Impact of Non-Performing Loan on Profitability of Nepalese Commercial Banks

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Abstracts

This paper aims to evaluate the impact of non-performing loan on the profitability of Nepalese commercial banks. For this purpose, this study employed the annual balanced panel data of 10 commercial banks during the period of 2016/17 to 2022/23. This paper used NPLs measured by the ratio of non-performing loans to total loans as an explanatory variable and profitability measured by ROA as a dependent variable. A multiple linear regression model was used to examine the effect of NPLs on the profitability of banks. The empirical results indicated that NPLs play a substantial role in determining profitability. Further, this paper revealed that NPLs have a significant negative impact on profitability. The findings of this paper suggests that bank management should maintain the lower level of NPLs as much as possible to achieve a higher level of profitability. Therefore, bank management should give more attention to minimize the NPL.

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Introduction

Commercial banks are major financial entities that supply financial services that have an impact on the economic outlook and welfare of society (Çollaku & Aliu, 2021). In underdeveloped nations, where loans are the primary source of external finance for a business, the function of banks is even more significant. Any country's economy needs commercial banks to function properly (Dawood, 2014). The lending activity of the bank generates the major source of income and risk (Çollaku & Aliu, 2021) which has substantial influence on profitability. Profitability is one of the major indicators of the operational efficiency of the bank. It is influenced by several factors, among them non-performing loan in the important one. The lending activities of the bank may create substandard, doubtful, and loss-rated loans, which are known as non-performing loans. It can be viewed as the percentage of non-performing loans in relation to the total amount of loans made to third parties, eliminating loans to other banks (Brastama and Yadnya, 2020). NPLs have a direct effect on bank revenue. The risk faced by the bank increases with the quantity of non-performing loans, which is one of the service products offered by the banking sector. This implies that the performance of the banking sector is not excellent.

The influence of NPLs on the profitability of banks is an extensively discussed issue. The majority of empirical evidence supports the adverse effect of NPL on the profitability of commercial banks (Karim et al., 2023; Maseke & Swartz, 2021; Stephen Kingu et al., 2018; Uddin, 2022). In this situation, retail banking's primary activity, i.e., lending and non-performing loans (NPLs), has attracted regulators' concern in Nepal in recent years because many Nepalese commercial banks are still having problems getting rid of NPLs that appeared on their accounts receivable during the financial meltdown. Due to pressure from various institutions for a more accurate assessment of loan portfolios during a time of historically low interest rates and low bank profitability, Nepalese commercial banks have faced a particularly difficult period in recent years. As a result, there has been a need to further investigate banks' asset quality and transparency from both a regulatory and accounting perspective.

However, Pokharel (2020) reported the positive influence of NPL on the profitability of banks; many studies, such as Gnawali (2018), Bhattarai (2020), Shrestha (2020), and Shrestha (2022), found the negative impact of NPL on the profitability of Nepalese commercial banks. Therefore, this paper aims to evaluate the effect of NPL on the profitability of Nepalese commercial banks. The remaining part of the paper is organized as follows: *Section II* deals with the review of literature; *Section III* presents the conceptual framework and operational definition of the variables; *Section IV* presents the data and research methodology; *Section V* presents the results and discussion; and finally, *Section VI* presents the conclusions and implications.

Review of Literature

With the aim of evaluating the effect of NPLs on bank profitability, Christaria et al. (2016) used the annual data of banks listed on the Indonesia Stock Exchange from 2012 to 2014. The examination of the data involved multiple regressions. The result indicated that NPLs significantly affect ROA. Bhattarai (2016) also examined the effect of NPLs on the profitability of Nepalese commercial banks using aggregated data from 14 commercial banks with 77 observations from 2010 to 2015, and the estimated regression results showed that the NPLs have a significant negative effect on ROA. Additionally, the paper declared that NPLs, along with other factors like bank size, cost per loan asset, and gross domestic product growth rate, affect the profitability of Nepalese commercial banks. In a similar way, Ozurumba (2016) examined the impact of NPLs on the performance of commercial banks in Nigeria. The study, which focused particularly on Access Bank, United Bank for Africa, and Union Bank of Nigeria Plc, spanned the years 2000 to 2013. The author found a significant negative influence of NPLs on ROA.

Vinh (2017) examined the effect of NPLs on the profitability and lending behavior of Vietnamese commercial banks. The study was based on the annual panel data from 2005 to 2015. The paper revealed that the NPLs have a significant negative effect on profitability and lending practices. Consequently, Khan, Siddique, and Sarwar (2020) examined the factors that contribute to NPLs using the banking industry in Pakistan as a case study from 2005 to 2017. The author found a weak but statistically significant negative correlation between operating efficiency, profitability metrics, and NPLs. Furthermore, Silaban (2017) studied the bank's health level, consisting of NPLs, on bank profitability based on data from all 40 state and private banks listed on the Indonesian Stock Exchange. Observations were conducted from 2012 to 2016. The results concluded that NPLs have a significant negative effect on (ROA) bank profitability. Kingu et al. (2018) utilized panel data from 16 commercial banks operating in Tanzania from 2007 to 2015. The study indicated a link between the occurrence of NPLs and profitability levels, and they also have theoretical and management ramifications for practitioners and decision-makers.

Brastama and Yadnya (2020) examined the role of profitability in NPLs in the data of four companies listed on the Indonesia Stock Exchange in 2011–2018. By utilizing simple regression analysis, the results concluded that the NPLs have a negative effect on the ROA. However, the effect of NPLs on listed commercial banks' profitability (ROA) in the Euro-Mediterranean region was examined by Psaila, Spiteri, and Grima in 2019. In the observed panel data from the 35 listed commercial banks' annual reports from 2013 to 2017, a purposive research design was used. Applying descriptive statistics and four regression models, including Arellano-Bond (AB), Fixed Effects (FE), Random Effects (RE), and the Pooled OLS regression model, were utilized to examine the data. The results showed that NPLs have a negative effect on ROA.

Additionally, Do, Ngo, and Phung (2020) examined the effect of NPLs on the ability to make profit of Vietnamese commercial banks spanning 2008 to 2017, and the result indicated that NPLs have a significant negative effect on the bank’s profitability. In another study, Çollaku and Aliu (2021) applied multivariable linear regression to test the effect of NPLs on Kosovo Bank's profitability in the data from 2010 to 2019. The results showed the inverse effect of NPLs on profitability. Adebisi and Matthew (2015) created a well-balanced secondary data source for the years 2006–2012, and regression statistical tools were used to evaluate the data in order to study how NPLs affect the profitability of Nigerian banks' businesses. The results showed that while NPLs and ROA had no link, there was a relationship between NPLs and ROE.

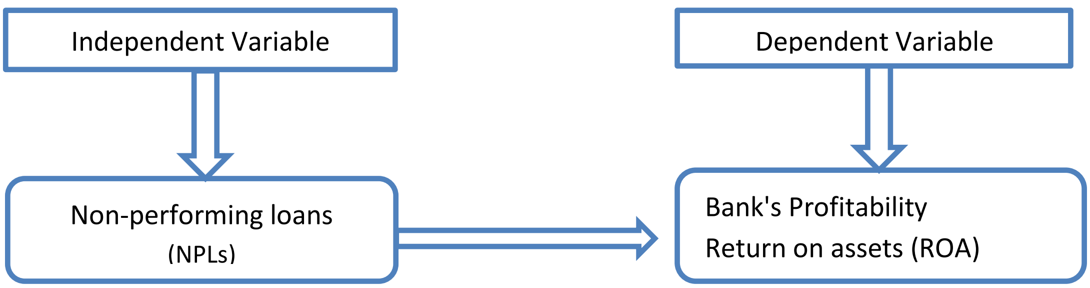
Moreover, Singh et al. (2021) gathered data from the years 2015 to 2019 to study the effect of NPL on conventional banks in Nepal. The data was evaluated using multiple regression analysis, which confirmed that ROA has a significant positive effect on NPLs. Thus, the authors suggested that bankers and policymakers should carefully consider this when making decisions involving NPLs. Similarly, using panel data from 12 commercial banks for the period of 2009 to 2018, Alshebmi et al. (2020) investigated the relationship between NPLs and selected specific bank determinants in the Saudi banking sector. The study found a negative, insignificant association between the NPLs and ROA. Furthermore, in the study of the bank-specific and macroeconomic causes of NPLs as well as their influence on profitability, Panta (2018) discovered that NPLS had a significant negative effect on ROA by using secondary data from seven joint venture banks from 2006 to 2017.

Thornton and Tommaso (2021) attempted to examine the effect of NPLs on bank profitability using panel data from 521 banks from 28 European countries. The study indicated that there is a significant positive effect of NPLs on bank profitability. Similarly, Jolevski (2017) discovered the influence of the NPLs on profitability indicators in the banking system of the Republic of Macedonia for the period 2007–2015. The study concluded that increasing the NPLs has an influence on reducing bank profitability. Swandewi and Purnawati (2021) discovered the effect of NPLs on return on assets with a capital adequacy ratio as a mediator. This research is conducted at banking companies listed on the Indonesia Stock Exchange with a panel data sample by observing the company's statements of 24 banks. The results show that NPLs have a negative and significant relationship with ROA.

Maaji et al. (2023) analyzed the relationship of NPLs with the profitability of banks operating in Cambodia. The study employed the annual data of 35 commercial banks from 2017 to 2022. The paper revealed that, along with other factors such as bank size, inflation, and loan-to-deposit ratio, NPLs also play a significant role in determining profitability. Further, the study observed a negative association between NPLs and profitability. Likewise, the negative association between NPLs and profitability was also reported by Olumide et al. (2024). The author used the annual data of a Nigerian commercial bank from 2010 to 2021 and used ROE as a measure of profitability. Based on the result of the regression analysis, the author concluded that NPLs play a significant negative role in determining profitability. However, the above discussed literature review verified the significant influence of NPL on profitability, their findings are inclusive. Thus, there is a need to identify the impact of NPL on profitability of banks in Nepalese context.

Conceptual Framework and Operational Definition of the Variables

Figure: 1 Conceptual framework



Non-performing Loans (NPLs): Bank loans that are prone to late repayment or are not expected to be repaid by the borrower are classified as NPLs. The financial crisis and the ensuing recessions made it impossible for debtors to repay their loans. As a result, several financial institutions noticed an increase in NPLs on their financial records. NPLs are credits that are of poor quality, questionable, and lost (Silaban, 2017). Furthermore, Bhattarai (2016) explained that due to the potential impact on commercial banks' revenue, NPLs have come to be a major concern among academia and financial organizations. Since it specifies the ratio between the amount of loan losses and the total quantity of loans, the NPLs provide an overall glimpse of how banks manage their credit risk. NPLs can be obtained as follows:

$$\text{NPLs} = \frac{\text{Total non-performing Loans}}{\text{Total Loan}}$$

Profitability gauges a company's capacity for efficient and effective management to generate profits at a given level of sales, assets, equity, and investment. A major influence on the growth of the financial and economic systems is profitability (Ulzanah & Murtaqi, 2015; Hanafi, Mamduh, & Abdual, 2003). Sarwar et al. (2018) explained that external factors include financial risk, GDP, interest rate, exchange rate, inflation, governmental regulations, etc., while internal factors or management factors include bank size, capital adequacy, asset quality, asset management, liquidity, management quality, management policies, capital ratios, risk management, etc. The financial system of a nation is heavily dependent on its banking sector; hence, the profitability of that industry is crucial. By comparing the company's income with its resources over the course of a year, profitability illustrates how well the business is performing. Consequently, without being profitable, banks cannot operate, which not only enables them to pay for costs and losses but also rewards investors and depositors. Thus, the management of the company has to regulate the efficient and effective utilization of its resources so as to make the most profit and satisfy the company's goals.

Return on Assets (ROA): ROA measures how much the bank is earning after tax for each investment in the assets of the firm and shows the efficiency of the management in generating earnings from a single asset in rupees. Subsequently, the return earned on the investment made by common stockholders in the company is measured by return on assets, in agreement with Gitman (2009). In other words, Ulzanah et al. (2015) compare the net profit with the firm's total assets and indicate the efficiency and effectiveness of the firm’s management in gaining profit by managing its total assets, which is useful for comparing companies in the same industry. In fact, a higher ROA is preferable as it gauges how well a company's management generates returns from its investments in assets, and higher assets can also result in higher profits (Sudana, 2011; Bodie et al., 2008).

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}}$$

Thus, an attempt has been made to investigate the cause-and-effect link between NPLs and the Banks's profitability in Nepal.

Objective of the Study

This study's purpose is to determine the effect of non-performing loans on bank's profitability of Nepalese commercial banks. Secondly, this study also aims to analyze the relationship between non-performing loans and bank's profitability.

Research Questions

This study has needed to experimentally examine the effect of variable that determines the bank's profitability of Nepalese commercial banks during the study period (2016/17-2022/23) by answering following research questions;

- Do non-performing loans effect on bank's profitability?
- What is relationship between non-performing loans with bank's profitability?

Hypothesis of the Study

Based on the above review of literature, this study has developed the following hypothesis.

H01: There is significant negative impact of non-performing loan on profitability of Nepalese commercial banks.

Data and Research Methodology

The study is based on secondary data taken from the annual reports of the respective banks. The data were collected from 10 banks out of 20 commercial banks in Nepal. This paper is based on the annual balance panel data for seven years, from 2016/17 to 2022/23. The descriptive analysis and linear regression methods were used in order to draw the conclusion.

Table 1

List of Sample Banks with Study Period and Number of Observations

S.N	Name of Bank	Study Period	No. of Observations
1	Global IME Bank Ltd.	2016/17-2022/23	7
2	Prime Commercial Bank Ltd.	2016/17-2022/23	7
3	Nepal SBI Bank Ltd.	2016/17-2022/23	7
4	Sanima Bank Ltd.	2016/17-2022/23	7
5	Citizens Bank International Ltd.	2016/17-2022/23	7
6	Laxmi Sunrise Bank Ltd.	2016/17-2022/23	7
7	Prabhu Bank Ltd.	2016/17-2022/23	7
8	Siddhartha Bank Ltd.	2016/17-2022/23	7
9	NMB Bank Nepal Ltd.	2016/17-2022/23	7
10	Rastriya Banijya Bank Ltd.	2016/17-2022/23	7
Total			70

Source: Annual Report of Sample Banks 2016/17 to 2022/23

Estimation of the Model

To achieve the aim of the study, the following econometric model is estimated.

$$ROA_{it} = \beta_0 + \beta_1 NPL_{it} + \varepsilon_{it}$$

Where, ROA is the return on assets, NPL is the non-performing loans, β_0 is the constant, β_1 is the coefficient to be estimated, and β1 is the error term.

Results and Discussion

Descriptive Analysis

The descriptive statistics used in this study consist of the number of observations, mean, standard deviation, and minimum and maximum values associated with the variables under consideration.

Table 2

Descriptive Statistics

Variables	Minimum	Maximum	Mean	Std. Deviation
ROA (%)	0.47	2.23	1.39	0.39
NPLs (%)	0.01	4.85	1.69	1.29

Table 2 depicts that the ROA of Nepalese commercial banks varies from 0.47 percent to 2.23 percent, leading to an average of 1.39 percent with a standard deviation of 0.39 percent. Similarly, the average value of NPLs is 1.69 percent, with a minimum value of 0.01 percent and a maximum value of 4.85 percent, and its standard deviation is 1.29 percent during the study period.

Regression Analysis

A regression analysis is a statistical tool that illustrates the relationship between two or more factors. Regression analysis is typically used to assess the impact of an explanatory variable on the dependent variable. Since, this study is based on the panel data, the best regression model between the random effect and fixed effect model is selected based on the result of Hausman test. The result of Hausman test shows the χ^2 value of 1.69 (p-value 0.1932>0.05), which suggest that random effect model is appropriate for the given set of data. Therefore, to identify the impact of NPL on profitability of Nepalese commercial banks, this study has estimated the regression model using random effect model. The regression result is presented in Table 3.

Table 3

Regression Result

	β	Std. Error	t	p
NPL	-.0887	.0357	-2.49	0.013
Cons.	1.5434	.0768	20.11	0.000
R^2 = 0.1060		χ^2 = 6.18		p = 0.013

Source: Calculation Based on Table 1

The result presented in Table 3 shows the R^2 value 0.1060, which means 10.60 percent of the variation in return on assets is explained by the predictor, i.e., NPLs. The χ^2 value 6.18 (P-value 0.013<0.05) specifies that the estimated model is a well-fitted model. Similarly, the result depicted in Table 3 shows that the beta coefficient of NPL is negative 0.0887 with a t-value negative 2.49 (p-value 0.013<0.01), which indicates that there is a significant negative impact of NPLs on the profitability of Nepalese commercial banks. This result is consistent with the findings of previous studies such as Azeem et al. (2014), Bhattarai (2016), Maaji et al. (2023), Olumide et al. (2024), and Purnawati (2021), whereas it contradicts the findings of Alshebmi et al. (2020) and Pokharel (2020) that claimed NPLs have a significant positive effect on ROA. Thus, the contradictory results regarding the impact of non-performing loans (NPLs) on the profitability of Nepalese commercial banks could arise from a variety of factors. Here are some possible reasons why studies might produce inconsistent or contradictory findings that may be differences in sample size and time frame, economic cycles, country specific factors, bank management and policies, bank size and diversification, regulatory framework, government policies, analytical methods, variables and definitions, global events, sectorial exposure, data reliability and transparency, management practices, cultural attitudes.

Conclusions and Implications

This study has investigated the effect of NPLs on the profitability of Nepalese commercial banks. Panel data from ten commercial banks with 70 observations for the period of 2016–17 to 2022–23 has been analyzed using a regression model. The estimated regression models reveal that NPLs have a substantial negative effect on ROA. The results of this study are useful to bank executives and decision-makers in enhancing the efficiency and lending practices of Nepalese commercial banks. The statistical study confirmed that one of the most significant elements influencing the movement and amount of the banking sector's profitability position is NPLs. the key messages of the study are it demonstrates that higher levels of non-performing loans lead to lower profitability in banks, and suggests that effective credit management is crucial for maintaining bank profitability with underscoring the importance of managing and reducing non-performing loans to improve financial performance.

The study contributes valuable insights into the critical relationship between non-performing loans and bank profitability offering practical implications for improving financial performance and fostering informed decision-making processes across different stakeholders such as policymakers, investors, researchers and bank executives who are looking to better understand and adopt the financial risks associated with high NPL ratios and more effective risk management policies and practices to maintain financial stability and profitability, and enriching the academic discourse and methodological advancements by demonstrating a robust approach on banking and finance sector in Nepal. This study recommends that Nepalese commercial banks should seek to enhance credit management and decrease NPLs in order to obtain higher profitability. Therefore, in order to keep NPLs as low as possible and sustain the high profitability of Nepal's commercial banks, senior management at the banks should ensure internal assessment that can be useful to detect weaknesses and quickly exercise corrective action, and current NRB directives should be seriously followed by Nepalese commercial banks. However, this paper has analyzed the impact of NPL on profitability of Nepalese commercial banks, several other factors may also influence on profitability. Thus, further study should be conducted by incorporating other factors as explanatory variables. Additionally, this paper is based on the panel data of 10 commercial banks for the period of 2016/17 to 2022/23, further studies can be conducted by incorporating the time series data of all commercial banks operating in Nepal.

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