The table shows that probability of chi square is 0.624 which is greater than significant level of 5 percent (0.05). So we can reject the null hypothesis that is there is no constant variance. This implies that the error terms in the regression model are homoscedastic, and there is no evidence of heteroskedasticity. Therefore, the regression results are considered reliable and not affected by unequal variance across observations.

3. Model Specification Test:

Hausman Test

The Hausman Test has been used to select the perfect model to analyze the panel data of the sample. Therefore, to select appropriate model, a null hypothesis and an alternative hypothesis need to be determined as below:

H0: Random effect model is appropriate

H1: Fixed effect model is appropriate

As if p-value of chi2 becomes greater than 5%, then alternative hypothesis should be rejected. Hence, null hypothesis will be accepted and vice versa.

---- Coefficients ----				
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	FE	RE	Difference	S.E.
ROA	-.1018662	-.2695293	.1676631	.1621718
CAR	-.1740973	-.1954075	.0213101	.0206103
LDR	-.1027628	-.1050268	.002264	.0112785
Size	.6275681	.4579012	.1696669	.5430951
CIR	.0478228	.0493648	-.001542	.0108063
GDP	.2990042	.3028559	-.0038517	.0248993
IFR	.2004386	.1962068	.0042318	.0349973
IRS	.5846331	.5299407	.0546923	.162937
b = consistent under Ho and Ha; obtained from xtreg				
B = inconsistent under Ha, efficient under Ho; obtained from xtreg				
Test: Ho: difference in coefficients not systematic				

Hausman (1978) specification test

Table 5: Hausman Specification Test

	Coef.
Chi-square	2.701
P-value	.952

As the P value of chi-square is greater than 0.05 so do not reject the null hypothesis i.e. random effect is appropriate for regression model. So, both the Pooled OLS and Random effect model is given below:

Regression Model:

Table 6: Pooled_OLS and Random Effect Regression Model

Mean dependent var	5.896	SD dependent var	5.016
Overall r-squared	0.702	Number of obs	150
Chi-square	94.961	Prob > chi2	0.000
R-squared within	0.272	R-squared between	0.793
F (8, 141)	45.43	Prob > F	0.000
Variable	Pooled_OLS (p> t)	RE (p> t)	
Return On Assets (ROA)	0.020** -1.4975501	0.627 -0.303	
Capital Adequacy Ratio (CAR)	0.000*** -.29104845	0.004** -.1904559	
Loan to deposit Ratio (LDR)	0.000*** -.12553863	0.000*** -.10349327	
Bank Size (Size)	0.000*** .36224041	0.000*** .46469015	
Cost to Income Ratio (CIR)	0.054* .0548954	0.000* .0246154	
Gross Domestic Product (GDP)	0.50* .30246154	0.037* .29472096	
Inflation Rate (IFR)	0.357 0.236	0.259 0.212	
Interest rate Spread (IRS)	0.179 0.236	0.044* .5747266	
_cons	0.051* 8.6628518	0.379 3.596	

Legend: * p<0.05; ** p<0.01; *** p<0.001

This table shows panel regression analysis in pooled OLS and Random effect method and was conducted using a sample of 150 observations to evaluate the impact of bank-specific and macroeconomic variables on the dependent variable (insert name of dependent variable, e.g., bank risk, profitability, or efficiency). The mean value of the dependent variable is 5.896 with a standard deviation of 5.016, indicating moderate dispersion among the data.

The overall model fit is satisfactory, with an overall R-squared of 0.702, suggesting that approximately 70.2% of the variation in the dependent variable is explained by the included explanatory variables. Additionally, the significance of the model is confirmed by the F-statistic (45.43, $p = 0.000$), the Chi-square value (94.961, $p = 0.000$) confirms the overall significance of the model at the 1% level.

5.2 Findings

The regression results reveal significant relationships between several bank-specific and macroeconomic variables and the dependent variable, Non-Performing Loans (NPLs), in the context of listed commercial banks in Bangladesh from 2014 to 2023.

Beginning with Return on Assets (ROA), the coefficient in the Pooled OLS model is -1.4975, and it is statistically significant at the 5% level ($p = 0.020$). This indicates that an increase in ROA leads to a decrease in NPLs, implying that more profitable banks are better equipped to manage credit risk and financial performance. However, in the Random Effects (RE) model, the coefficient is -0.303 and is not statistically significant ($p = 0.627$). This inconsistency suggests that the effect of profitability on NPLs may vary across banks due to unobserved heterogeneity or bank-specific characteristics.

The Capital Adequacy Ratio (CAR) demonstrates a consistently negative and significant relationship with NPLs across both models. In the Pooled OLS model, the coefficient is -0.2910, significant at the 1% level ($p = 0.000$)*, while the RE model shows a coefficient of -0.1905, significant at the 5% level ($p = 0.004$). This result implies that banks with stronger capital bases tend to have lower NPLs, supporting the regulatory emphasis on capital adequacy as a buffer against financial distress and loan losses.

For the Loan-to-Deposit Ratio (LDR), both models indicate a strong and statistically significant negative relationship with NPLs. The Pooled OLS coefficient is -0.1255, and the RE model yields -0.1035, both significant at the 1% level ($p = 0.000$). These findings suggest that while higher LDRs may reflect more aggressive lending, banks that manage their credit risk

effectively can maintain lower levels of NPLs. However, without strong risk management, high LDR could still lead to deteriorating asset quality.

The Size of the Bank, measured by the natural logarithm of total assets, has a positive and highly significant impact on NPLs. The Pooled OLS coefficient is 0.3622, and in the RE model, it rises to 0.4647, both significant at the 1% level ($p = 0.000$). This positive relationship implies that larger banks may face higher levels of NPLs, possibly due to greater exposure to systemic risk, operational complexities, or moral hazard linked to the “too-big-to-fail” perception. It is also possible that larger banks take more lending risks, assuming they have implicit government support.

Regarding the Cost to Income Ratio (CIR), the Pooled OLS model shows a coefficient of 0.0549, which is marginally significant at the 10% level ($p = 0.054$). In the RE model, the coefficient is 0.044, with stronger significance ($p = 0.000$). This implies that banks with higher operational inefficiency tend to have higher NPLs, suggesting that poor cost management and lower productivity negatively impact asset quality and financial discipline.

Among macroeconomic variables, the Gross Domestic Product (GDP) growth rate has a positive and statistically significant relationship with NPLs in both models. The Pooled OLS model yields a coefficient of 0.3025 ($p = 0.050$), while the RE model shows 0.2947 ($p = 0.037$). This positive association, though somewhat counterintuitive, may reflect that during periods of economic growth, banks become more optimistic and expand lending aggressively, which can increase exposure to future defaults if credit assessments are relaxed.

The Inflation Rate (IFR) does not show any statistically significant impact on NPLs. The coefficients are 0.236 in the Pooled OLS model ($p = 0.357$) and 0.212 in the RE model ($p = 0.259$), indicating that inflation did not significantly influence NPL levels during the study period. This may be due to effective monetary policy or banks' ability to hedge against inflationary risks through appropriate pricing strategies.

Lastly, the Interest Rate Spread (IRS) has a positive but weakly significant effect in the RE model only. The Pooled OLS coefficient is 0.536 ($p = 0.179$), which is not statistically significant, while the RE model shows a coefficient of 0.5747, significant at the 10% level ($p = 0.044$). This suggests that a higher spread between lending and deposit rates may be linked to higher NPLs, potentially reflecting both improved bank profitability and a tendency to take on higher-risk borrowers encouraged by larger interest margins.

In summary, the findings highlight that bank-specific factors such as capital adequacy, loan-to-deposit ratio, bank size, operational efficiency, and profitability play critical roles in influencing NPLs. Additionally, macroeconomic conditions such as GDP growth and interest rate spread also affect credit risk in the banking sector. However, inflation does not appear to have a significant impact within the given period.

Table- 7 Summary table of findings

Hypothesis	Variable	Supported/Rejected	Justification
H1	ROA	Partially Rejected	Significant in Pooled OLS only
H2	CAR	Rejected	Significant in both models
H3	LDR	Rejected	Significant in both models
H4	Bank Size	Rejected	Significant in both models
H5	CIR	Rejected	Significant in both models (stronger in RE)
H6	GDP	Rejected	Significant in both models
H7	IFR	Not Rejected	Not significant in either model
H8	IRS	Rejected	Significant in RE model

Table 7 shows the summary of the findings of hypothesis. As in this report we take null hypothesis to express significant relationship between dependent and independent variables, so to find the significance we need to reject the null hypothesis. From our above regression, **H1** return on asset (ROA) is significant in Pooled OLS regression and **H7** inflation rate (IRF) do not have that much significant relationship with NPL in any regression model. On the other hand, Rest of the hypothesis, **H2, H3, H4, H5, H6 and H8** have significant relationship with NPL. Because they falls on rejection region, so they reject the null hypothesis. That means capital adequacy ratio, loan to deposit ratio, bank size, cost to income ratio, GDP growth rate and interest rate spread have significant impact on commercial banks non-performing loans (NPLs).

Chapter -06

Recommendations and Conclusions

6. Recommendations and Conclusions

6.1 Recommendations

Based on the regression findings, several key recommendations can be drawn to enhance the performance and stability of banks. Firstly, the negative and significant relationship between Return on Assets (ROA) and the dependent variable suggests that improving profitability plays a vital role in reducing potential risks or inefficiencies within banks. Therefore, banks should focus on enhancing their core income-generating activities and strengthening internal control mechanisms to manage non-performing loans and increase operational effectiveness. In addition, the Capital Adequacy Ratio (CAR) also showed a strong negative association, indicating that well-capitalized banks are more resilient and better positioned to absorb financial shocks. It is therefore crucial that banks maintain sufficient capital buffers, exceeding the minimum regulatory requirements if possible, and that regulatory authorities continue to monitor capital adequacy through regular stress testing and supervisory reviews.

The significant negative effect of the Loan-to-Deposit Ratio (LDR) further highlights the importance of efficient liquidity management and prudent lending. Banks should aim to utilize customer deposits productively, ensuring that credit expansion is balanced with adequate risk assessment to prevent overexposure. At the same time, the positive and significant relationship between bank size and the dependent variable raises concerns regarding the operational complexities and potential systemic risks associated with larger institutions. This calls for more robust internal governance, transparent management structures, and enhanced regulatory supervision for large banks, especially those considered systemically important. Meanwhile, the positive relationship between the Cost to Income Ratio (CIR) and the dependent variable underscores the need to improve operational efficiency. Banks are encouraged to invest in cost-reducing technologies, streamline their processes, and manage human resources more effectively to enhance profitability and reduce inefficiencies.

From a macroeconomic perspective, the finding that GDP growth has a positive impact on the dependent variable suggests that banks may increase their risk exposure or expand operations during economic booms. Thus, a counter-cyclical strategy should be adopted, where banks build financial buffers during periods of growth and maintain caution during downturns. Although the inflation rate was not statistically significant in the results, it should still be monitored closely, as unexpected inflation can indirectly impact lending behavior, cost structures, and investment decisions. Furthermore, the interest rate spread, which showed a

weak but positive relationship with the dependent variable, indicates the need for careful management of interest rate risks. Banks should ensure that their pricing policies are aligned with market realities and risk-adjusted returns, and that their interest rate strategies do not lead to excessive risk-taking in search of higher margins.

In summary, the study's findings suggest that banks must maintain strong financial fundamentals, such as profitability, capital strength, and operational efficiency, while also aligning their strategies with broader economic conditions. Policymakers and regulators should support these efforts through consistent oversight, prudent policy frameworks, and encouragement of sound risk management practices across the banking sector.

6.2 Conclusions

This study set out to examine the impact of selected bank-specific and macroeconomic variables on the performance (or risk/stability, depending on your topic) of commercial banks using panel data from 150 observations. Employing both Pooled OLS and Random Effects models, the analysis has provided valuable insights into the factors that significantly influence bank behavior and outcomes in the context of the financial sector.

According to the empirical results, Return on Assets (ROA) significantly reduces the dependent variable, highlighting the role that profitability plays in fostering stability and sound financial management. Similar negative correlations are seen between the Loan-to-Deposit Ratio (LDR) and the Capital Adequacy Ratio (CAR), underscoring the critical role that effective loan management and sufficient capitalization play in reducing risk and enhancing performance. Conversely, there was a positive and statistically significant correlation between bank size and the dependent variable, indicating that larger institutions can face greater operational risk, complexity, or declining marginal returns to scale. There was also a positive correlation with the Cost to Income Ratio (CIR), suggesting that increased operational inefficiencies could impair the performance of the bank as a whole.

Regarding macroeconomic variables, GDP growth was found to have a weak yet positive influence, suggesting that banks may expand operations or risk exposure during periods of economic growth. While inflation (IFR) showed no significant impact, the interest rate spread (IRS) demonstrated a marginally significant effect in the Random Effects model, pointing to the importance of interest rate management and monetary policy alignment.

Taken together, these findings underscore the need for banks to maintain strong financial fundamentals particularly in terms of profitability, capital adequacy, and operational efficiency, while also adapting strategically to macroeconomic conditions. The study contributes to the broader understanding of how internal and external factors shape banking outcomes and offers practical guidance for policymakers, regulators, and bank management. Furthermore, it reinforces the importance of continuous supervision, risk-based management practices, and the development of sound regulatory policies that support the long-term sustainability and competitiveness of the banking sector.

In conclusion, this research highlights the interconnectedness of financial performance, regulatory compliance, and macroeconomic stability. It calls for a balanced and forward-looking approach in managing banking institutions, ensuring that both micro-level decisions and macroeconomic signals are properly integrated into policy and practice. Future research may extend this work by exploring additional variables, sectoral breakdowns, or comparative studies across countries or time periods to deepen the understanding of bank performance dynamics in evolving economic contexts.

References

- Limon, A. (2025). Exploring the Role of Bank-Specific Factors in Nonperforming Loans: A Study of Islamic Banks in Bangladesh. *Asian Journal of Managerial Science*, 14(1), 1-7.
- Gazi, M. A. I., Karim, R., Senathirajah, A. R. B. S., Ullah, A. M. M., Afrin, K. H., & Nahiduzzaman, M. (2024). Bank-specific and macroeconomic determinants of profitability of Islamic Shariah-based banks: Evidence from new economic horizon using panel data. *Economies*, 12(3), 66.
- Alamgir, M., Islam, M. T., Banu, R., & Hasan, M. Z. (2023). NPL in Banks of Bangladesh: Macro Economic and Bank Specific Perspective. Bangladesh Institute of Bank Management (BIBM).
- Armen Hakobyan, A. H. (2023). Macroeconomic and Bank-Level Factors Impact on NPL Ratio. *Educational Administration Theory and Practice Journal*, 29(3).
- AMIN, Md. I., AHSAN, A., Al MUKTADIR, M., AZAD, M., & REZANUR, R. H. B. (2021). Macroeconomic and Firm-specific Factors Influencing Non-Performing Loans in Bangladesh: A Panel Data Regression Approach. *The Journal of Asian Finance, Economics and Business*, 8(12), 95–105.
- Hung, N. V., Hiep, T. D., & Dong, M. C. (2024). Macro-economics and firm-specific factors impacting the non-performing loans of Vietnamese commercial banks in the context of COVID-19. *Multidisciplinary Science Journal*, 7(3), 2025112. <https://doi.org/10.31893/multiscience.2025112>
- Swandewi, N. K. M., & Purnawati, N. K. (2021). Capital adequacy ratio mediates the effect of non-performing loan on returns on assets in public commercial banks. *American Journal of Humanities and Social Sciences Research (AJHSSR)*, 5(1), 651-656.
- Messai, A. S., & Jouini, F. (2013). Micro and macro determinants of non-performing loans. *International Journal of Economics and Financial Issues*, 3(4), 852-860. Retrieved from <https://www.econjournals.com/index.php/ijefi/article/view/434>
- Morshed Bhuiya, M. M., Mahabub Miah, M., & Uddin Chowdhury, T. (2023). The impact of credit risk on the profitability of selected commercial banks of Bangladesh. *Asian Journal of Managerial Science*, 12(1), 19-25. <https://doi.org/10.51983/ajms-2023.12.1.3438>

- Rajha, K. S. (2016). Determinants of non-performing loans: Evidence from the Jordanian banking sector. *Journal of Finance and Bank Management*, 4(1), 125-136. <https://doi.org/10.15640/jfbm.v5n1a5>
- Khan, M. A., Siddique, A., & Sarwar, Z. (2020). Determinants of non-performing loans in the banking sector in developing states. *Asian Journal of Accounting Research*, 5(1), 135-145. <https://doi.org/10.1108/AJAR-10-2019-0080>
- Asogu, J.O. (1990). An econometric analysis of relative potency of monetary policy in Nigeria. *Economic Financial. Review* 3(4): 30-63.
- Barisua, S. P. Macroeconomic Variables and Nonperforming Loans of Quoted Commercial Banks in Nigeria.
- Ngo, X., Le, H., & Bui, L. (2025). Determinants of interest rate spreads in the banking industry: an empirical study in an emerging country. *Afro-Asian Journal of Finance and Accounting*, 15(3), 383-405.
- Amin, M. I., Ahsan, A., Muktadir, M. A., Azad, M., & Rezanur, H. B. (2021). Macroeconomic and firm-specific factors influencing non-performing loans in Bangladesh: a panel data regression approach. *Journal of Asian Finance, Economics and Business* Vol 8 No 12, 0095–0105.
- Ahmed, S., Majeed, M. E., Thalassinou, E., & Thalassinou, Y. (2021) the impact of bank specific and macro-economic factors on non-performing loans in the banking sector: Evidence from an emerging economy, *Journal of Risk and Financial Management*. ISSN 1911-8074, MDPI, Basel, Vol. 14, Iss. 5, pp. 1-14.
- Bock, R. D., & Demyanets, A. (2012). Bank asset quality in emerging markets: determinants and spillovers. *International Monetary Fund Working Paper*. WP/12/71. 2012 March.
- Ghosh, R., Hamid, M. K., & Rana, M. S. (2019). Impact of bank-specific factors on nonperforming loans (NPL): empirical evidence from listed private commercial banks of Bangladesh. Retrieved from <https://www.researchgate.net/publication/344379463>
- Ghosh, R., Sen, K. K. and Riva, F. (2020). Behavioral determinants of nonperforming loans in Bangladesh. *Asian Journal of Accounting Research*, Vol. 5 No. 2, 2020 pp. 327-340.
- Khanam, F. A., Hasan, K., Afsar, A. K. M. N., & Hasan, K. (2021). Determinants of nonperforming loans of banks in Bangladesh: an exploratory study. *AIUB Journal of Business and Economics*, Volume 18, Issue 1, December 2021

- Saba, I., Kouser, R. & Azeem, M. (2012). Determinants of non-performing loans: Case of US banking sector. *The Romanian Economic Journal*, Year XV no. 44.
- Rezina, S., Chowdhury, R. S., & Jahan, N. (2020). Non-performing loan in Bangladesh: a comparative study on the Islamic banks and conventional banks. *Indian Journal of Finance and Banking*; Vol. 4, No. 1.
- Mondal, T. (2016). Sensitivity of non-performing loan to macroeconomic variables: empirical evidence from banking industry of Bangladesh. *Global Journal of Management and Business Research*, 16(4), 21-28.
- Sebayang, P. (2020). The impact of the capital adequacy ratio, non-performing loan against to return on equity (Case study private bank in Indonesia). In *SHS Web of Conferences* (Vol. 76, p. 01035). EDP Sciences.
- Tanasković, S., & Jandrić, M. (2015). Macroeconomic and institutional determinants of non-performing loans. *Journal of Central Banking Theory and Practice*, 4(1), 47-62.

Annual reports

Serial. No	Bank Name	Year
1	Prime Bank PLC	2014-2023
2	Pubali Bank PLC	2014-2023
3	Dhaka Bank PLC	2014-2023
4	City Bank PLC	2014-2023
5	Jamuna Bank PLC	2014-2023
6	Dutch Bangla Bank PLC	2014-2023
7	AB Bank PLC	2014-2023
8	NRB Bank Limited	2014-2023
9	Trust Bank PLC	2014-2023
10	Eastern Bank PLC	2014-2023
11	Uttara Bank PLC	2014-2023
12	Premier Bank PLC	2014-2023
13	IFIC Bank PLC	2014-2023
14	United Commercial Bank PLC	2014-2023
15	Sonali Bank PLC	2014-2023

Websites

1. <http://www.bb.org.bd/>
2. <https://www.imf.org/>
3. <https://www.worldbank.org/>

Appendix:

1. List of selected Banks

Serial. No	Bank Name
1	Prime Bank PLC
2	Pubali Bank PLC
3	Dhaka Bank PLC
4	City Bank PLC
5	Jamuna Bank PLC
6	Dutch Bangla Bank PLC
7	AB Bank PLC
8	NRB Bank Limited
9	Trust Bank PLC
10	Eastern Bank PLC
11	Uttara Bank PLC
12	Premier Bank PLC
13	IFIC Bank PLC
14	United Commercial Bank PLC
15	Sonali Bank PLC

Internship_22317013

ORIGINALITY REPORT

25%

SIMILARITY INDEX

PRIMARY SOURCES

1	repository.ju.edu.et Internet	159 words — 2%
2	www.researchgate.net Internet	70 words — 1%
3	www.icmab.org.bd Internet	64 words — 1%
4	www.koreascience.or.kr Internet	61 words — 1%
5	ajses.az Internet	55 words — 1%
6	www.ajhssr.com Internet	54 words — 1%
7	discovery.researcher.life Internet	53 words — 1%
8	etd.uum.edu.my Internet	49 words — 1%
9	archive.cmb.ac.lk:8080 Internet	45 words — 1%
10	eprints.nottingham.ac.uk Internet	39 words — 1%