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Risk and Resilience: Examining the Role of Capital Adequacy and Credit Risk in Shaping the Performance of Nepalese Commercial Banks

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Abstract

The purpose of this study is to evaluate the effects of capital adequacy and credit risk management on the profitability of the Nepalese banking sector. The specific objectives include analyzing the trends of major performance indicators, evaluating the explanatory power of capital adequacy, examining the causal link between credit risks and bank performance, analyzing the relationship with liquidity, and exploring the opinions of bank staff on factors affecting performance. The results reveal that the return on equity (ROE) of commercial banks fluctuated between 6% and 43% during the study period. Positive correlations were found between ROE/ROA and capital adequacy ratio, while negative correlations were observed with loan loss provision, non-performing loans, and liquidity. The study concludes that capital adequacy, liquidity, and loans and advances significantly influence profitability, while loan loss provision and non-performing loans have negative impacts. The results confirm the significance of prudent credit risk management and emphasize the need for banks to adopt effective risk management strategies and enhance capital requirements to improve profitability.

Keywords: Capital adequacy, Credit risk management, Bank profitability, Liquidity, Loans

1. Introduction

Banks play a crucial role as financial intermediaries, acquiring capital through various means such as share capital and reserves. The success of every bank relies on maintaining a prudent balance between assets and liabilities in meeting liquidity and solvency requirements imposed by monetary and banking policies, ultimately fostering economic development. To ensure the accessibility of funds when needed, regulatory measures must be in place to assess and regulate banks' capital. Capital adequacy, determined by the capital-asset ratio, is a prerequisite for effective bank operations and depends on the deposits and capital funds held by banks (Chinonye et al., 2011). If their liquid assets decline below 20% of total deposits, commercial banks in Nepal are required to increase their capital adequacy ratio. According to the Basel II requirements, commercial banks must uphold a capital adequacy ratio of 10% against all risk-weighted assets, which includes both core (Tier 1) and supplementary (Tier 2) capital. Hence, banks need to classify their capital into core and supplementary parts to calculate regulatory capital (Accord Implementation Group, 2007).

Credit risk management is a crucial component of the banking loan process. It involves assessing and balancing risks and returns associated with lending, securities, and other investments. Banks must maintain sufficient capital reserves to protect their solvency and stability, commensurate with their exposure to risks. Credit risk is one of the main concerns for bank authorities and regulators among the risks that banks face because it might result in bank failure (Achou & Tenguh, 2008). Effective credit risk management is vital for the survival and growth of financial institutions, especially banks. Credit risk in the banking sector is of significant concern due to the perceived higher risks associated with clients and business conditions. Banks not only provide loans but also offer various credit and payment services, investment products, and other financial services. Managing credit risk is crucial to protect a bank's solvency, stability, and compliance with regulatory bodies such as the Basel II Accord (Essvale Corporation Limited, 2011).

One of the most important indicators of a bank's resilience is its capital adequacy ratio. To preserve their stability and resilience against adverse occurrences, commercial banks in Nepal must maintain minimum capital adequacy levels, which include Tier 1 and Tier 2 capital. Assessing capital adequacy is crucial in understanding a bank's financial strength and its ability to meet depositor demands and expand lending activities. However, capital requirements are often straightforward mechanical restrictions rather than complex risk models imposed by regulators (Etzel, 2010).

Given the significance of credit risk management and capital adequacy, their influence on bank performance has been the subject of debate and controversy. Previous studies have produced mixed results, with some suggesting a positive correlation between financial performance and credit risk management, while others indicating a negative or multifactorial impact. Understanding the dynamics between capital adequacy, credit risk management, and profitability is essential for assessing the overall health and effectiveness of the Nepalese banking sector (Poudel, 2012).

This study aims to investigate the impact of credit risk and capital adequacy on the profitability of commercial banks in Nepal. Specifically, it examines the structure and patterns of credit measures, non-performing loans, and capital adequacy in Nepalese commercial banks. Furthermore, the influence of non-performing loans and loan loss provisions, as well as the relationship between loans and advances and bank performance, has been investigated. Finally, the study assesses the extent to which capital adequacy affects bank performance (Baral, 2005; Kolapo et al., 2012; Odunga et al., 2013).

The remainder of the research is divided into four sections. The literature review examines prior research on the subject, whereas the research methods section describes data gathering and analytic procedures. Findings and interpretations are reported in the data analysis and outcomes section. Finally, the conclusion provides a summary of the main findings and recommendations.

2. Review of Literature

Credit risk management and capital adequacy are critical factors that have been extensively studied in relation to commercial bank performance. Several scholars have studied these areas to understand their impact on bank profitability and overall financial stability Hassan and Bashir (2012) observed a negative correlation between higher loan ratios and bank profitability, suggesting that heavy reliance on loans can adversely affect financial performance. Similarly, Staikouras and Wood (2003) discovered that commercial banks with a greater proportion of non-loan earnings assets tend to be more profitable. These studies highlight the importance of diversifying revenue sources beyond traditional lending activities. In terms of capital adequacy, Barrios and Blanco (2003) emphasized the significance of managerial quality and productive efficiency in assessing a bank's capital management. They further emphasized that competition within the industry is critical in assessing the effectiveness of capital utilization. Soludo (2005) underscored the role of adequate capital in protecting customers' deposits and strengthening the overall banking system.

Examining the determinants of bank profitability, Yuqi (2007) focused on the UK and identified credit and liquidity risk as key elements negatively impacting bank profitability. Muhammad et al. (2012) conducted a study in Nigeria and discovered a negative correlation between non-performing loans and profitability. Samuel (2015) explored the profitability-credit risk relationship in Ghana, noting a positive and significant association. These studies highlight the complex interplay between credit risks and profitability, indicating the need for effective risk management practices. Kolapo et al. (2012) investigated the influence of credit risks on Nigerian banks' profitability, revealing a negative association between nonperforming loans and profitability while observing a positive relationship between loan-to-deposit ratios and profitability. Tamimi and Obeidat (2013) examined the factors of capital adequacy in Jordanian banks, finding significant correlations with liquidity risk and return on assets.

Examining the comparative financial performance of commercial banks, Karki (2004) discovered fluctuating liquidity ratios, satisfactory return on equity, and a positive relationship between deposits and loan advances. Udas (2007) focused on capital adequacy ratios and highlighted the significant impact of NRB's directives on Nepalese banks. While these directives improved stability and aligned the sector with international standards, increased provisioning amounts resulted in decreased profitability. The study suggested exploring alternative profit generation avenues and adopting new technologies to mitigate declining profitability. Poudel (2009) emphasized the close relationship between net profit and total loans and advances. Increasing outstanding loans led to higher net income for banks. Since macroeconomic variables were found to be cointegrated and exhibit a log-run equilibrium relationship (Karki, 2012, 2018), further research is required to investigate the macroeconomic factors and regulatory frameworks influencing bank profitability and risk management practices in Nepal.

Sedhain (2012) investigated the challenges faced by Nepalese banks in adhering to international capital norms. The Basel Accord played a significant role in improving the management and operating environment of commercial banks. However, more research is required to understand the specific strategies employed by banks to enhance risk management systems. Poudel (2012) examined the effect of credit risk management on bank performance. The study highlighted the importance of credit risk mitigation and adherence to prescribed capital adequacy frameworks to enhance financial performance and mitigate risks. Further research is needed to explore the implications of technological advancements and digital transformation on credit risk management and profitability. Jha and Hui (2012) examined the financial results of Nepalese commercial banks with various ownership structures. They discovered that the CAR had a substantial impact on ROE, whereas ROA was largely impacted by CAR, interest expenditures to total loan, and net interest margin.

While existing research has shed light on the association between credit risk management, capital adequacy, and bank performance, several research gaps remain unexplored. So, further research is necessary to fill the identified gaps and develop a more comprehensive understanding of the intricate relationship between these factors and bank profitability. This study, addressing these research gaps aims to assist regulators, policymakers, and banks in making informed decisions to enhance financial stability and promote sustainable banking practices.

Conceptual Framework

This conceptual framework provides a comprehensive understanding of the relationship between credit risk, capital adequacy, and profitability, drawing upon theoretical and empirical perspectives. These variables serve as crucial indicators in assessing the influence of capital adequacy and credit risks on profitability. To visualize the empirical relationships, the framework is illustrated in the following diagram.

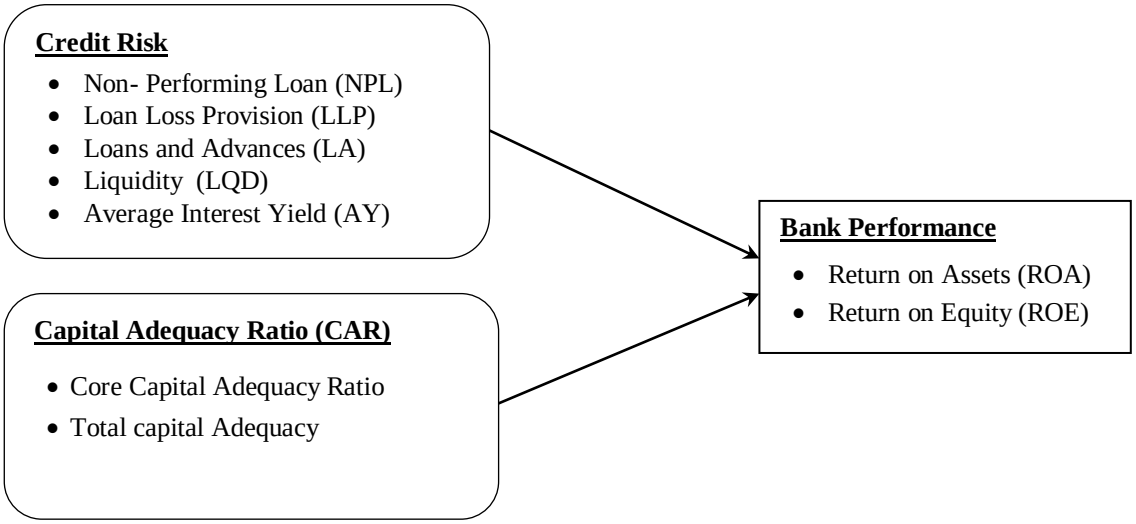

Figure 1: Conceptual Framework

Specification of Variables

Dependent Variables

Profitability: Profitability is often measured by ROA and ROE. ROA shows how well a bank manages its assets for profit. ROA is the proportion of asset income. ROA undervalues assets by excluding off-balance sheet elements like leased assets. An alternative profitability measure divides net income by equity to derive ROE. It gauges shareholder capital income. This approach is flawed since high-leverage institutions generate a greater ratio. Despite strong ROE, high-leverage banks may be riskier. Thus, ROE may not always reveal a bank's financial soundness. Regulation complicates ROE use. ROE is often used with ROA.

Independent Variables

Non-Performing Loan (NPL): The quality of a bank's assets is influenced by its exposure to specific risks and the prevalence of non-performing loans. Research suggests that the influence of credit risk on profitability is significantly negative. This can be attributed to the accumulation of unpaid loans, resulting in lower returns for commercial banks (Miller & Noulas, 1997). It is the proportion of nonperforming loans to total loans & advances

Loan Loss Provision (LLP): It refers to the sum of money that a bank sets aside from its profits as a safeguard against potential losses from non-performing loans or to offset lost credit facilities. It is the proportion of loan loss provisions to total loans. According to studies, both emerging and developed economies' potential credit risks are significantly influenced by an increase in loan loss provisions (Ahmad & Ariff, 2007).

Loans and Advances (LA): It represents the facilities offered by a bank to its customers, allowing them to utilize the bank's funds with the obligation of repayment and interest. It is the proportion of advances and loans to all deposits. According to research done in Kenyan banks, the volume of lending and the number of non-performing loans do not significantly affect the profits of commercial banks. This implies that variables other than credit and non-performing loans affect banks' profitability (Kithinji, 2010).

Liquidity (LQD): The ability of a bank to meet short-term obligations and commitments as they occur is measured by its liquidity. Insufficient liquidity can lead to bank failure, and banking regulators consider it a significant concern. Liquidity is represented by a ratio of liquid assets to total deposits & borrowings. Banks with inadequate liquidity are at risk of bank runs by depositors. Holding highly liquid assets, such as cash, tends to reduce income due to lower rates of return. Consequently, higher liquidity is generally expected to have a negative correlation with profitability, as it may reduce earnings and potentially impact the bank's stock price in the market (Karki, 2018).

Average interest yield (AY) refers to the average interest rate earned by a bank on its interest-earning assets, such as loans and advances, over a specific period. It has a direct impact on a bank's profitability. A higher AY indicates that the bank is earning a higher interest income relative to its interest-earning assets, which contributes to improved profitability (Baltagi, et. al., 2009). Increased profitability increases investors' confidence in the banking sector, and investors' sentiments are the most important determinant of any type of decision, whether it's investment or risk-seeking behavior (Karki, 2017).

Capital adequacy ratio (CAR): It is a key indicator of a bank's financial health, particularly from a regulatory standpoint. It encompasses various forms of financial capital, with a primary focus on shareholders' equity due to its reliability and liquidity. Banks that have higher capital adequacy ratios are typically more profitable. Banks having a solid capital base are better able to withstand losses from non-performing loans. According to Bourke (1989), profitability and capital adequacy have a significantly positive relationship.

3. Research Methods

This study on credit risk, capital adequacy, and bank performance in Nepal uses a descriptive and causal-comparative research approach. The purpose of this study is to measure, compare, and categorize the financial conditions of commercial banks in Nepal using a descriptive research design. This study employs a causal-comparative research design to examine the impact of certain factors on the banks' profitability, specifically the ability to estimate profitability as measured by ROA and ROE using data on capital adequacy and credit risk. To accomplish its goals and answer its research questions, this study exclusively used information gathered from secondary resources. The information came from the Nepal Rastra Bank's (NRB) database and publicly available financial statements from sample commercial banks. Banks that underwent mergers or acquisitions during the study period are excluded as much as possible to ensure uniformity in presentation.

The population of this study comprises all Nepalese commercial banks as of mid-2017. The initial population of 31 commercial banks was reduced to 28 after excluding state-owned banks and banks under the merger process. The sample for the study consists of 10 commercial banks; namely Himalayan Bank Limited (HBL), Everest Bank Limited (EBL), Nabil Bank Limited (NABIL), Citizen Bank International Limited (CBIL), Kumari Bank Limited (KBL), Laxmi Bank Limited (LBL), Lumbini Bank Limited (LUBL), Machhapuchhre Bank Limited (MBL), Bank of Kathmandu Limited (BOK), and Nepal Bangladesh Bank Limited (NBBL). The sample selection follows a purposive sampling method, resulting in a sample size of 70 observations for the period of 2010/11-2016/17.

Table 1: Composition of Sample and Population

Banks	Population	Sample (n)	Sample (%)	No. of Obs.
Domestic Private Bank	21	7	33.33%	49
Joint Venture Bank	7	3	42.85%	21
Total	28	10	76.18%	70

The sample includes 49 observations of domestic private banks and 21 observations of joint venture banks, covering a total of 76.18% of the total population.

Model Specification

In this study, multiple regression models were employed to examine the impact of credit risks and capital adequacy on bank profitability. The regression equations employed in the analysis were as follows:

For Return on Assets (ROA):

$ROA_{it} = \alpha + \beta_1 CAR_{it} + \beta_2 NPL_{it} + \beta_3 LA_{it} + \beta_4 LLP_{it} + \beta_5 LQD_{it} + \beta_6 AY_{it} + e_{it}$ ------ ------ (i)

For Return on Equity (ROE):

$ROE_{it} = \alpha + \beta_1 CAR_{it} + \beta_2 NPL_{it} + \beta_3 LA_{it} + \beta_4 LLP_{it} + \beta_5 LQD_{it} + \beta_6 AY_{it} + e_{it}$ ------ ------ (ii)

Where,

NPL_{it}: Nonperforming loan to total loans and advances of bank 'i' for period 't'

LLP_{it}: Loan loss provision to a total loan of bank 'i' for period 't'

LA_{it}: Loans & advances to total deposit of bank 'i' for period 't'

AY_{it}: Average interest yield

LQD_{it}: Liquid assets to deposit and borrowings of bank 'i' for period 't'

CAR_{it}: = TCAR + CCAR = Capital adequacy ratio to total risk-weighted assets of bank 'i' for period 't'

Data Analysis and Results

The Descriptive Statistics section of the study conducted an analysis to present the mean, median, standard deviation, minimum, and maximum values of the bank performance, capital adequacy, and credit risk, variables based on the overall data.

Table 2: Analysis of descriptive statistics of capital adequacy, credit risk ratio, and performance

Measures	*ROA (%)*	*ROE (%)*	*CAR (%)*	*NPL (%)*	*LA (%)*	*LLP (%)*	*LQD (%)*	*AY (%)*
Mean	0.0192	0.1936	0.1223	0.0250	0.7543	1.000	0.2989	1.50
Median	0.0160	0.1720	0.1170	0.0148	0.7650	0.666	0.3005	0.46
Std. Dev.	0.0190	0.1383	0.0452	0.0412	0.1149	0.9800	0.0823	0.78
Minimum	-0.0099	-0.0614	-0.1817	0.0000	0.3814	5.0000	0.1245	4.00
Maximum	0.1804	1.1601	0.3396	0.3173	1.1675	6.9500	0.5732	5.85

Table 2 depicts the descriptive analysis of factors, including the ROA and ROE of the 10 sample commercial banks. On average, the ROA is 1.92 percent, indicating the profitability of the banks in generating earnings from their assets. However, it is important to note that the ROA varies significantly, ranging from -0.99 percent to 18.04 percent. Negative values indicate that some banks suffered losses in the sample period. Regarding the ROE, the average value is 19.36 percent, which is close to the median value of 17.20 percent. The wide range of variation in ROE, from -6.14 percent to 116.01 percent, can be attributed to specific circumstances within the sample banks. Negative values indicate losses incurred during the period, while values exceeding 100 percent are influenced by negative reserve and surplus, leading to a decrease in equity. This reduction in equity significantly impacts the ROE calculations, resulting in values above 100 percent.

The findings highlight the diversity of bank performance within the sample, with some banks demonstrating strong profitability while others experiencing losses. These variations can be attributed to a range of factors such as differences in business strategies, risk management practices, and economic conditions.

Table 3: Correlation of independent variables with ROA and ROE

	ROA	*ROE*	*NPL*	*LA*	*LLP*	*LQD*	*AY*	*CAR*
ROA	1							
ROE	0.917**	1						
NPL	-0.306**	-0.396**	1					
LA	0.243**	0.139	-0.274**	1				
LLP	-0.348**	-0.470**	0.785**	-0.239**	1			
LQD	-0.618**	-0.631**	-0.347**	0.099	-0.417**	1		
AY	0.58**	-.31**	0.27**	0.099	0.317**	0.499**	1	
CAR	0.524**	0.499**	-0.633**	0.319**	-0.575**	0.516**	0.516**	1

** *The correlation at a 1% level of significance.*

* *The correlation at a 5% level of significance.*

The relationships between the profitability measures (ROA & ROE) and the explanatory variables (NPL, LA, LLP, LQD, AY, & CAR) were examined using a correlation matrix. The findings of the correlation study are shown in

Table 3. Return on assets and loans and advances were found to have a correlation coefficient of 0.243, the least positive coefficient among the variables. This shows that there is only a weak relationship between commercial banks' loans and advances and their profitability as determined by the return on assets. Additionally, there is a negative relationship (-0.618) between the return on assets and the liquidity of commercial banks as measured by the ratio of liquid assets to deposits. This implies that higher liquidity levels may have a detrimental effect on profitability.

In contrast, return on equity demonstrates a positive relationship with capital adequacy, loans & advances, and liquidity. Notably, liquidity shows a substantial relationship with return on equity, with a correlation coefficient of -0.631. On the other hand, there is a negative relationship of -0.470 between ROE and LLP. This suggests that higher levels of loan loss provisions may negatively impact a bank's return on equity. Examining the correlation between the explanatory variables, it is observed that loan loss provisions and non-performing loans exhibit a high degree of correlation (0.785) compared to the other explanatory variables. While a correlation coefficient of more than 0.8 is usually considered indicative of multicollinearity, Hair et al. (2009) argue that coefficients less than 0.9 may not produce significant multicollinearity issues. Therefore, although the correlation between non-performing loans and loan loss provision is relatively high, it may not lead to severe multicollinearity problems in this context (Cooper & Schindler, 2009).

Through the use of a cross-sectional regression model, this study analyzed secondary data to evaluate the statistical significance and reliability of the results. The estimated relationship between bank performance (ROA & ROE), credit risks, and capital adequacy was investigated using the regression results from various Models (i) and Model (ii) specifications. The analysis used cross-sectional data from 10 sample banks, with 70 observations spanning the years 2010/11 to 2016/17.

Table 4: Estimated Regression Results of ROA on Study Variables for 10 Sample Banks spanning 70 Observations from 2010/11 to 2016/17

	Dependent Variable: ROA									
Model	**Intercept**	***CAR***	***NPL***	***LA***	***LLP***	***LQD***	***AY***	***F***	***Adj. R^2***	***SEE***
I	-0.010 (-2.15)*	0.232 (6.85)*						46.97*	0.269	0.016
II	0.023 (11.98)*		-0.141 (-3.58)*					12.81*	0.086	0.018
III	-0.011 (-1.01)			-0.040 (2.79)*				7.76*	0.051	0.019
IV	0.026 (11.36)*				-0.675 (-4.13)*			17.07*	0.114	0.018
V	-0.023 (-4.64)					-0.143 (8.74)*		76.43*	0.376	0.015
VI	-0.029 (-5.69)						0.109 (6.00)*	48.12*	0.430	0.014
VII	-0.032 (-4.83)	0.124 (3.57)*					-0.110 (6.01)*	32.09*	0.427	0.014
VIII	-0.018 (-2.91)*		-0.026 (-0.50)*		-0.127 (-0.56)	-0.132 (7.34)**		26.27*	0.377	0.015
IX	-0.015 (-1.346)*	0.205 (4.807)*		0.013 (0.99)	-0.121 (-0.667)			16.10*	0.266	0.016
X	-0.031 (-4.29)*	0.139 (3.27)*	-0.040 (0.73)		-0.076 (-0.35)	-0.108 (5.79)*	-0.111 (5.97)*	23.94*	0.423	0.014

Note: t-values are presented in parenthesis, and significance at the 5% and 1% levels are indicated by the presence of an asterisk (*) and a double-asterisk (**).

According to Table 4, the beta coefficients of nonperforming loans to total loans (NPL) and liquid assets to total loans and borrowings (LQD) are negatively related to return on assets (ROA). Specifically, the beta coefficients for LQD and loan loss provision to total loans are negative in the overall specification, but they were not statistically significant at the 1% level. In contrast, the beta coefficient for the capital adequacy ratio (CAR) is positive with respect to ROA. The results indicate that the beta coefficients of non-performing loans to total loans (NPL) and liquid assets to total loans and borrowings (LQD) are negatively associated with return on assets (ROA). Specifically, in the overall specification, the beta coefficients are negative for LQD and loan loss provision to total loans, but they were not statistically significant at the 1 percent level.

These findings partially align with prior research. Studies like Bourke (1989), which demonstrate that larger levels of nonperforming loans might have a negative impact on bank profitability, are consistent with the negative link between nonperforming loans and return on assets. Although there is no significant relationship between loan loss provision and return on assets, some earlier research (Ahmad & Ariff, 2007) implies that loan loss provision has a major impact on bank profitability.

Table 5: Estimated Regression Results of ROE on Study Variables for 10 Sample Banks spanning 70 Observations from 2010/11 to 2016/17

Dependent Variable: Return on Equity (ROE)										
Model	**Intercept**	**CAR**	**NPL**	**LA**	**LLP**	**LQD**	***AY***	***F***	***Adj. R^2***	***SEE***
I	-0.006 (0.17)	1.608 (6.41)*						41.07*	0.243	0.120
II	0.227 (17.05)*		-1.329 (-4.80)*					23.07*	0.150	0.128
III	0.067 (0.825)*			-0.167 (1.56)***				2.44***	0.011	0.138
IV	0.260 (16.613)*				-6.622 (1.118)*			35.09*	0.214	0.123
V	-0.123 (-3.403)					-1.061 (9.060)*		82.08*	0.393	0.108
VI	-0.157 (-4.25)*						0.762 (2.99)*	48.17*	0.430	0.104
VII	-0.116 (-2.45)**	0.529 (-1.72)***	-0.392 (-1.34)			-0.851 (6.44)*		32.93*	0.434	0.104
VIII	0.237 (0.08)*		-0.221 (-0.51)	-0.027 (0.27)	-5.816 (-3.198)*			11.67*	0.204	0.123
IX	-0.078 (-1.56)	0.466 (1.65)***			-2.636 (-2.27)**		0.805 (6.084)*	34.91*	0.449	0.103
X	-0.080 (-1.57)	0.490 (1.61)	-0.083 (0.213)		-2.861 (-2.86)***	-0.801 (5.99)*		25.99*	0.444	0.108
XI	-0.082 (-1.03)	0.488 (1.56)	-0.084 (0.21)	-0.003 (0.03)	-2.860 (-1.81)***	-0.802 (5.95)*	0.083 (0.213)	20.62*	0.440	0.104

Note: t-values are presented in parenthesis, and significance at the 5% and 1% levels are indicated by the presence of an asterisk (*) and a double-asterisk (**).

The regression results presented in Table 5 examine the influence of credit risk, capital adequacy, and liquidity on the return on equity (ROE) as a measure of commercial banks' performance. Stepwise regression analysis was performed to fulfill the objectives of this research and test the hypotheses. Table 5 reveals that the beta coefficient for nonperforming loans to total loans (NPL) is adversely linked to ROE and statistically significant in a single model. This finding supports the study conducted by Abiola and Olausi (2014), which also reported a statistically significant negative association between NPL and ROE. The negative coefficient indicates that an increase in non-performing loans can adversely affect a bank's profitability. This aligns with theoretical expectations, as higher levels of non-performing loans signal increased credit risk and potential financial distress for banks. Furthermore, the research demonstrates a positive relationship between the capital adequacy ratio (CAR) and commercial banks' performance, as indicated by the statistically significant beta coefficient. This finding suggests that an increase in CAR leads to a corresponding increase in ROE. This result is in line with earlier literature, which suggests that higher capital adequacy enhances banks' financial stability and profitability (Bourke, 1989).

Regarding liquidity (LQD), the beta coefficient is statistically significant and negatively associated with ROE. This implies that higher levels of liquidity hurt profitability. This result contradicts some prior research, which suggests a positive relationship between liquidity and profitability (Karki, 2018). However, it is important to consider the specific context and characteristics of the sample banks in this study, as well as potential variations across different banking environments. Additionally, the beta coefficients for loans and advances (LA) and loan loss provision (LLP) are statistically significant in their relationship with ROE. The negative coefficients indicate that higher levels of loans and advances and loan loss provisions have a detrimental effect on profitability. This aligns with the expectation that excessive loan exposure and provisioning for potential losses can reduce a bank's profitability.

4. Conclusion

This study has analyzed the relationship between credit risk management, capital adequacy, and bank performance in the context of commercial banks in Nepal. The findings provide valuable insights into the variables that influence the profitability and stability of banks in the Nepalese banking sector. Firstly, our analysis revealed that loans and advances, capital adequacy, and liquidity have a significant impact on the return on assets (ROA) of commercial banks. Specifically, we found a negative correlation between the capital adequacy ratio and ROA, indicating that higher capital ratios do not necessarily translate into higher profitability. This finding is consistent with the earlier studies conducted by Hassan and Bashir (2012) and Staikouras & Wood (2003), who also found a negative relationship between loan ratio and profitability. It suggests that the capital adequacy ratio alone is not sufficient to assess a bank's financial soundness, and other factors should be considered. Furthermore, our analysis demonstrated a positive relationship between capital adequacy and return on equity (ROE). This indicates that higher capital ratios contribute to increased profitability for banks in Nepal. Our findings align with the research conducted by Tamimi & Obeidat (2013), who also found a positive correlation between capital adequacy and the rate of return on equity. It underscores the importance of maintaining adequate capital levels to enhance the financial performance and stability of commercial banks. Additionally, our study examined the impact of credit risk management on bank performance. We found that non-performing loans and loan loss provisions have a negative correlation with both ROA and ROE. This implies that effective credit risk management practices, such as proper evaluation of clients before loan disbursement, can reduce loan defaults and enhance banks' profitability. These findings are consistent with the research conducted by Abiola and Olausi (2014) and Ogboi and Unuafe (2013), which also emphasized the significant impact of credit risk management on the profitability of commercial banks.

The implications of our study are twofold. First, it highlights the need for banks in Nepal to focus on risk management practices, particularly credit risk management, to mitigate potential losses and improve their overall performance. Banks should allocate adequate resources to assess and monitor borrowers' creditworthiness, thereby reducing the incidence of loan defaults. Second, our findings suggest that maintaining an optimum level of capital adequacy is crucial for banks to achieve better performance. While higher capital ratios alone do not guarantee increased profitability, adequate capital levels contribute to a bank's stability and financial soundness. Therefore, banks should carefully balance their capital positions to support growth and mitigate risks effectively. We propose that banks in Nepal should invest in advanced credit risk assessment tools and techniques to enhance their risk management capabilities. Additionally, banks should prioritize the evaluation of clients' creditworthiness before disbursing loans to minimize the risk of default and enhance profitability. Furthermore, maintaining an appropriate level of capital adequacy should be a priority for banks, as it directly impacts their stability and performance. For future research, it is recommended to explore the influence of other variables on bank performance, such as operational efficiency, technological advancements, and regulatory frameworks. Additionally, studying the effectiveness of specific credit risk management tools and techniques could provide valuable insights.

Conflicting Interest

Authors declare no any conflicting interest.

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