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Effects of Non-Performing Loans on Profitability of Commercial Banks in Nepal

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Abstract

Purpose: *This study examines the impact of non-performing loans on the profitability of Nepalese Commercial Banks.*

Methods: *The data were analyzed using a multiple regression, descriptive, and correlational model. Up until February 2024, the combined data of five commercial banks with the lowest paid-up capital out of the twenty commercial banks was examined. Return on equity and return on assets are the study's dependent variables, while the capital adequacy ratio, non-performing loan ratio, cash reserve ratio, and bank size are its independent factors.*

Results: *The results show that several financial metrics, including bank size, cash reserve ratio, non-performing loan ratio, and capital adequacy ratio, are important determinants of ROA and ROE. Highlighted are significant problems with non-performing loans and impairment expenses.*

Conclusion: *Non-performing loans significantly impact bank profitability, as evidenced by their positive correlation with reduced returns on assets (ROA) and returns on equity (ROE). This underscores the importance of effective management and mitigation strategies for non-performing loans to safeguard the profitability and stability of banks in Nepal. Moreover, the analysis highlights the interconnectedness of various financial metrics with bank profitability.*

Keywords: Bank size, Capital adequacy ratio, Cash reserve ratio, Non-performing loans ratio, Return on assets

I. Introduction

When a customer fails to make payments on a loan that has been provided by a commercial bank and the loan has matured, it is referred to as a non-performing loan (NPL) by the banks. Non-performing loans are those that are not promptly returned by customers and are past due. Since they facilitate the easy flow of credit, which opens up investment opportunities in productive industries, financial institutions play a critical role in the economy's growth. Any country's financial stability is ensured by the banking industry's long-term, efficient, and effective performance. Commercial banks are crucial to the country's economic development,

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and the amount of credit that banks give the general public for productive endeavors like industrial facilities speeds up the rate of economic growth in the country.

Erdas and Ezanoglu (2022) found that the banking sector is essential to the success and well-being of the economy and found that the banking sector is essential to the success and well-being of the economy. Foglia (2022) investigated the relationship between the increase in loans that are considered to be in default and how dependent those loans are on the economy. Even though the growth rate of overall bank lending slowed during the COVID-19 crisis, the percentage of non-performing loans held by banks increased significantly. If financial institutions have access to superior capital, they can better manage their non-performing loan ratios during the financial crisis. As per Hallunovi and Berdo (2018), non-performing loans reflect a commercial bank's competitiveness and management quality by demonstrating the bank's capacity to handle risk and capital growth.

Commercial banks primarily engage in two activities: the costly mobilization of resources and the lucrative deployment of those resources, which results in revenue. The bank's primary source of profit is the excess of revenue over expenditures. The bank depletes both the nations and its own resources if it is unable to provide a suitable return on the resources used. In the current climate, non-performing loans have become one of our banks' most significant issues. A loan in which the borrower is in default and has not made any scheduled principle or interest payments for a while is known as a nonperforming loan (NPL). A commercial debt is deemed nonperforming by the lender if it is 90 days past due.

The most important component in assessing a bank's strength is its assets. The credit administration system, the composition of risky assets, and the quality of the loan portfolio are the main variables that may be considered. Because bank lending is the engine driving the country's economic growth, a high percentage of non- performing loans (NPLs) is a serious worry for both the public and the bank. A rapidly rising non-performing loan (NPL) level creates a bad economic climate for the nation. Bankers need to be vigilant enough to keep the non-performing loan (NPL) at a tolerable range in order to maintain a steady presence in the market. Better risk assessment and a strong non-performing loan system are in place when the NPL ratio is lower, and vice versa. Higher loan loss provisions, on the other hand, are indicative of subpar non-performing loans as well as sufficient reserves for potential loan loss, safeguarding the individual banks' balance sheets.

The commercial banking sector of Nepal is still in its infancy. They must abide by all guidelines and instructions provided by the nation's national bank, the Rastra Bank of Nepal. Mobilizing deposits and using them to finance industry is the fundamental operation of banks. The lending industry is often supported as it helps move money out of the system and into useful endeavors, which boosts the economy. But lending also involves non-performing loans, which result from borrowers' inability to carry out their half of the bargain throughout the lending transaction. There is widespread recognition that the amount of non-performing loans in Nepali banks and financial institutions is rising and becoming unmanageable. NPLs in a loan portfolio have an impact on operational effectiveness, which has an impact on banks' profitability, liquidity, and solvency. The impact of non-performing loans on banks' profitability is investigated using the information asymmetry theory and the bad management hypothesis.

The capacity of commercial banks to generate a profit from their business activities is referred as their profitability. It is usually quantified using metrics such as Net Interest Margin (NIM), Return on Equity (ROE), and Return on Assets (ROA). These measures evaluate the efficiency with which a bank uses its resources to create profit, the return it offers to investors, and the discrepancy between the interest revenue it earns and the amount it pays to loans. The size of the bank, loan and deposit ratios, capital sufficiency, non-performing loan ratios, and even macroeconomic variables like inflation may all have an impact on a commercial bank's profitability. For example, a research on commercial banks in Nepal discovered that ROA and ROE had a negative relationship with the loan, deposit, and capital ratios, but a positive relationship with bank size and inflation. Bank size, loan-to-deposit ratio, inflation,

and NIM all have positive relationships, however the capital ratio and NIM have negative relationships (Patwary & Tasneem, 2019).

To acquire an understanding of the effects of nonperforming loan on profitability of commercial banks, following research question is formulated: How do non-performing loans affect Nepal's commercial banks' profitability?

Research Objective

- To assess the current pattern of nonperforming loans and profitability of Commercial Banks in Nepal.
- To analyze the association between non-performing loan and profitability of Commercial Banks in Nepal.
- To examine how non-performing loans affect Nepal's commercial banks' profitability.
- To determine the present problem with impairment costs and non-performing loans.

II. Reviews

A finding from a recent study that looks at the commercial bank's profitability has been reviewed in this section.

Reshmi (2023) examined the impact of nonperforming loans on the profitability of Nepal's commercial banking sector. An unbalanced data collection comprising 13 commercial banks in Nepal between 2069 and 2070 B.S. and 2078 and 2079 B.S. was collected from secondary sources for study. Conclusions were drawn following an assessment of the adequacy of the fixed effect, random effect, and Pooled OLS regression models using the Hausman and Breusch-Pagan tests. The study's findings demonstrate that both return on equity and return on asset are adversely and statistically considerably impacted by the nonperforming loan ratio. Loan loss provisions have a slight negative effect on bank profitability (ROA and ROE). Interest income has a favorable and significant impact on ROA, while it has a small but beneficial impact on ROE. Interest income has a favorable and significant impact on ROA, while it has a small but beneficial impact on ROE. ROE is negatively impacted by the total loan to deposit ratio, but ROA is significantly positively impacted. Bank size has a statistically significant negative influence on both ROA and ROE. CAR has a significant impact on ROE but little on ROA.

Uddin (2022) examined how non-performing loan affects profitability while controlling for operational efficiency loans. Bangladesh's state-owned commercial banks are the subject of the research. The sample banks are selected using the purposive sampling approach. The annual reports of selected banks have been a source of secondary data. Path analysis, multiple regression analysis, and descriptive data analysis are the methods employed. The mediation effect has been investigated using the PROCESS Macro Mediation Model 4. According to the research, operational efficiency has a small and negative influence on profitability, whereas non-performing loans have a positive but negligible effect on operating efficiency. The statistical analysis examining the direct impact of non-performing loans on financial performance demonstrates that, even in the presence of operational efficiency, non-performing loans have a substantial and adverse influence on profitability. Operating efficiency has no mediating impact on the connection between non-performing loans and the profitability of state-owned commercial banks, according to the PROCESS Macro mediation effect results. In order to increase banks' profitability, the research advises bank management to use efficient strategies to reduce the proportion of non- performing loans and the operating expenditure to operating revenue ratio.

A research on non-performing loans and profitability: A case study of the Indian banking industry was carried out by Gaur and Mohapatra (2021). The scholar look at the link between non-performing loans (NPLs) and profitability in the Indian banking industry and assess how

much of an effect NPLs have on bank profitability. For the necessary study, a secondary data collection including 37 scheduled commercial banks in India over a 14-year period (2005–2018) has been employed. using panel regression models with fixed and random effects. They discovered that there is a strong negative association between NPL and return on equity (ROE) and return on assets (ROA), two profitability metrics. As a consequence of NPL's highest negative regression coefficient a statistically significant finding, the study's findings have identified NPL as the primary factor undermining the banking industry's profitability.

It suggests that deteriorating credit quality impairs bank operations and causes them to fail.

The impact of non-performing loans on the financial stability of deposit-taking SACCOs in Kenya was examined by Jagongo (2021). The research used secondary data by using the library and internet journals. The impact of non-performing loans on SACCOs' capacity to maintain their financial stability has not been sufficiently covered in any of the examined research. There is a void left here that must be filled. Because of their distinctive way of doing business, SACCOs are very important to Kenya's financial intermediation sector. Therefore, closing this gap will be the main goal of this research. The results of this research will help Sacco's SASRA authorities create strict regulations to control the growing number of non-performing loan cases. SACCOs in Nairobi County will find the study's conclusions helpful in assessing the efficacy of their NPL management strategy. They will be able to determine any gaps in their NPL management and make the necessary adjustments as a result. The influence of non-performing loans on profitability was studied by Jha and Grover (2021) using a sample of Indian commercial and public sector banks. Their objective was to investigate the impact of non-performing loans (NPLs) on the financial performance of Indian banks. For the study, two top banks, one from the public and one from the private sector, have been chosen. The secondary information on net profit and NPL provisions was gathered from the banks' websites and their standalone financial statements. Eight years of data collection, from 2012 to 2019, have been completed. Tabular and graphical representations of the data have been used in the analysis process. They discovered that the banks' net earnings are impacted by their NPL provisions. The banks' capacity to make profits is greatly impacted by their provisions for non-performing loans. Provisions for non-performing loans (NPLs) have a greater influence on net profit in the case of SBI due to their enormous number, which acts as a barrier to generating higher profits. In comparison to SBI, banks have more diverse revenue streams, and the HDFC Bank is less impacted. When comparing public sector banks to private sector banks, it is evident from this comparison that the former have far more non-performing loans (NPLs). Government banks have such a large amount of non-performing loans (NPL) that, when their provisioning is subtracted from the net loss, the loss is converted to profit.

Singh and Al (2021) analyzed the impact of Nepalese conventional banks' non- performing loans (NPL). The study's population consists of Nepal's largest commercial banks, and the data used in it came from 2015 to 2019. The annual reports of each bank, as well as GDP and inflation figures retrieved from the World Bank database, provided the secondary data utilized in this study. Multiple regression analysis is the strategy employed in this research for data analysis. NPL was the dependent variable in the research, while the independent/explanatory factors were bank size, GDP growth, inflation, return on asset (ROE), and capital adequacy ratio (CAR). The study's findings indicate that although CAR has no discernible impact on bank non-performing loans (NPL), bank size, GDP, inflation, and ROE all significantly affect NPL. Put otherwise, this research demonstrates a positive and noteworthy impact of GDP on NPL, while the majority of studies indicate a negative impact. It demonstrates that when GDP development grows, Nepalese bank expansion rises significantly, even in the absence of noticeable changes in income growth. Therefore, GDP growth has a favorable and considerable impact on commercial banks' non-performing loans. Thus, lenders and regulators need to carefully consider GDP growth when making decisions regarding non-performing loans (NPLs).

According to Pokharel and Pokharel (2020), non-performing loans (NPLs) are the greatest

indicator of a country's financial health. The quantity of non-performing loans has an impact on the nation's economy, the banking sector, and the whole financial system. The need to assess how non-performing loans affect Nepalese commercial banks' profitability is the driving force for this inquiry. The study's time frame is July 16, 2013, to July 16, 2018. Additionally, an analysis is conducted to look at the effects of different bank groupings. Specifically, government-owned banks and local banks operating in the financial sector in this way. As a sample, the investigation's final target has been five of the twenty-four separate private division banks and one of the three government-claimed banks. The inquiry is reliant on optional data obtained on the website of Nepal Rastra Bank as well as the annual report of banks of concern.

Abedin (2020) examined the circumstances in Bangladesh while doing research on non-performing loans and their effects on the banking industry. The purpose of this research was to ascertain the present state of non-performing loans (NPLs) in Bangladeshi banks. The research makes use of publicly available data that was gathered from the Bangladesh Bank's annual reports, the websites of Bangladesh's scheduled banks, and World Bank observations made between 2008 and 2019. He discovered that NPLs have been Bangladesh's banks' biggest issues for the last 20 years. Bangladesh's position is far more complex than the global average, which is 2% or less for non-performing loans.

The whole banking sector is uneasy as Bangladesh's NPL percentages are four to five times higher than the norm. According to the results of the present analysis, the NPL ratio is showing a consistent upward trend over time.

According to Bhattarai (2020), non-performing loans (NPLs) has a significant impact on profit margins and bank success or failure. This research looks at how non-performing loans affect the profitability of commercial banks in Nepal. Panel data from twelve commercial banks was gathered during a five-year period, from 2013–2014 to 2017–2018, totaling sixty observations. The data has been analyzed using the multiple regression model. To assess profitability, the fixed effect model, random effect model, and pooled ordinary least square model have all been used. Return on equity (ROA), a measure of profitability, was considered a dependent variable, whereas the following factors were considered independent: inflation (INF), non-performing loans (NPL), capital adequacy ratio (CAR), liquidity (LIQ), and bank size (SIZE). Three distinct models' results showed that ROA is significantly and adversely correlated with NPL, CAR, and LIQ. Likewise, there is a strong positive correlation between SIZE and ROE. With regard to ROE, the INF has a favorable but negligible effect. The investigation came to the conclusion that the variables NPL, CAR, LIQ, and SIZE had a significant impact on profitability. Profitability is not much impacted by the INF. Nonetheless, nonperforming loans have a significant negative impact on profitability. Sincere payments for over ninety days have been received by the bankers. It also rationally affects the country's economy.

Khadka (2020) in research of non-performing loans from Nepalese commercial banks determined whether or not Nepalese commercial banks are adhering to NRB guidelines on non-performing loans, this research looked at the amount of non-performing loans (NPLs) in total assets, total deposits, and lending of commercial banks. The research design used is descriptive in nature. The secondary data used in this research was gathered from five sample banks via annual reports, NRB directives, and banking magazines. Data analysis methods included the mean, standard deviation, correlation, and regression analysis. It seemed that Nepal Bangladesh Banks limited had a higher level of non-performing loan (NPL) than any of the other banks included in the analysis. Similarly, Bank of Kathmandu and Nepal SBI Banks are ranked second and third, respectively. Given that Nabil Bank Limited has been reducing its non-performing loan (NPL) each year and that Nepal Investment Bank's NPL has been reducing at a minimum relative to all other banks and the fact that no bank has been adhering to the NRB's directives regarding the loan loss provision the bank's position appears to be satisfactory.

Ramaswamy (2020) studied how NPL affects bank profitability. The purpose of this research

was to ascertain if the financial head (total assets, total advances, and total deposits) had a substantial influence on non-performing loans (NPLs) and how NPLs affected bank profitability. The study used a descriptive research design. We used convenience sampling. Secondary data gathered between 2014–2015 and 2018–2019 from the RBI website and bank annual reports. Regression analysis and correlation will be used to determine the effect and connection. In comparison to private banks, they discovered that NPL was greater in public banks. To recover from non- performing loans (NPLs), the banks must now take the initiative and be prepared to implement drastic measures. The study also shown that NPL by itself is insufficient as a metric for assessing a bank's soundness. The study found a negative correlation between non-performing loans (NPLs) and net profits in all save HDFC Bank. Additionally, NPLs had a significant influence on net profits, but only in SBI, Axis, and HDFC Bank cases. The findings of multiple regression indicate that, other from SBI, the financial heads as standalone variables have no discernible effect on bank non-performing loans (NPLs).

III. Methodology

This study is based on both descriptive and causal research design and secondary data forms the foundation of our investigation. The Nepal Rastra Bank, Nepal Stock Exchange, and other relevant magazines are the sources of secondary data, as are the annual reports and other publications of the relevant banks.

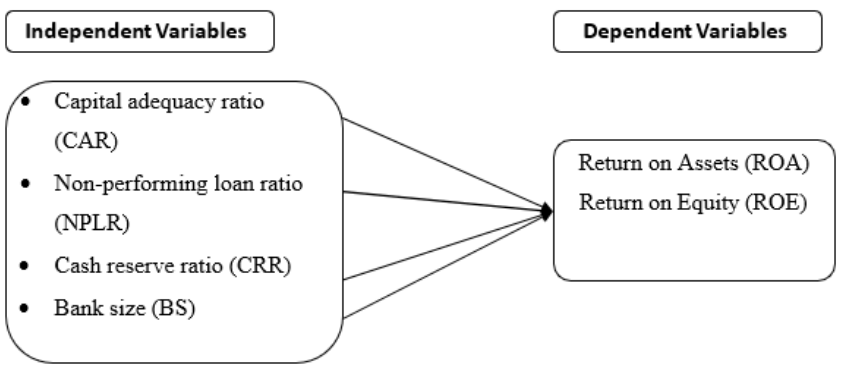
This study used a descriptive, correlational, and multiple regression statistical tools to examine the relationship between non-performing loans (NPLs) and the profitability as well as effect on NPL of Nepal's commercial banks. The study includes five commercial banks of Nepal as sample out of twenty commercial banks, and the data from the sample is gathered for the fiscal year 2013/014-2022/023 leading to a total of 50 observations. The sample banks are selected on the basis of their capital structure i.e. Laxmi Sunrise Bank Limited, Siddartha Bank Limited, Kumari Bank Limited, Nepal Bank Limited, and Prime Commercial Bank Limited are the names of the respective banks. As a result, the purposive sampling approach has been used to gather data from five Nepalese commercial banks with the lowest paid-up capital. Data presented using tables and charts prepared using Microsoft Word and Excel software, Statistical Package for Social Science (SPSS) version 21 will also be utilized for data analysis and conclusion-making.

Conceptual Framework

A conceptual framework is a tool that can be used in a variety of settings. It helps to determine and define the focus and goal of the research problem.

Figure 1

Conceptual Framework



IV. Results and Discussion

This study has attempted to analyze the effects of Non Performing Loan on profitability of commercial banks in Nepal. Descriptive statistics for the selected variables are below;

Descriptive

Descriptive statistics of return on assets, return on equity, capital adequacy ratio, non-performing loan ratio, cash reserve ratio & bank size are

Table 1

Descriptive Analysis

	N	Minimum	Maximum	Mean	S.D.
ROA	50	1.06	2.53	2.0220	.46071
ROE	50	7.69	53.42	16.4603	6.64741
CAR	50	11.79	18.60	14.2955	2.42619
NPLR	50	12.30	24.15	16.7895	3.78244
CRR	50	0.16	0.81	0.4515	0.23752
BS	50	487450.91	1631945.06	995411.35	397995.42

The average return on assets for Nepalese commercial banks from 2013/14 to 2022/23 is 2.02 times, according to Table 1. The minimum return on assets during this time is 1.06 times, and the maximum return on assets is 2.53 times. The standard deviation of the return on assets is 0.461, indicating that the standard deviation fluctuates at least a little.

The average capital adequacy ratio is 14.2955 percent, which indicates that Nepalese commercial banks' average capital adequacy ratio from 2014 to 2023 is 14.2955 percent. Throughout the time, the capital adequacy ratio has ranged from a minimum of 11.79 percent to a maximum of 18.60 percent. The capital adequacy ratios standard deviation is 2.43, indicating that the standard deviation fluctuates as little as possible.

The average non-performing loan ratio is 16.79 percent, which indicates that Nepalese commercial banks' average non-performing loan ratio from 2014 to 2023 is 16.79 percent. Over the period, the non-performing loan ratio ranges from a low of 12.30 percent to a maximum of 24.15 percent. The non-performing loan ratio's standard deviation is 3.78, indicating a significant degree of standard deviation variation.

The average cash reserve ratio is 0.4515 percent, which indicates that Nepalese commercial banks' average cash reserve ratio from 2014 to 2023 is 0.4515 percent. Throughout the time, the cash reserve ratio has ranged from a minimum of 0.16 percent to a maximum of 0.81 percent. The cash reserve ratio's standard deviation is 0.24, indicating that the standard deviation fluctuates as little as possible.

Since the minimum bank size ratio during this time was Rs. 487.450.91 and the maximum bank size was Rs. 1631945.06, the average bank size ratio for Nepalese commercial banks during 2014–2023 was Rs. 995.411.3570. The standard deviation of the bank size is Rs. 397995.42603, indicating a high degree of standard deviation fluctuation.

Correlation Analysis

To determine relationships between the various factors, correlation analysis between variables was examined. The relationship between the many independent and dependent variables related to the study is ascertained using Pearson's Correlation analysis. Any two

variables' linear correlation is measured. Table 2 displays the bivariate Pearson's correlation coefficients between the different research variables. Correlation coefficients were computed using data from five selected commercial banks with fifty observations between 2013–14 and 2022–23. The capital adequacy ratio, non-performing loans, cash reserve, and bank size are the independent components, while return on assets is the dependent variable.

Table 2

Correlation Analysis

	ROA	ROE	CAR	CRR	NPL	BS
ROA	1					
ROE	.168*	1				
CAR	.287*	.171*	1			
CRR	.347**	.162**	-.262	1		
NPLR	.255*	.049*	-.919**	.323	1	
BS	.772**	.286**	.637*	-.553	-.617	1

***.Correlationissignificantatthe0.01level(2-tailed).*

**.Correlationissignificantatthe0.05level(2-tailed).*

The correlation analysis results presented in above table 2 shows that Pearson Correlation Coefficient Relationship between CAR (Capital Adequacy Ratio), there's a positive correlation of 0.287 with ROA and 0.171 with ROE. These correlations indicate a moderate positive relationship between CAR and both ROA and ROE. It suggests that stronger capital adequacy tends to be associated with higher returns on both assets and equity. CRR (Cash Reserve Ratio) displays a positive correlation of 0.347 with ROA and 0.162 with ROE. Similarly, NPL (Non-Performing Loans Ratio), there's a positive correlation of 0.255 with ROA and 0.049 with ROE. Lastly, BS (Leverage Ratio) shows a strong positive correlation with ROA (0.772) and ROE (0.286), indicating that higher leverage ratios tend to be associated with higher returns on assets and equity.

Regression Analysis

The effect of independent factors (bank size, cash reserve ratio, non-performing loan ratio, and capital adequacy ratio) on deposits is predicted using multiple linear regression analysis. The following equation represents the equation for the impact of independent variables:

$$ROA_{it} = \beta_0+\beta_1 CAR_{it}+\beta_2 NPLR_{it}+\beta_3 CRR_{it}+\beta_4 BS_{it}+e_{it}$$

Where,

ROA_{it} = Return on assets(ratio of earnings after taxes to total assets) of bank i^{th} in year t

CAR_{it} = Capital adequacy ratio of i^{th} bank in year t

$NPLR_{it}$ = Non-performing loan ratio of i^{th} bank in year

CRR_{it}= Cash reserve ratio of i^{th} bank in year t

BS_{it} = Bank size (natural logarithm of total assets) of i^{th} bank in year t

β_o = the intercept (constant)

β_1, β_2, β_3, β_4, β_5 = The slope which represents the degree with which bank perform ance changes as the independent variable changes by one unit variable. eit= error component

Analysis of variance (ANOVA), model summary, and beta coefficients were used to examine

how independent variables affected Nepalese commercial banks' interest rates on deposits.

Table3

Model Summary (ROA)

Model	R	R2	Adj. R2	Std. Error of Estimate
1	.831a	.690	.442	.344

a.Predictors:(Constant),BS,CRR,NPLR,CAR

Table 3 shows that the R-squared value is 0.690, meaning that CRR, NPLR, BS, and CAR account for 69.00% of the variation in the return on assets of Nepalese commercial banks. The remaining 31.00% (100%–69.00%), however, remains unexplained in this study. To put it another way, this study has not taken into account other factors that contributed to the return on assets of Nepalese commercial banks.

Similarly, after adjusting for degree of freedom (df), adjusted R-square is 0.442, meaning that CRR, NPLR, BS, and CAR account for 44.2% of the bank return on assets of Nepalese commercial banks in Nepal. A standard error of the estimate of 0.34403 is also shown in the model summary, illustrating the variability of the observed value of Nepalese commercial banks' return on assets.

Table 4

Model ANOVA(ROA)

	Model	Sum of Regression	df	Mean Square	F	Sig
	Regression	1876.515	4	375.303	11.049	.000[b]
	Residual	5502.899	45	33.969		
1	Total	7379.414	49			

a.Dependent Variable: ROA
b.Predictors:(Constant),BS,CRR,NPLR,CAR

The regression model is statistically significant at the 0.05 significance level, as indicated by the F-value of 11.049, the ratio of explained variance to unexplained variance in the model, and the associated significance level (Sig.) of.000b. As a result, the independent variables (BS, CRR, NPLR, and CAR) are significant in explaining the variance in bank performance of Nepalese commercial banks in the context of Nepal. Table 4 shows that the mean square is 375.303, which represents the average variance explained by each predictor.

Table 5

Model Coefficient (ROA)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	39.018	5.801		6.725	.000
CAR	.115	.049	.166	2.357	.020
CRR	.394	.210	.129	1.880	.062
NPLR	.318	.058	.386	5.500	.000
BS	.019	.006	.217	3.116	.002

Dependent Variable: ROA

The regression model's coefficients for ROA (Return on Assets) are shown in Table 5. The

degree and direction of the association between each independent variable in the model and the dependent variable (ROA) are shown by these coefficients. The coefficient and standard error of the constant term (intercept) are 39.018 and 5.801, respectively. This indicates that the expected value of ROA is 39.018 when all independent variables are zero. This intercept term is statistically significant, as indicated by the corresponding t-value of 6.725 and a significance level (Sig.) of.000.

The coefficient for CAR(Capital Adequacy Ratio) is 0.115 with a standard error of 0.049. This suggests that a one-unit increase in CAR is associated with a 0.115 unit increase in ROA, holding all other variables constant. The t-value of 2.357 and a significance level of.020indicatethat this relationship is statistically significant at the 0.05 significance level.

Cash Reserve Ratio (CRR) exhibits a coefficient of 0.394 and a Beta of 0.129. While the coefficient suggests a positive relationship between CRR and ROA, the t-value of1.880 and a significance level of .062 indicate that this relationship is not statistically significant at the conventional 0.05 threshold, although it approaches significance. This implies that the impact of CRR on ROA may be less conclusive or weaker compared to other variables.

The Non-Performing Loans Ratio (NPLR) shows a substantial coefficient of 0.318 and a Beta of 0.386. This suggests that a one-unit increase in NPLR results in a 0.318 unit increase in ROA, after controlling for other variables. The high t-value of 5.500 and a significance level of .000 indicate that this relationship is statistically significant, highlighting the detrimental effect of non-performing loans on return on assets.

Lastly, the Leverage Ratio (BS) displays a coefficient of 0.019 and a Beta of 0.217.This indicates that a one-unit increase in the Leverage Ratio leads to a 0.019 unit increase in ROA. With a high t-value of 3.116 and a significance level of .002, this relationship is statistically significant, suggesting that higher leverage tends to be associated with higher returns on assets, though the effect may not be as pronounced as other variables.

Multiple linear regression analysis is used to predict the impact of independent variables of interest on deposit. The equation for impact of independent variables is expressed in the following equation:

$$ROE_{it} = \beta_0 + \beta_1 CAR_{it} + \beta_2 NPLR_{it} + \beta_3 CRR_{it} + \beta_4 BS_{it} + e_{it}$$

Where,

ROE_{it}=Return on equity (ratio of earnings after taxes to total equity) of bank *I*

In year *t*

CAR_{it} =Capital adequacy ratio of i^{th} bank in year t

$NPLR_{it}$ = Non-performing loan ratio of i^{th} bank in year t

CRR_{it} = Cash reserve ratio of i^{th} bank in year t

BS_{it} = Bank size (natural logarithm of total assets) of i^{th} bank in year t

β_0 = the intercept (constant)

β_1, β_2, β_3, β_4, β_5 = The slope which represents the degree with which bank performance changes as the independent variable changes by one unit variable e_{it} = error component

The results of model summary, analysis of variance (ANOVA) and beta coefficients analyzed the impact of independent variables on interest on deposit of Nepalese commercial banks.

Table 6

Model Summary (ROE)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.504a	.254	.231	5.82825

Predictors:(Constant), BS, CRR, NPLR, CAR

The R-square, sometimes referred to as the coefficient of determination, is shown in the model summary and can be used to explain variation. As can be seen from Table 6, the R-square value is 0.504, meaning that BS, CRR, NPLR, and CAR account for 50.40% of the variation in the financial performance of Nepalese commercial banks (ROE). The remaining 49.60% (50.40%–100.00%), however, remains unexplained in this study. To put it another way, this study has not taken into account other factors that could have contributed to the financial success of Nepalese commercial banks.

Similarly, adjusted R-square is 0.254 which means 25.40% in bank performance of Nepalese commercial banks in Nepal is explained by BS, CRR, NPLR, and CAR after adjusting degree of freedom (df). Model summary also indicates the standard error of the estimate of 5.828 which shows the variability of the observed value of financial performance of Nepalese commercial banks.

Table7

Model ANOVA (ROE)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	82.209	4	20.552	39.307	.000b
	Residual	206.532	45	.523		
	Total	288.741	49			

a. Dependent Variable:ROE

b. Predictors:(Constant),BS,CRR,NPLR,CAR

Table 8

Coefficient (ROE)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.199	.195		6.142	.000
CAR	.377	.055	.377	6.905	.000
CRR	.167	.066	.142	2.550	.011
NPLR	.113	.053	.109	2.119	.035
BS	-.019	.006	-.217	-3.116	.002

Dependent Variable: ROE

Table 7 displays the regression model is statistically significant at the 0.05 significance level, according to the associated significance level (Sig.) of.000b and the F-value of 39.307, which

shows the model's explained variance to unexplained variance ratio. This suggests that a large portion of the variation in ROE can be explained by at least one of the independent factors. Therefore, in the context of Nepal, the independent variables (BS, CRR, NPLR, and CAR) are important in explaining the variation in bank performance of Nepalese commercial banks.

Table 08 presents the coefficients of the regression model for ROE (Return on Equity). These coefficients offer insights into the relationship between the dependent variable (ROE) and each independent variable included in the model. The constant term (intercept) has a coefficient of 1.199 with a standard error of 0.195. This implies that when all independent variables are zero, the expected value of ROE is 1.199. The associated t-value of 6.142 and a significance level (Sig.) of .000 indicate that this intercept term is statistically significant.

The coefficient for CAR (Capital Adequacy Ratio) is 0.377 with a standard error of 0.055. This suggests that a one-unit increase in CAR leads to a 0.377 unit increase in ROE, holding all other variables constant. The t-value of 6.905 and a significance level of .000 indicate that this relationship is statistically significant at the 0.05 significance level.

Similarly, the coefficients for CRR (Cash Reserve Ratio), NPLR (Non-Performing Loans Ratio), and BS (Leverage Ratio) represent the irrespective impacts on ROE. The positive or negative sign of the coefficient indicates the direction of the relationship, while the t-value and significance level determine the statistical significance of the relationship.

The Non-Performing Loans Ratio (NPLR) shows a coefficient of 0.113 and a Beta of 0.109. This indicates that a one-unit increase in NPLR results in a 0.113 unit increase in ROE, holding other variables constant. The moderate t-value of 2.119 and a significance level of .035 suggest that this relationship is statistically significant, highlighting the adverse effect of non-performing loans on return on equity.

Contrastingly, the Leverage Ratio(BS) displays a coefficient of -0.019 and a Beta of- 0.217. This suggests that a one-unit increase in the Leverage Ratio leads to a decrease of 0.019 units in ROE. With a high t-value of -3.116 and a significance level of .002, this relationship is statistically significant, indicating that higher leverage tends to be associated with lower returns on equity, mirroring the potential risks associated with increased leverage.

Current issue related to non-performing loan and impairment cost

After COVID, the economy began to experience an increase in non-performing loans, which has persisted to this day due to the global crisis, the government's inability to pay per capita expenses, generate new jobs, and maintain economic mobility. Inadequate legal and regulatory, Capacity of Borrowers to Repay, Asset Quality Review, Technological Adoption and Fraud Risk were also the current issue related to non-performing loan(Singh, Basuki, & Setiawan, 2021;Jiang & Zheng, 2024).

Due to sectoral vulnerabilities, loan moratoriums and relief measures, data issues, and the borrower's failure to satisfy scheduled loan obligations, impairment costs have escalated dramatically (Natufe & Evbayiro-Osagie, 2023; Roncagliolo, 2024).

Discussion

The first objective's outcome shows a positive and statistically significant capital adequacy ratio's impact on ROA/ROE. The outcome drawn by Abu-đlrop and Kokh (2020), found that banks' financial performance was negatively impacted by the gross loan to non-performing loan ratio. However, Suyanto's (2021) findings, which showed a negative relationship between non-performing loans and bank performance, are in line with this result. According to the study's findings, there isn't much of a relationship between bank performance and bad credit and liquidity. A large percentage of bad credit is associated with poor bank performance.

The findings of Otwoko and Maina (2021), found that there is a positive and statistically

insignificant association between bank performance and the cash reserve ratio, notwithstanding priori predictions. The study's findings indicate that the cash reserve ratio has no bearing on how well Nepal's commercial banks function. Ultimately, the ultimate goals of bank size indicate a noteworthy inverse relationship between bank success and size. The bank size coefficient is as anticipated, and the outcome is in line with research by Khati (2020), which discovered a negative correlation between bank size and performance. Furthermore, the study's findings suggest that bigger Nepalese banks do better than smaller ones.

V. Conclusion and Implication

The study concludes that Non-performing loans significantly impact bank profitability, as evidenced by their positive correlation with reduced returns on assets (ROA) and returns on equity (ROE). This underscores the importance of effective management and mitigation strategies for non-performing loans to safeguard the profitability and stability of banks in Nepal. Moreover, the analysis highlights the interconnectedness of various financial metrics with bank profitability. While variables like the Capital Adequacy Ratio (CAR) exhibit positive effects on profitability, indicating the importance of maintaining sufficient capital reserves, other factors such as the Cash Reserve Ratio (CRR) and Leverage Ratio (BS) display mixed impacts, underscoring the complexity of their relationships with profitability.

These findings underscore the need for banks in Nepal to take preemptive steps. to address non-performing loans and strengthen their financial resilience. Strategies such as rigorous credit risk assessment, effective loan recovery mechanisms, and prudent leverage management are imperative to mitigate the adverse effects of non- performing loans on profitability. Policies that encourage transparency, risk management, and accountability within the banking sector can contribute to the overall health and sustainability of Nepal's banking industry. Additionally, policymakers are essential in establishing an enabling regulatory environment that promotes sound banking practices and financial stability.

In conclusion, while non-performing loans pose significant challenges to bank profitability in Nepal, they also present opportunities for improvement and growth. By implementing robust risk management practices and adopting proactive strategies to address non-performing loans, banks can enhance their profitability and contribute to the broader economic development of Nepal.

The study highlights the critical need for Nepali banks to strengthen credit risk management and implement proactive strategies to address non-performing loans, given their significant negative impact on profitability. Maintaining sufficient capital reserves, improving loan recovery mechanisms, and ensuring prudent leverage management are essential for enhancing financial resilience. Furthermore, promoting transparency, accountability, and sound risk management practices within the banking sector is vital for sustainable growth. Policymakers play a crucial role in developing regulatory frameworks that encourage financial stability and robust banking operations. By addressing the challenges posed by non-performing loans, banks can not only safeguard profitability but also contribute to broader economic development in Nepal.

References

Abedin, M. Z. (2020). Non-performing loans and its impact on the banking sector: An investigation on the current status of Bangladesh. *Journal of Banking and Financial Services, 6*(2), 87-98.

Bhattarai, B. (2016). Effect of credit risk on performance of Nepalese commercial banks. *Nepal Banking Journal, 12*(2), 45-56.

Bhattarai, R. (2020). Effect of non-performing loan on profitability of commercial banks in Nepal. *Nepalese Journal of Banking and Finance, 15*(1), 56-67.

Bhattarai, S. (2015). Impact of macroeconomic variables on non-performing loan of commercial banks in Nepal. *Journal of Finance and Economics, 3*(2), 112- 125.

Gaur, S. K., & Mohapatra, S. (2021). Non-performing loan and profitability: Case of Indian banking sector. *Research Journal of Finance and Accounting, 12*(1), 147-156.

Erdas, M. L., & Ezanoglu, Z. (2022). How do bank-specific factors impact non-performing loans: Evidencefrom G20 countries. *Journal of Central Banking Theory and Practice, 11*(2), 97-122.https://doi.org/10.2478/jcbtp-2022-0015

Foglia, M. (2022). Non-performing loans and macroeconomics factors: The Italian case. Risks, 10(1), 21.https://doi.org/10.3390/risks10010021

Hallunovi, A., & Berdo, M. (2018). The relationship between risk management and profitability ofcommercial banks in Albania. *Asian Themes in Social Sciences Research, 1*(2), 44-49. https://doi.org/10.33094/journal.139.2018.12.44.49

Jagongo, A. (2021). Effect of Non-Performing Loan on Financial Stability of Deposit Taking SACCOs in Kenya. *Journal of Finance and Accounting, 9*(5), 244- 253.

Jha, P., & Grover, R. (2021). Impact of non-performing loan on profitability: A Study of selected private and public sector banks in India. *International Journal of Finance and Economics, 6*(3), 110-120.

Khadka, N. (2020). Non-performing loan of Nepalese commercial Banks. *Journal of Nepalese Banking, 4*(2), 78-89.

Kingu, J. P., Macha, R. S., & Gwahula, G. J. (2018). Impact of non-performing loans on banks' profitability: evidence from commercial banks in Tanzania. *Journal of Accounting and Finance in Emerging Economies, 4*(1), 42-59.

Natufe, O. K., & Evbayiro-Osagie, E. I. (2023). Credit risk management and the financial performance of deposit money banks: Some new evidence. *Journal of Risk and Financial Management, 16*(7), 302. https://doi.org/10.3390/jrfm16070302

Patwary, A. K., & Tasneem, S. (2019). Non-performing loans (NPL): Causes, effects, analysis, and initiatives. *Journal of Business and Technology, 4*(1), 30-42.

Pokharel, S., & Pokharel, S. (2020). Non-performing loan (NPLs) and its impact on profitability: Evidence from Nepalese commercial banks. *Nepalese Journal of Management Science and Research, 1*(1), 45-56.

Ramaswamy, S. (2020). Impact of NPL on profitability of banks. *Journal of Finance and Banking Research, 4*(3), 112-125.

Reshmi, B. (2023). Non-performing loan and profitability of commercial banks in Nepal. *International Journal of Finance and Commerce, 5*(2), 43-50.

Singh, A. (2013). Impact of non-performing loan on profitability: A study of Indian banking sector. *Indian Banking Journal, 7*(2), 78-89.

Singh, R., Sharma, S., Paudel, N., & Bhandari, B. (2021). Effect of non-performing loan (NPL) on Nepalese conventional banks. *International Journal of Economic Research, 18*(6), 51-68.

Singh, S. K., Basuki, B., & Setiawan, R. (2021). The effect of non-performing loan on profitability: Empirical evidence from Nepalese commercial banks. *Journal of Asian Finance, Economics and Business, 8*(4), 0709–0716. https://doi.org/10.13106/jafeb.2021.vol8.no4.0709

Uddin, M. K. (2022). The effect of non-performing loan on state-owned commercial banks' profitability with operating efficiency as mediating variable. *European Journal of Business and Management Research, 7*(3), 216-223.

Wolf, M. & Pant, L. (2002). Literature reviews. The SAGE encyclopedia of social science research methods, 2, 623-626.