



Integrated Risk Management and Its Impact on Financial Performance in Nepalese Commercial Banks

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Abstract

This study investigates the characteristics and relationships of risk factors—credit risk, operational risk, market risk, and non-performing loans (NPLs)—with financial performance metrics, specifically return on assets (ROA) and return on equity (ROE). It further examines the impact of these risks on the financial performance of Nepalese commercial banks. Using a descriptive and causal-comparative research design, the study analyzes secondary data from fiscal years 2012–13 to 2022–23, covering 19 commercial Rastriya Banijya Bank was excluded due to its absence from the stock market. Analytical tools such as descriptive statistics, correlation, and regression analysis were applied.

The results indicate that ROE is more variable than ROA, and operational and market risks show greater dispersion compared to credit risk and NPLs. A low degree of positive



relationship exists between most risk factors and performance metrics. Notably, NPLs negatively affect financial performance, while credit risk has a positive impact. The study recommends reducing NPLs and managing credit risk within acceptable limits to improve performance. These findings offer valuable insights into the influence of risk factors on bank performance and provide practical implications for financial institutions in emerging markets.

Keywords: Credit risk, Operational risk, Market risk, ROA, ROE, Commercial Banks

Introduction

Financial institutions are vital for the economic development of a nation, with commercial banks occupying a dominant position among other financial entities in Nepal. A well-functioning banking sector significantly contributes to economic growth (Barth et al., 2004). The survival, stability, and growth of banks largely depend on their profitability. However, over the past two decades, the stability of financial institutions has been challenged by factors such as political interference, non-performing loans (NPLs), and fluctuating interest rates. Banks must carefully monitor both microeconomic and macroeconomic factors to assess and manage risks effectively. Failure to do so can lead to bank failure, which may trigger a broader financial crisis, as seen during the Asian banking crisis (1997–1998) and the global financial crisis (2007–2008). Bank-specific factors like capital adequacy, credit risk, and liquidity ratios significantly influence the financial performance of Nigerian commercial banks (Yakubu & Egopija, 2021).

Borodovsky and Lore (2000) highlight the importance of risk management in preventing losses that could lead to institutional failure. Banks face various risks, including credit, liquidity, operational, interest rate, foreign exchange, and market risks. Cornett and Saunders (1999) classify these risks into three categories: financial, operational, and strategic. Hussain and Al-Ajmi (2012) identify credit, liquidity, and operational risks as the most pressing challenges for financial institutions. Santomero (1997) notes that even well-performing institutions can suffer significant losses due to credit exposures, which often stem from borrower defaults. Market risk arises from factors that impact the overall performance of financial markets, while credit risk occurs when borrowers fail to repay loans as agreed (Greuning & Bratanovic, 2003). Poor borrower solvency assessments by bank managers can also contribute to defaults. Among all risks, credit risk is considered the most critical in the banking industry, with Chijoriga (1997) describing it as the most severe. To mitigate credit risk, banks should accurately measure it and set up appropriate provisions for doubtful debts. Managing credit risk effectively is essential for avoiding losses (Altman, 2002). Banks and monetary authorities should ensure asset quality is maintained and non-performing loans are minimized to improve performance (Mwangi, Irungu, & Mutwiri, 2022).

Drehmann and Nikolaou (2009) explain that a bank may eventually lose the ability to meet its obligations promptly. According to the Basel Committee on Banking Supervision (2004), operational risk arises from losses caused by failures in internal processes or external events. Barros and Torre-Enciso (2012) describe operational risk management as a specialized



discipline with its own tools, processes, and organizational structure, similar to the management of credit or market risks. Operational risks are a real concern in banking and require effective management to avoid bankruptcy.

Recent studies have explored various aspects of financial performance in Nepalese banks, highlighting key determinants such as risk management, mergers, and employee retention. For instance, Kandel and Bhattra (2024) conducted a comprehensive analysis of pre- and post-merger financial performance of commercial banks in Nepal, emphasizing the importance of effective integration strategies. Similarly, Adhikari (2017) examined the effects of the merger law wave (2012–2015) on the performance of Nepalese banks, noting improvements in operational efficiency and profitability. Kandel (2023) delved into the organizational factors affecting employee retention, demonstrating how these elements indirectly influence financial performance.

Emerging challenges like credit risk, liquidity management, and non-performing loans (NPLs) remain critical concerns for the banking sector. Dhungana (2022) highlighted the adverse impact of NPLs on Nepalese commercial banks' profitability and suggested that stricter credit evaluation mechanisms could mitigate this issue. Bista (2023) further analyzed the relationship between credit risk management and financial performance in Nepalese banks, finding a strong negative correlation between NPLs and key performance indicators such as return on assets (ROA) and return on equity (ROE).

These studies underscore the importance of addressing multiple risk factors collectively to improve financial performance in Nepalese banks. By integrating findings from both global and local perspectives, the current research seeks to provide actionable insights into mitigating risks and enhancing overall performance.

Existing research tends to focus on individual types of risks (Li, 2005; Aduda and Gitonga, 2011; Kaaya and Pastory, 2013; Alzorqan, 2014; Marozva, 2015; Noman et al., 2015; Chen et al., 2018; Munangi and Bongani, 2020). Among the most critical risks faced by financial institutions are credit, liquidity, and operational risks (Hussain and Al-Ajmi, 2012). These risks are typically firm-specific, meaning that their management largely depends on the effectiveness of the bank's internal processes. Additionally, government intervention, limited competition, legal frameworks, and the strict control of GCC central banks have been found to positively influence bank performance. Unlike conventional banks, asset diversification has been shown to add value to Islamic banks (AlKhouri & Arouri, 2019). For this reason, it is essential to study these three major risks and their combined impact on bank performance, particularly in developing countries.

Emerging markets play a significant role in driving global economic growth (Arouri et al., 2013). According to Boubaker and Nguyen (2014), the economic and financial dynamics of developing countries differ significantly from those of developed nations. Due to their high growth potential and improving infrastructure, developing markets are increasingly attractive to investors, offering promising investment opportunities. Effective identification of credit risk has been shown to reduce the annual growth of non-performing assets (NPAs) or loans (Sharifi,



Halдар, & Rao, 2019). Similarly, risk demonstrates a negative impact on corporate financial performance (CFP) when evaluated with a two-year lag (Devie, Liman, Tarigan, & Jie, 2019). This study addresses a key gap in the literature by examining the combined impact of credit, market, and operational risks on the financial performance of listed commercial banks in Nepal. While prior studies have analyzed these risks individually, this research is the first to evaluate their collective influence on financial performance in Nepal's banking sector. For instance, liquidity creation has been found to negatively correlate with bank performance when measured by return on average equity (Sahyouni & Wang, 2019). In contrast, liquidity risk has no significant effect on the financial performance of Rwanda's listed commercial banks, although credit and market risks do (Akimana & Tarus, 2024).

Other factors, such as equity, foreign ownership, off-balance sheet activities, GDP growth, real interest rates, and market concentration, also contribute to bank profitability (Ahamad, 2019). South Asian banks effectively manage liquidity risks by maintaining sufficient current assets to meet obligations. Non-performing loans (NPLs), which occur when borrowers fail to make scheduled payments for a prolonged period (e.g., 90 days), adversely affect financial performance. For example, a rise in NPLs reduces U.S. GDP growth, particularly in sectors like construction (Ghosh, 2017). In Nepal, non-performing loans similarly negatively impact the financial performance of commercial banks (Adhikari, 2017).

The financial performance of commercial banks has been widely studied globally and locally. Recent research highlights that effective risk management practices, credit risk evaluation, and operational efficiency are crucial for banks' profitability and sustainability. Hussain and Al-Ajmi (2012) found that credit, liquidity, and operational risks are the most significant challenges for banks. Similarly, Santomero (1997) emphasized that poor risk management practices can lead to substantial financial losses.

In Nepal, the banking sector has undergone significant transformations in recent years, driven by regulatory reforms, mergers, and advancements in technology. Dhakal (2022) studied the impact of digitization on the operational efficiency of Nepalese banks and found that the adoption of digital banking has improved service delivery and profitability. Furthermore, Koirala and Sharma (2023) examined the role of corporate governance in mitigating risks in Nepalese commercial banks, revealing that strong governance practices enhance financial performance.

Non-performing loans (NPLs) continue to be a major concern in the Nepalese banking sector. According to Bhattarai (2021), the rising levels of NPLs negatively impact profitability and erode capital reserves. Similarly, Ghimire and Adhikari (2022) highlighted the need for stricter credit monitoring mechanisms to address the issue of NPLs effectively.

While previous studies have focused on specific aspects such as credit risk, operational efficiency, and governance, there is a lack of comprehensive research examining the combined effects of credit, operational, market, and liquidity risks on the financial performance of Nepalese banks



This study seeks to address the existing research gap by investigating the effects of various risk factors—credit risk, operational risk, market risk, and non-performing loans—on the financial performance of Nepalese commercial banks. Financial performance is measured using key indicators such as return on assets (ROA) and return on equity (ROE). Additionally, the study examines the relationships between these risk factors and performance metrics, both collectively and individually, to provide a comprehensive understanding of their influence on Nepalese banks' profitability and sustainability (Kandel, 2023).

The primary objectives of this research are to evaluate the combined impact of credit risk, operational risk, market risk, and liquidity risk on the financial performance of Nepalese commercial banks. It aims to analyze the relationship between risk management practices and financial performance indicators such as ROA and ROE. Moreover, the study seeks to identify strategies for improving risk management in Nepalese commercial banks to enhance overall financial performance. These objectives ensure a detailed exploration of the risks and their implications for banking efficiency.

While there is extensive literature on risk management and bank performance, most studies focus on individual risk types or emphasize global banking practices, often overlooking the unique regulatory, economic, and operational challenges faced by Nepalese banks. There is limited research that holistically examines the integrated impact of multiple risk factors—credit, operational, market, and liquidity risks—on the financial performance of Nepalese commercial banks. This study aims to fill this gap by providing valuable insights into how these risks influence ROA and ROE and by identifying actionable strategies to strengthen risk management in the Nepalese banking sector.

Methods

Indicator of financial performance of this study were return on assets (ROA) and return on equity (ROE). Sigillary, indicator of risk in this study were credit risk, operation risk, market risk, and non-performing loan (NPL). Secondary sources of data were used in this study. This study occupied nineteen commercial banks out of twenty. Rastriya Banijya Bank was excluded in this study due to not listed in stock market. Data were collected through annual audit report of respective bank from fiscal year 2012/13 to 2022/23. This study focused on individual characteristics of mention variable i.e., mean, maximum value, minimum value, standard deviation, and coefficient of variance due to this reason it was used descriptive research design. This study also focused on relationship between above mention variable as well as this study used multiple regression analysis to measure the impact of different risk factor on financial performance. So, correlational and casual comparative research design were used by this study. Following regression models were used in this study.

$$ROA_{i,t} = \alpha_0 + \beta_1 CR_{i,t} + \beta_2 OR_{i,t} + \beta_3 MR_{i,t} + \beta_4 NPL_{i,t} + \varepsilon_{i,t}, \dots (i)$$

Dependent variable is return on assets of a firm i in a year t . independent variable are credit risk, operational risk, market risk, and non-performing loan of a firm i in a year t .

$$ROE_{i,t} = \alpha_0 + \beta_1 CR_{i,t} + \beta_2 NPL_{i,t} + \varepsilon_{i,t}, \dots (ii)$$

Return on equity of firm i in a year t is dependent variable. Credit risk and non-performing loan of a firm i in a year t are independent variables.

Results

Table 1

Descriptive Statistics

Variables	Maximum	Minimum	Mean	Std. dev.	C.V.
ROA	0.0363	-0.034	0.015	0.007	45.502
ROE	0.606	-3.613	0.127	0.293	230.384
CR	181251255708	9333277000	61266787619.406	33872268721.580	55.286
OR	7111149947000	155270000	45347645964.324	526846867254.934	1161.795
MR	425030841000	1248490	2955081101.769	31478570585.913	1065.235
NPL	4494341394	3582854	924672381.217	950830495.205	102.828

Source: *www.nrb.org*

Table 1 presents the descriptive statistics of the key variables used in the study, including their maximum, minimum, mean, standard deviation, and coefficient of variation (C.V.). These statistics provide insights into the distribution and variability of the data across the analyzed sample of Nepalese commercial banks.

Return on Assets (ROA): The ROA values range from a maximum of 0.0363826 to a minimum of -0.0343399, with a mean of 0.0158981 and a standard deviation of 0.0072341. The coefficient of variation (C.V.) is 45.5029, indicating moderate variability in ROA across the sample.

Return on Equity (ROE): ROE shows a much broader range, from 0.606 to -3.613, with a mean of 0.127 and a standard deviation of 0.293. The C.V. is significantly higher at 230.384, reflecting substantial variability in ROE, likely due to differences in profitability and leverage among the banks.

Credit Risk (CR): CR exhibits extreme variability, with a maximum of 181,251,255,708.00 and a minimum of 9,333,277,000. The mean is 61,266,787,619, and the standard deviation is 33,872,268,721, resulting in a C.V. of 55.286. This reflects considerable disparities in the credit risk levels across banks.

Operational Risk (OR): OR demonstrates the highest variability in the dataset, with a maximum of 7,111,149,947,000 and a minimum of 155,270,000. The mean is 45,347,645,964.3242, while the standard deviation is a staggering 526,846,867,254.934, leading to a C.V. of 1161.795. Such extreme variability indicates significant differences in operational exposures among banks.

Market Risk (MR): MR also shows substantial variability, with a maximum of 425,030,841,000.00 and a minimum of 1,248,490. The mean is 2,955,081,101.769, with a standard deviation of 31,478,570,585.913, resulting in a C.V. of 1065.235, highlighting significant fluctuations in market risk exposure.

Non-Performing Loans (NPL): NPL ranges from 4,494,341,394.00 to 3,582,854, with a mean of 924,672,381.217 and a standard deviation of 950,830,495.205. The C.V. is 102.8289, indicating a high level of variability in loan defaults across the banks.

The descriptive statistics in **Table 1** reveal that ROE, OR, and MR have the highest variability (as indicated by their C.V.), suggesting considerable differences in profitability, operational risk, and market risk exposure among Nepalese commercial banks. These findings underscore the importance of robust risk management practices to mitigate financial instability and improve performance.

Table 2

Correlation Analysis

Variables	ROA	ROE	CR	OR	MR	NPL
ROA	1.00					
ROE	.596**	1.00				
CR	.443**	.139	1.000			
OR	.567**	.320**	.848**	1.00		
MR	.337**	.267**	.302**	.448**	1.00	
NPL	.068	-.108	.425**	.393**	-.079	1.00

***.* Correlation is significant at the 0.01 level (2-tailed) and ***. Correlation is significant at the 0.05 level (2-tailed)

Table 2 presents the correlation matrix, showing the relationships between the key variables in the study: ROA (Return on Assets), ROE (Return on Equity), CR (Credit Risk), OR (Operational Risk), MR (Market Risk), and NPL (Non-Performing Loans). Correlation coefficients range from -1 to +1, where values closer to +1 or -1 indicate strong positive or negative relationships, respectively.

The correlation analysis reveals several key relationships between financial performance indicators and risk factors in Nepalese commercial banks. There is a moderately strong positive correlation ($r=0.596$, $p<0.01$, $r=0.596$, $p<0.01$) between return on assets (ROA) and return on equity (ROE), suggesting that an increase in asset-based returns tends to coincide with higher equity returns. ROA also shows a positive correlation with credit risk ($r=0.443$, $p<0.01$, $r=0.443$, $p<0.01$), indicating that better credit risk management enhances asset-based profitability. Furthermore, there is a strong positive correlation ($r=0.567$, $p<0.01$, $r=0.567$, $p<0.01$) between ROA and operational risk, emphasizing the critical role of efficient operations in driving profitability.

The correlation between ROA and market risk is moderate ($r=0.337$, $p<0.01$, $r=0.337$, $p<0.01$), suggesting that market-related exposures have a lesser impact on profitability compared to operational and credit risks. Interestingly, the correlation between ROA and non-performing loans (NPL) is weak and statistically insignificant ($r=0.068$, $p>0.05$, $r=0.068$, $p>0.05$), indicating that NPLs may indirectly affect profitability through other factors. Additionally, a moderate positive correlation ($r=0.320$, $p<0.01$, $r=0.320$,

$p < 0.01$ $r=0.320$, $p < 0.01$) exists between ROE and operational risk, suggesting that operational efficiencies also influence equity-based returns.

Interrelationships among risks reveal a high correlation between credit risk (CR) and operational risk ($r=0.848$, $p < 0.01$ $r = 0.848$, $p < 0.01$ $r=0.848$, $p < 0.01$), highlighting their interdependence. Both risks are also moderately correlated with market risk (MR), underscoring the interconnected nature of these risk factors in banking operations. NPL shows a positive correlation with credit risk ($r=0.425$, $p < 0.01$ $r = 0.425$, $p < 0.01$ $r=0.425$, $p < 0.01$) and operational risk ($r=0.393$, $p < 0.01$ $r = 0.393$, $p < 0.01$ $r=0.393$, $p < 0.01$), indicating that higher loan defaults are associated with increased credit and operational risks. However, NPLs have no significant correlation with ROA, ROE, or MR, suggesting their impact is mediated through other channels. These findings emphasize the need for integrated risk management to enhance profitability and stability in the banking sector.

The findings in **Table 2** underscore the interconnectedness of risk factors and their collective impact on financial performance. While ROA and ROE are influenced by CR, OR, and MR, the weak correlation of NPL with profitability measures suggests that its impact might depend on other mitigating factors such as effective loan recovery mechanisms or provisioning policies. These insights highlight the importance of integrated risk management approaches to enhance financial performance in Nepalese commercial banks.

Regression analysis

Table three has presented: all regression models are statistically significant at 1 % LOS. Value of variation inflation factor (VIF) of each independent variable of three regression models is less than 10. So, all regression models are free from multicollinearity problem. Similarly, Value of D.W. of each regression model has approved all regression models are free from autocorrelation problem. All regression models are free from heteroscedasticity problem.

Table 3

Dependent variable is Return on Assets

Variables	Model 1			Model 2		
	Std. Coeff. (β)	t-Value	VIF	Std. Coeff. (β)	t-Value	VIF
Constants	0.392*		1.179	0.395*	11.089	1.189
CR _{i,t}		11.141	1.179	-0.029	5.185	1.010
OR _{i,t}	-0.134***	5.181	1.179	-0.135***	-0.415	1.179
MR _{i,t}		-1.777				
NPL _{i,t}	-0.134***	-1.777	1.179	-0.135***	-1.780	1.179
R ²	0.131			0.132		
F	13.456*			8.987*		
D.W.	1.894			1.898		

Note. * Significant at 0.01 level. ** Significant at 0.05 level. *** Significant at 0.10 level.

The table 3 provides a comprehensive overview of the regression analysis results for three models, each evaluating the impact of credit risk (CR_{i,t}), operational risk (OR_{i,t}), market risk (MR_{i,t}), and non-performing loans (NPL_{i,t}) on financial performance, specifically return on assets (ROA). These models aim to identify which factors significantly influence profitability in Nepalese commercial banks.

Model 1:

$$ROA = 0.392 + (-0.134 \times OR_{i,t}) + (-0.134 \times NPL_{i,t})$$

In **Model 1**, operational risk (OR_{i,t}) and non-performing loans (NPL_{i,t}) are included as predictors of ROA. The regression equation reveals that both OR_{i,t} ($\beta = -0.134$) and NPL_{i,t} ($\beta = -0.134$) negatively affect ROA, with both coefficients being statistically significant at $p < 0.10$. This indicates that inefficiencies in operations and higher loan defaults contribute to reduced profitability. The R^2 value of 0.131 suggests that 13.1% of the variation in ROA is explained by the model, while the F-statistic ($F = 13.456$, $p < 0.$) confirms the overall significance of the model. The Durbin-Watson (D.W.) value of 1.894 indicates no significant autocorrelation in the residuals.

Model 2:

$$ROA = 0.395 + (-0.029 \times CR_{i,t}) + (-0.135 \times OR_{i,t}) + (-0.135 \times NPL_{i,t})$$

In **Model 2**, credit risk (CR_{i,t}) is added as an additional independent variable. Here, CR_{i,t} has a small negative coefficient ($\beta = -0.029$) but is not statistically significant, suggesting a minimal effect on ROA. Operational risk (OR_{i,t}) and non-performing loans (NPL_{i,t}) remain significant with coefficients of -0.135 each ($p < 0.10$). The model's R^2 value increases slightly to 0.132, indicating a marginal improvement in explanatory power. The F-statistic ($F = 8.987$, $p < 0.01$) and D.W. value (1.898) reaffirms the model's robustness.

Across all models, operational risk (OR_{i,t}) demonstrates a significant negative impact on ROA, indicating that inefficiencies in operational processes are detrimental to profitability. This finding underscores the critical importance of effective operational risk management in improving financial performance. Similarly, non-performing loans (NPL_{i,t}) consistently show a significant negative relationship with ROA, highlighting the adverse effects of high loan defaults on financial performance. Managing NPLs is essential for sustaining profitability in Nepalese commercial banks. In contrast, credit risk (CR_{i,t}) exhibits a minimal and statistically insignificant impact on ROA, suggesting it is less influential compared to other risks in this context. Market risk (MR_{i,t}) is excluded from the regression models, likely due to its insignificant contribution or multicollinearity with other variables, indicating that market-related exposures may not substantially affect profitability in the analyzed scenario.

The R^2 values across all models are approximately 0.13, indicating that the independent variables explain about 13% of the variation in ROA. While the explanatory power is modest, the significant F-statistics confirm the overall validity and robustness of the models. These findings validate the relationships between the included variables and financial performance, emphasizing the need for targeted strategies to manage operational risk and NPLs for improved profitability.

The regression analysis highlights that operational risk ($OR_{i,t}$) and non-performing loans ($NPL_{i,t}$) are the most critical factors negatively affecting financial performance (ROA) in Nepalese commercial banks. Credit risk ($CR_{i,t}$) has a minimal effect, while market risk ($MR_{i,t}$) does not feature in the models. These findings emphasize the need for effective operational and credit risk management strategies to enhance profitability and stability in the banking sector.

Table 4

Regression Analysis for Return on Equity (ROE)

Variables	Model 1			Model 2		
	Std. Coeff. (β)	T Value	VIF	Std. Coeff. (β)	T Value	VIF
Constants	0.412*			0.415*	10.865	1.190
$CR_{i,t}$				0.045	3.212	1.012
$OR_{i,t}$	-0.128***	-5.234	1.186	-0.132***	-0.478	1.190
$MR_{i,t}$		-1.932				
$NPL_{i,t}$	-0.140***	-2.134	1.190	-0.138***	-2.126	1.192
R^2	0.125			0.127		
F	12.134*			9.213*		
D.W.	1.889			1.892		

Note. * Significant at 0.01 level. ** Significant at 0.05 level. *** Significant at 0.10 level.

Regression Analysis for Return on Equity (ROE)

Table 4 provides a comprehensive overview of the regression analysis results for three models, each evaluating the impact of credit risk ($CR_{i,t}$), operational risk ($OR_{i,t}$), market risk ($MR_{i,t}$), and non-performing loans ($NPL_{i,t}$) on financial performance, specifically return on equity (ROE). These models aim to identify which factors significantly influence profitability in Nepalese commercial banks.

Model 1:

$$ROE = 0.412 - 0.128 \times OR_{i,t} - 0.140 \times NPL_{i,t}$$

In Model 1, operational risk ($OR_{i,t}$) and non-performing loans ($NPL_{i,t}$) are included as predictors of ROE. The regression equation reveals that both $OR_{i,t}$ ($\beta = -0.128$) and $NPL_{i,t}$ ($\beta = -0.140$) negatively affect ROE, with both coefficients being statistically significant at $p < 0.10$. This indicates that inefficiencies in operations and higher loan defaults reduce profitability. The $R^2 = 0.125$ suggests that 12.5% of the variation in ROE is explained by the model. The F-statistic ($F = 12.134$, $p < 0.01$) confirms the overall significance of the model. The Durbin-Watson (D.W.) value of 1.889 indicates no significant autocorrelation in the residuals.

Model 2:

$$ROE = 0.415 + 0.045 \times CR_{i,t} - 0.132 \times OR_{i,t} - 0.138 \times NPL_{i,t}$$

In Model 2, credit risk ($CR_{i,t}$) is added as an additional independent variable. Here, $CR_{i,t}$ has a small positive coefficient ($\beta = 0.045$) but is not statistically significant,

suggesting a minimal effect on ROE. Operational risk ($OR_{i,t}$) and non-performing loans ($NPL_{i,t}$) remain significant with coefficients of -0.132 and -0.138 , respectively ($p < 0.10$). The model's $R^2 = 0.127$ indicates a slight improvement in explanatory power. The F-statistic ($F = 9.213$, $p < 0.01$) and D.W. value (1.892) confirms the model's strength.

Across all two models, operational risk ($OR_{i,t}$) has a significant negative impact on ROE, indicating that inefficiencies in operational processes directly reduce profitability. This emphasizes the critical need for banks to address operational shortcomings to enhance equity-based returns. Similarly, non-performing loans ($NPL_{i,t}$) consistently exhibit a significant negative relationship with ROE, underscoring the detrimental effects of high loan defaults on financial performance. Effective management of NPLs is crucial for maintaining profitability and financial stability. In contrast, credit risk ($CR_{i,t}$) shows a minimal and statistically insignificant effect on ROE, suggesting that its influence on equity-based returns is limited in the analyzed context. Market risk ($MR_{i,t}$) is excluded from the models, likely due to its insignificant contribution or multicollinearity with other variables, indicating it plays a negligible role in determining profitability in this scenario.

The R^2 values across all models hover around 0.13 , indicating that approximately 13% of the variation in ROE is explained by the independent variables. Although the explanatory power is modest, the significant F-statistics confirm the overall validity and robustness of the models. These findings highlight the critical role of managing operational risk and NPLs while showing that other risks, like credit and market risks, have limited influence on ROE in the current context.

The regression analysis highlights that operational risk ($OR_{i,t}$) and non-performing loans ($NPL_{i,t}$) are the most critical factors negatively affecting financial performance (ROE) in Nepalese commercial banks. Credit risk ($CR_{i,t}$) has a minimal effect, while market risk ($MR_{i,t}$) does not feature in the models. These findings emphasize the need for effective operational and credit risk management strategies to enhance profitability and stability in the banking sector.

Discussion

The findings of this study reveal several key insights into the relationship between risk factors and financial performance in Nepalese commercial banks. Among the performance indicators, return on equity (ROE) exhibited higher variability compared to return on assets (ROA). This result aligns with the observations of Hunjra et al. (2020), who highlighted the broader fluctuations in equity-based returns due to factors like leverage and capital structure.

Among the risk factors, operational risk demonstrated the highest variability, followed by market risk, while credit risk showed relatively low variability compared to non-performing loans (NPLs). The study identified a low degree of positive correlation between risk factors and performance variables, indicating limited direct influence of risks like credit and market risks on financial performance. However, NPLs had a significant inverse impact on both ROA and ROE, consistent with the findings of Hunjra et al. (2020) and Adhikari (2017). This



underscores the detrimental effects of high loan defaults on profitability, reinforcing the importance of stringent credit evaluation and recovery processes.

Credit risk, on the other hand, exhibited a positive effect on ROA and ROE, contrary to the results of Hunjra et al. (2020). This divergence may be attributed to context-specific factors in Nepal, such as the regulatory environment and credit portfolio composition. Interestingly, neither operational risk nor market risk showed significant impacts on ROA or ROE, consistent with the findings of Kandel and Bhattraï (2024). As a result, the study excluded the measurement of their effects on ROE, further emphasizing their limited influence on financial performance.

These findings align with existing theoretical frameworks that suggest a negative relationship between NPLs and financial performance, highlighting the critical role of effective NPL management in sustaining profitability (Kandel & Timilsina, 2024). Additionally, the results suggest that bearing credit risk can enhance ROA and ROE, offering an incentive for banks to optimize their credit portfolios without significantly increasing their risk exposure.

The absence of market risk (MRI_t) in the models indicates that it does not significantly influence ROE and ROA in the context of Nepalese commercial banks, at least within the scope of this study. This finding aligns with the notion that other factors, such as operational inefficiencies and loan defaults, play a more critical role in determining financial performance (Kandel & Bhattraï, 2024). Future research could revisit market risk with different methodologies to evaluate its potential impact.

Conclusion

This study reinforces the criticality of managing NPLs to safeguard profitability and highlights the unique context in which credit risk can positively influence financial performance. While operational and market risks showed limited impacts in this study, future research should explore these dimensions with larger datasets and additional performance metrics. Addressing the gaps related to liquidity risk and foreign exchange risk will further enrich the understanding of risk management and its implications for financial performance in Nepalese commercial banks.

Return on equity is highly dispersed and return on assets is also dispersed but it is low in comparison to return on equity due to non-performing loan, credit risk, and other different factors which are not included in this study. The Bank's credit risk in relation to a financial instrument is the risk that its customer or counter party fails to discharge its obligation in accordance with agreed terms and cause the Bank to incur a financial loss but credit risk positive effect to increase on return on assets and return on equity.

Contributions and Limitations

This study analyzes the financial performance of Nepalese commercial banks over eleven fiscal years (2012/13 to 2022/23) and 19 banks, offering insights into risk-performance dynamics. Despite its contributions, the study has limitations. It uses a restricted time frame and sample size, potentially limiting robustness, and focuses narrowly on ROA and ROE, excluding broader financial metrics. Furthermore, it omits liquidity risk and foreign exchange risk due to



data unavailability. Future research should expand observations, include diverse performance metrics, and address these exclusions for a more comprehensive analysis of financial performance.

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