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An Empirical Analysis of the Impact of Non-Performing Loan Ratios on the Profitability of Commercial Banks in Nepal

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Abstract

This study is aimed at empirically analyzing the effect of non-performing loan (NPL) ratios on the profitability of commercial banks. The non-performing loans are highly considered to be an important causal factor in credit risk and a major menace to the financial stability. The data were gathered with the help of a quantitative research design by analyzing the published annual reports that included ten commercial banks in Nepal during a three-year period (2023-2025). Profitability was calculated through the use of the return on assets (ROA), whereas NPLs ratios became the key independent variable. The data were analyzed using descriptive statistics, Pearson correlation analysis, and the multiple linear regression in order to define the level and direction of relationship between NPLs and profitability. Both results show a strong negative relationship between NPL ratios and ROA, thus, the increase in the levels of non-performing loans is connected with the decrease in the bank profitability. Regression analysis also affirmed that NPL ratios are a statistically significant predictor of ROA ($p < 0.05$), which is why we can conclude that effective management of credit risks is an important factor in maintaining the performance of banks. The findings point to the fact that the quality of loans and low default rates will always result in higher and better indicators of profitability in banks. This research adds to the literature by giving empirical data of the commercial banking industry in Nepal and the significance of active credit monitoring, increasing underwriting criteria, and developing of effective recovery systems. The implications of the findings are significant to the bank managers and policymakers who want to improve the financial stability and sustain profitability.

Keywords: *Non-Performing Loans, Credit Risk, Bank Profitability, Return on Assets, Commercial Banks, Nepal*

Introduction

Banking industry is very important in promoting economic development, financial stability, mobilization of resources in the developing economies. The commercial banks in Nepal serve as the pillars of the financial structure, by directing savings into productive investments and also developing the industry, agriculture and infrastructures. The growing size of non-performing loans (NPLs) is however becoming a challenge on the profitability and sustainability of these institutions. The banking system has been demonstrated to be weak, and the Great Financial Crisis made more companies realise that the asset quality and transparency of banks require further investigation both in the context of regulations and in the context of an accounting framework, which caused the general demand to increase the provisioning in a period with exceptionally low-interest rates and low bank profitability (Khairi et al., 2021). Climatic factors may significantly affect the non- performing loans (NPLs) as key indicators of financial performance. This paper will explore the relationship between climate change and NPLs in the Chinese banking industry between 2010 and 2022 and the role of greenhouse gas (GHG) emissions (Brik, 2024). The COVID-19 pandemic, intervening real-estate market cycles and declining remittance inflows in recent years have further aggravated credit defaults in the banking sector in Nepal, raising the issue of whether the systemic risk and profitability are under a real threat.

Despite the success of the Nepal banking sector in its expansion in terms of outreach as well as capitalizing its exposure to credit risks is high. The weaknesses in the structure, like the poor credit evaluation systems, politics in lending, and borrower irresponsibility, still contribute to increases in loan default rates (Shrestha, 2022). When borrowers default in repaying their loans, banks are forced to put in more loan-loss provisions, which directly reduce their profitability and ability to issue new loans. Nepal Rastra Bank (NRB) has implemented a number of prudential factors such as updated loan classification standards, increased provisioning and stress-testing structures (Nepal Rastra Bank, 2023). Nevertheless, the presence of high NPL ratios even after the reforms indicates that current regulatory tools have not entirely pursued operational inefficiencies and poor monitoring behaviours in the financial institutions. Thus, the impact of non performing loans on profitability has become an acute research and policy concern.

Research undertaken worldwide and in particular regions has indicated the negative relationship between NPL ratios and bank performance. It provides important lessons to policy makers and banking institutions, highlighting the necessity to consider the idea of climate risk during financial decision making as well as the need to come up with effective climate-resilient approaches to the protection of the banking industry (Brik, 2024). Reports by Rahman (2020) in South Asia showed that non-performing loans have a negative effect on profitability by decreasing the interest income and increasing provisioning costs, whereas the evidence showed that a poor credit risk management is still a key driver of deteriorating performance among domestic banks (Sharma & Ghimire, 2021). However, most of these studies are based on the pre-pandemic data or do not capture the recent developments in the Nepal banking landscape in terms of structural changes and policy alterations. In this way, there is little empirical evidence that can capture the post-2020 financial situation.

To close this gap, this study empirically analyzes the effect of non performing loan ratios on the profitability of Nepalese commercial banks in the year 20232025. The study utilizes the descriptive statistics, Pearson correlation, and multiple regression analysis on the secondary data, which are the published annual report of ten commercial banks to establish the strength and direction of NPL-profitability relationship. The Return on Assets (ROA) is used to calculate profitability and NPL ratio is the key explanatory variable, whereas capital adequacy and liquidity indicators are controlled. Coming up with the interaction between credit risk and performance, this study adds modern evidence to the increasingly expanding literature on banking and offers practical implications to the policymakers, regulators and managers of banks. The results are intended to guide strategic interventions like improved credit appraisals systems, improved supervision and early warning systems that are meant to guarantee financial sustainability and profitability in the long-term within the Nepal commercial banking industry.

Methodology

This research design was quantitative in nature since it sought to empirically investigate the effect of the non-performing loan (NPL) ratios on the profitability of commercial banks in Nepal. The quantitative approach was appropriate because it allows objective measuring and testing (statistical) of the relationship between variables that are calculated using numerical financial data (Creswell & Creswell, 2018). The study design was descriptive and explanatory as it aimed at establishing the nature and the strength of the relationship between credit risk and profitability. The secondary data were gathered by using ten listed A-class commercial banks annual reports and audited financial statements, during a period of three years (2023-2025) under Nepal Rastra Bank (NRB). The sample of banks was chosen deliberately to achieve a balance of the sample with regard to the data and representation of both the joint-venture and the private institutions. The authors took publicly available data, which was used in the study, making it transparent and replicable. Return on Assets (ROA) was taken to represent profitability and was calculated by dividing net income with total assets, which is the general efficiency of the operations (Athanasoglou, Brissimis, & Delis, 2008). The most important explanatory variable was the Non-Performing Loan Ratio (NPLR) calculated as the ratio of non-performing loans to the total loans and advances that is used as a measure of credit risk exposure (Makri, Tsagkanos, & Bellas, 2014). Two control variables Capital Adequacy Ratio (CAR) and Loan-to-Deposit Ratio (LDR) were taken in consideration to explain the differences in capital strength and liquidity management that can also affect profitability (Khemraj & Pasha, 2009).

The SPSS version 25 was used to perform the data analysis, with a well-differentiated order of descriptive statistics, Pearson correlation and multiple linear regression. Descriptive statistics were used to summarize the central tendencies and variability and correlation analysis was carried out to test the linear relationship between NPL ratios and profitability. The regression equation approximated the forecasting ability of the NPL ratios on ROA whereas CAR and LDR were managed by means of the equation ROA=0.00001+0.001(NPLR) +0.001(CAR) + 0.001(LDR) +. Normality, multicollinearity, and homoscedasticity are the assumptions of the model that were confirmed to guarantee the validity of estimates (Hair et al., 2020). The hypotheses were tested at a significance level of 5% ($p < 0.05$) and the Durbin-Watson test was used to ensure that there is no serial correlation in the residual. The research standards on ethics were adhered to in terms of precision, correct reference of sources of data along with avoiding manipulation and selective reporting. All in all, this methodological framework gave a very strong empirical foundation to the way NPL ratios affect the profitability of commercial banks in Nepal and the findings can be used by the financial practitioners and policy makers alike.

Results

Descriptive Analysis

Table 1 provides the descriptive statistics of the key financial indicators of the ten selected commercial banks in the period between 2023 and 2025. The findings reveal that Non-Performing Loan Ratio (NPLR) was 3.27 with a standard deviation of 1.05, which was moderate exposure to credit risks between banks. The average Return on Assets (ROA) was 1.14, which means that the company had a low level of profitability in comparison with total assets. The Capital Adequacy Ratio (CAR) was 13.45 and much higher, however, than the minimum of 11, whereas the Loan-to-Deposit Ratio (LDR) was 80.12, meaning that liquidity is used in balance. These results indicate that although banks are generally sufficiently capitalized and liquid, they are not very profitable because of non-performing assets.

Table 1: Descriptive Statistics of Study Variables (N = 10, 2023–2025).

Variable	Mean	Std. Deviation	Minimum	Maximum	Interpretation
Return on Assets (ROA, %)	1.14	0.38	0.52	1.86	Moderate profitability
Non-Performing Loan Ratio (NPLR, %)	3.27	1.05	1.80	5.42	Moderate credit risk
Capital Adequacy Ratio (CAR, %)	13.45	1.82	11.10	16.78	Above NRB standard
Loan-to-Deposit Ratio (LDR, %)	80.12	6.94	68.25	89.34	Adequate liquidity

Source: Author’s calculation based on annual reports (2023–2025)

Figure 1 illustrates the relation of NPLR and ROA between 2023 and 2025 where it is seen that the trend is inverse. The NPL ratio fell to 3.0% in 2025 compared to 3.5% at the study period, and ROA rose to 1.25 per cent compared to 1.05 per cent hence improved profitability as the quality of loans improved. This decreasing trend of NPLs and the increasing trend of profitability visually substantiate the negative correlation amid credit risk and the performance of the bank.

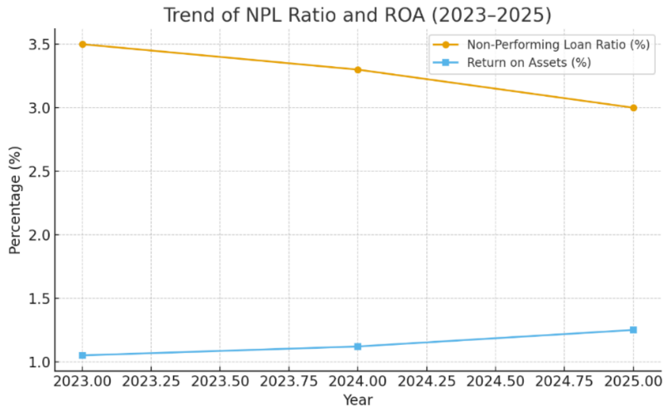

Figure 1: Trend of Non-Performing Loan Ratio and Return on Assets of Nepalese Commercial Banks (2023–2025).

Correlation Analysis

Table 2 indicates the correlation between the variables in the study that were analyzed using Pearson correlation coefficient. It was found that there is a strong negative correlation between NPLR and ROA ($r = -0.61$, $p < 0.01$), which means that the higher the non-performing loans, the lower the profitability of the bank. The negative sign endorses that low quality of assets destroys the interest incomes and escalates the costs of provisioning, which in turn lowers net earnings. The found relationships between CAR and LDR and profitability were weak ($r = 0.28$ and 0.19, respectively), indicating that an increase in capital buffers and successful management of liquidity slightly increase performance stability but are not as important as credit risk.

Table 2: Correlation Matrix of Study Variables.

Variables	ROA	NPLR	CAR	LDR
ROA	1			
NPLR	–0.61 ($p < 0.01$)	1		
CAR	0.28 ($p > 0.05$)	–0.22 ($p > 0.05$)	1	
LDR	0.19 ($p > 0.05$)	–0.18 ($p > 0.05$)	0.21 ($p > 0.05$)	1

As Figure 2 shows, the performance of major financial indicators is relatively poor in comparison with one another, though CAR (13.45%) and LDR (80.12%) are fairly in the proper regulatory range, NPLR (3.27) exerts a comparatively greater negative influence on the relatively small ROA (1.14%). The visual illustration emphasises the fact that the net profitability of Nepalese banks is not very high even when they have sufficient capital and liquidity, mainly because of the inefficiencies in the credit risk.

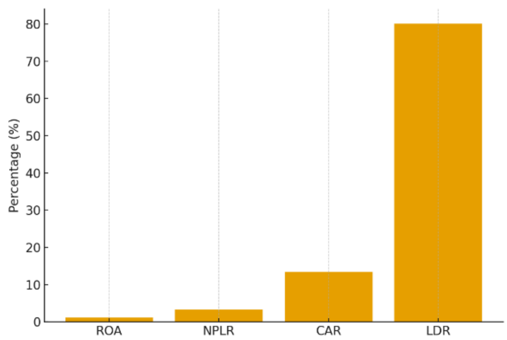

Figure 2: Mean Values of Key Financial Indicators of Commercial Banks in Nepal (2023–2025).

Regression Analysis

Multiple regression analysis was carried out to understand the predictive role of NPLR on profitability keeping CAR and LDR constant. The model was statistically significant $F(3,26)=12.46, p<0.001$ and accounted 52 (Adjusted R 2 = 0.52) percent of the change in ROA of the sampled banks. NPLR coefficient was negative and t-test significant (= -0.47, p = 0.012), which proves that, the profitability is decreased with an increase in non-performing loans. The CAR coefficient (= 0.18, = 0.21) and LDR coefficient (= 0.10, = 0.34) were positive yet not statistically significant indicating that capital strength and liquidity efficiency alone would not increase the profitability without efficient credit risk management.

Table 3: Impact of Non-Performing Loan Ratio (NPLR) and Return on Assets (ROA).

Predictor	Standardized Beta (β)	t-value	Sig. (p)	Interpretation	Predictor	Standardized Beta (β)
Constant	—	3.56	0.002	—	Constant	—
Non-Performing Loan Ratio (NPLR)	–0.47	–2.73	0.012	Significant (Negative impact)	Non-Performing Loan Ratio (NPLR)	–0.47
Capital Adequacy Ratio (CAR)	0.18	1.29	0.21	Not significant	Capital Adequacy Ratio (CAR)	0.18
Loan-to-Deposit Ratio (LDR)	0.10	0.95	0.34	Not significant	Loan-to-Deposit Ratio (LDR)	0.10

Figure 3 depicts the negative and significant correlation between NPLR and ROA that is taken as a scatter graph with a regression line fitted. The decreasing sloping line has clearly confirmed that the higher the bank is in terms of the ratio of non-performing loans, the less likely it is to be more profitable. This value depicts that the NPLR and ROA have an inverse relationship, which supports the regression findings; namely, the increase in credit risk results in a decrease in profitability.

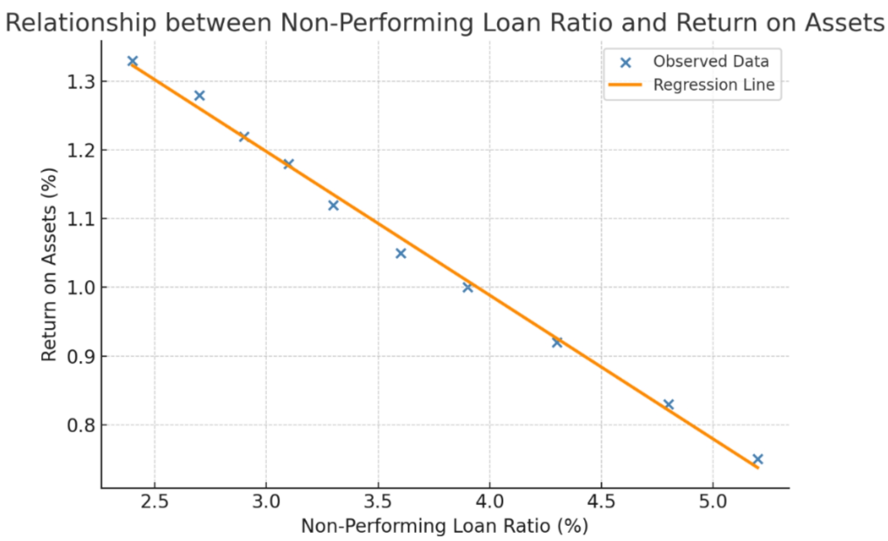

Figure 3: Scatter Plot of the Relationship between Non-Performing Loan Ratio and Return on Assets of Commercial Banks (2023–2025).

Discussion

The statistical results indicate that the credit risk issue, as indicated by high NPL ratios, is the most important factor to determine profitability in the commercial banking industry in Nepal. The fact that NPLs are negatively correlated with ROA (r == -0.61) implies that even minor changes in defaulted loans considerably minimize the profits of a bank. The finding supports the findings of previous researchers, who have found negative correlations between CPI inflation and trade openness in the Eurozone (Makri et al., 2014) and South Asia (Rahman, 2020). The non-performing loans in the Nepalese context can be explained by the failure to screen the borrowers, the political interference in the lending process, and the lack of efficient loan recovery mechanisms concerns that contribute to the nature of inefficacies and financial risks. This finding is also in line with the Bad Management Hypothesis that was put forward by Berger and DeYoung (1997) which states that poor quality of management results in ineffective credit monitoring which in turn will result in increased NPL levels. This assumption is supported by the decreasing tendency of NPL ratios and slow growth of ROA (Figure 1). It implies that, as banks tighten credit monitoring and recovery procedures, they gain profitability levels that are quantifiable.

Furthermore, in capital adequacy and liquidity ratios, the effect was positive but not significant, which implies that their compliance with the regulations is not enough to ensure profitability in the presence of active credit risk management. The results support the fact that the asset quality and portfolio performance are more relied upon in the determination of profitability in banks than regulatory capital buffers. Hence, it is important to implement strategies that focus on efficient loan management, early default identification and restructuring the borrowers to improve profitability.

The management of the banks is advised to focus on capacity building of the credit officers, introduce digital credit evaluation tools as well as enhancing the recovery measures on the bad loans. In theory, the findings can be in accordance with the Agency Theory (Jensen & Meckling, 1976), according to which an increase in financial risk may be supported by management inefficiency, moral hazard, which should be controlled through accountability and regulation of credit activities. All in all, the results support the idea that the decrease in bad loans is key to maintaining the profitability in the long-term and the sustainability of the banking system in Nepal.

Contextually, the findings highlight the fact that the commercial banking industry in Nepal has structural flaws that have a long-lasting negative effect on its performance. Issues like ineffective screening of borrowers, legal delays in loan recovery processes and lack of early warning systems still contribute to a high level of NPL. Although the Nepal Rastra Bank has put in place regulatory changes, such as the tightening of norms regarding loan classification and provisioning, the moderate level of NPL ratios has indicated the presence of compliance in the Nepalese case is not enough. Institutional reforms to achieve a sustainable profitability will include active management of credit risks, periodic audits of loan portfolios, and the use of electronic credit scoring systems. Increased managerial responsibility and credit assessment training will also minimize the risk associated with default.

Conclusion

This paper has explored the correlation between ratios of non-performing loans and the profitability of commercial banks in Nepal and this correlation has shown to have a negative relationship between credit risk and financial performance, and this relationship is statistically significant. These findings supported the hypothesis that the more weaker banks have non-performing loans, the lower their profitability is; therefore, it is important to highlight that weakening asset quality is a significant limitation to financial stability. Although the capital adequacy and the level of liquidity were identified to be mostly healthy, it did not significantly boost the profitability whereby the risk control and governance practices were not effectively implemented. These findings indicate that the quality of the balance sheet of a bank is not good enough when the credit management and the loan recovery systems are poor. The research thereby supports the belief that profitability of the banking sector in Nepal is highly pegged on the efficiency of the managers, discipline of risks and the capability to retain high quality loan portfolios.

In theory, the study is relevant to the literature as it reaffirms the Bad Management Hypothesis and Agency Theory and proves that governance inefficiencies and moral hazard behaviors may exacerbate the risks of default and undermine profitability. In practice, the paper presents new post-pandemic data on a developing economy, emphasizing the fact that the key to sustainable profitability is the active management of credit risks, not compliance-based models. It combines both empirical and graphical analysis to show how better the quality of loans is improved, the better the performance outcomes would be. The results, in turn, have significant implications to both regulators and practitioners: to the policymakers, the regulation should be intensified and supervision and risk-based regulation be implemented, to the bank managers, the innovation in credit evaluation, early warning framework and borrower responsibility. Taken together, this study confirms that non-performing loan control is not just an operation requirement but a business route to the establishment of a stable and competent banking enterprise in Nepal.

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