Impact of Financial Risk Factors on Profitability of Nepalese Commercial Banks

Ajit Uprety*

Abstract

The study examines the impact of financial risk factors on profitability of Nepalese commercial banks. Return on assets and net interest margin are selected as the dependent variables. The selected independent variables are non-performing loan, capital adequacy ratio, loan to deposit ratio, cash reserve ratio, operating cost ratio and exchange rate. The study is based on secondary data of 14 commercial banks with 112 observations for the period from 2014/15 to 2021/22. The data were collected from Banking and Financial Statistics published by Nepal Rastra Bank, publications and websites of Nepal Rastra Bank (NRB) and annual reports of the selected commercial banks. The correlation coefficients and regression models are estimated to test the significance and importance of financial risk factors on profitability of Nepalese commercial banks.

The study showed that non-performing loan has a negative impact on return on assets and net interest margin. It shows that increase in non-performing loan leads to decrease in return on assets and net interest margin. On the other hand, capital adequacy ratio has a positive impact on return on assets and net interest margin. It implies that increase in capital adequacy ratio leads to increase in return on assets and net interest margin. Similarly, loan to deposit ratio has a negative impact on return on assets and net interest margin. It implies that increase in loan to deposit ratio leads to decrease in return on assets and net interest margin. However, cash reserve ratio has a positive impact on return on assets and net interest margin. It means increase in cash reserve ratio leads to increase in return on assets and net interest margin. In addition, BOPO ratio has a negative impact on return on assets and net interest margin. It means that increase in BOPO ratio leads to decrease in return on assets and net interest margin. Moreover, exchange rate has a negative impact on return on assets and net interest margin. It means that increase in exchange rate leads to decrease in return on assets and net interest margin.

Keywords: return on assets, net interest margin, non-performing loan, capital adequacy ratio, loan to deposit ratio, cash reserve ratio, operating cost ratio, exchange rate

1. Introduction

Profitability is the most common measure of firm performance. The measures of profitability are used to assess how well management is investing the firms' total capital and raising funds. Profitability is generally the most important to the firm's total shareholders. Profits serve as cushion against adverse conditions such as losses on loans, or losses caused by unexpected changes in interest rates (Gitogo *et al.,* 2013). Profitability is a guide of the

* Mr. Uprety is a Freelance Researcher, Kathmandu, Nepal. E-mail: azeet089@gmail.com

net outcome activities and policies commenced by commercial banks and maintain its stability and growth (Greuning and Bratanovic, 2009). While net interest margin shows bank management's ability when it becomes a manager of productive assets to obtain net interest income (Saleh and Afifa, 2020).

Market Risk is defined as the risk of losses that arises from movements in market prices. That is changes in market prices that result from general market behavior and changes in market prices which are specific and are independent of general market movements (Pariyada, 2013). Risk is defined as anything that can create hindrances in the way of achievement of certain objectives. Financial risk is defined as uncertainty of the future financial outcomes which can influence the profitability and targets of the institutions. Financial risk is the major risk category which severely affects performance of the financial institutions. Financial risk is often defined as the unexpected variability or volatility of returns and thus includes credit risk, liquidity risk, and market risks (Holton, 2004).

Adeusi *et al.* (2014) identified that there are six types of banks' related risks, credit, market, operational, liquidity, reputational and legal risks, which can affect the cash flows and profitability, thus subsequently affect the shareholders' wealth in negative ways. According to Haneef *et al.* (2012), liquidity of banks can also affect the performance of the banks. Liquidity Risk (LR) basically originates due to the weak deposit base of a bank. Further, Shen *et al.* (2009) found the importance of LR for the banks and recommends the ways to mitigate the risk. Likewise, liquidity risk is the risk due to the inability of banks to meet obligations resulting from cash flow funding sources, or high-quality liquid assets that can be mortgaged, without disrupting the activities and financial condition of the bank, as measured by the loan to deposit ratio (Badawi, 2017).

Kolopo & Dapo (2015) defined credit risk as the potential that a bank borrower or counterparty will fail to meet the obligation in accordance with the agreed terms and conditions. Operational risk is defined as all risks which would generate volatility in a bank's reserves, expenses and the value of its business which is loss resulting from inadequate or failed internal processes, people and systems or from external events. Bank operational efficiency aims to make the bank concerned run more optimally in serving its customers. With efficiency carried out, banks can minimize expenditure figures, and vice versa maximize revenue figures (Adam *et al.,* 2018).

Operational risk may materialize directly, for instance in electronic fund transfer (transfer of funds to the wrong person) or could result indirectly

as a credit or market loss. Since there is a close linkage of operational risk with other types of risks, it is very important for every institution to first have a clear understanding of the concept of operational risk before designing the appropriate operational risk measurement and management framework (Epetimehin and Obafemi, 2015). According Cuac *et al.* (2020), operational costs operational income (BOPO) measures the level of a bank's ability to operate. Liquidity risk basically originates due to the weak deposit base of a bank. Similarly, Shen *et al.* (2009) found the importance of LR for the banks and recommends the ways to mitigate the risk. Likewise, liquidity risk is the risk due to the inability of banks to meet obligations resulting from cash flow funding sources, or high-quality liquid assets that can be mortgaged, without disrupting the activities and financial condition of the bank, as measured by the loan to deposit ratio (Badawi, 2017).

Wood and McCooney (2018) indicated that there is a negative relationship between CREDRISK and ROA, OPERISK had a significant negative impact on ROA and LIQRISK has a negative and significant influence on ROA. Likewise, Ugah (2020) revealed that credit risk, interest rate risk and liquidity risk were negatively related to return on asset. Fahrul and Rusliati (2016) showed that credit risk, market risk, operational risk and liquidity risk have an effect on the profitability of banks amounted to 67.1%. Partially, credit risk did not affect the profitability. Market risk, operational risk, liquidity risk has a positive effect on the profitability of banks listed on the Indonesia Stock Exchange in 2010-2014.

Thinh *et al.* (2022) found that liquidity has a positive relationship with the profitability of listed banks including return on assets and net interest margin. Particularly loans liability (loan to deposit ratio) has a negative impact on NIM. Joseph and Adelegan (2023) revealed that cash reserve ratio has a positive relationship with net interest margin but negative with return on asset. Likewise, Khalid *et al.* (2019) concluded that liquidity has no significant impact on return on asset as financial performance. Witjaksono and Natakusumah (2020) showed that capital adequacy and the comparison of operating expenses to operating income has a significant effect on profitability. Ahmed (2015) found that foreign exchange exposure has a negative impact on the performance of listed commercial banks performance in Kenya.

In the context of Nepal, Bhandari (2023) examined the effect of credit performance and interest spread on the profitability of commercial banks in Nepal. The study revealed that NPLR is positively correlated with profitability Similarly, Shrestha and Chaurasiya (2023) investigated the

impact of liquidity management and profitability of joint venture commercial banks in Nepal. The result showed that there is an insignificant impact of credit to deposit ratio, capital adequacy ratio, and cash reserve ratio on ROA of joint venture commercial banks in Nepal. In addition, Pradhan and Parajuli (2017) analyzed the effect of capital adequacy and cost income ratio on the performance of Nepalese commercial banks. The study showed that there is a negative relationship of capital adequacy, cost income ratio, equity capital to total assets ratio and liquidity ratio with return on assets. Likewise, Bhattarai (2018) revealed that exchange rate is found significantly negatively associated to profitability.

Malla and Paudel (2023) revealed that credit deposit ratio and cash reserve ratio have the more impact on lending than short term loan to total assets. Likewise, Rijal (2019) showed that credit to deposit, assets quality and liquidity ratio are significant and positive with net interest margin whereas only credit to deposit ratio is significant and positive to return on assets. Chalise (2019) examined the impact of capital adequacy and cost-income ratio on performance of Nepalese commercial banks. The study revealed that cost-income ratio has a negative significant impact on banks performance and total capital adequacy has a negative insignificant impact with bank performance (ROA). Similarly, Poudel (2018) confirmed that credit risk has a significant negative impact on profitability of commercial banks in Nepal. Shrestha (2022) assessed the effect of credit risk on profitability of Nepalese commercial banks. The study observed that TL/TD has a significant positive, and NPL/TL and LLP/TL has a significant negative impact on profitability of Nepalese commercial banks.

The above discussion shows that empirical evidences vary greatly across the studies concerning the impact of financial risk factors on profitability of commercial banks. Though there are above mentioned empirical evidences in the context of other countries and in Nepal, no such findings using more recent data exist in the context of Nepal. Therefore, in order to support one view or the other, this study has been conducted.

The major purpose of the study is to examine the impact of financial risk factors on profitability of Nepalese commercial banks. Specifically, it examines the relationship of non-performing loan, capital adequacy ratio, loan to deposit ratio, cash reserve ratio, operating cost ratio and exchange rate with return on assets and net interest margin of Nepalese commercial banks.

The remainder of this study is organized as follows. Section two describes the sample, data and methodology. Section three presents the

empirical results and the final sections draws the conclusion.

2. Methodological aspects

The study is based on the secondary data which were gathered from 14 commercial banks for the study period from 2014/15 to 2021/22, leading to a total of 112 observations. The study employed stratified sampling method. The main sources of data include Banking and Financial Statistics published by Nepal Rastra Bank, reports published by Ministry of Finance and the annual report of respective banks. This study is based on descriptive as well as causal comparative research designs. Table 1 shows the list of commercial banks selected for the study along with the study period and number of observations.

Table 1

List of commercial banks selected for the study along with study period and number of observations

S.N.	Name of the banks	Study period	Observations
Public Banks			
1	Nepal Bank Limited	2014/15 - 2021/22	8
2	Agricultural Development Bank Limited	2014/15 - 2021/22	8
3	Rastriya Banijya Bank Limited	2014/15-2021/22	8
Joint Venture Banks			
4	NMB Bank Limited	2014/15 - 2021/22	8
5	Everest Bank Limited	2014/15 - 2021/22	8
6	Standard Chartered Bank Nepal Limited	2014/15 - 2021/22	8
Private Banks			
7	NIC Asia Bank Limited	2014/15 - 2021/22	8
8	Himalayan Bank Limited	2014/15 - 2021/22	8
9	Prime Commercial Bank Limited	2014/15 – 2021/22	8
10	Siddhartha Bank Limited	2014/15 – 2021/22	8
11	Nepal SBI Bank Limited	2014/15 - 2021/22	8
12	Sanima Bank Limited	2014/15 - 2021/22	8
13	Citizens Bank International Limited	2014/15 - 2021/22	8
14	Machhapuchchhre Bank Limited	2014/15 - 2021/22	8
Total number of observations			**112**

Thus, the study is based on 112 observations.

The model

The econometric models employed in this study tries to analyses the financial risk factors on profitability of Nepalese commercial banks using the panel data. The following linear regression model is used in this study to examine the impacts of financial risk factors on profitability of Nepalese commercial banks. Thus, the following model equation is designed to test

the hypothesis. From the conceptual framework the function of dependent variables (i.e. the profitability) takes the following form:

ROA = *f* (NPL, CAR, LDR, CRR, BOPO, EXR).

NIM = *f* (NPL, CAR, LDR, CRR, BOPO, EXR).

More specifically, the given model has been segmented into the following models:

$ROA = \beta_0 + \beta_1 NPL + \beta_2 CAR + \beta_3 LDR + \beta_4 CRR + \beta_5 BOPO + \beta_6 EXR + e_{it}$

$NIM = \beta_0 + \beta_1 NPL + \beta_2 CAR + \beta_3 LDR + \beta_4 CRR + \beta_5 BOPO + \beta_6 EXR + e_{it}$

Where,

ROA = Return on assets as measured by the ratio of net income to total assets, in percentage.

NIM = Net interest margin as measured by the ratio of net interest income to total assets, in percentage.

NPL = Non - performing loan as measured by non-performing loan to total loan, in percentage.

CAR = Capital adequacy ratio as measured by the ratio of total capital to total risk weighted exposure, in percentage.

LDR = Loan to deposit ratio as measured by total loan to total deposit, in percentage.

CRR = Cash reserve ratio as measured by the ratio of cash balance with NRB to total deposits, in percentage.

BOPO = Operating cost ratio as measured by operating expenses to operating income.

EXR = Exchange rate is measured by the rate of last day of each reporting fiscal year, in NRS/USD.

The following section describes the independent variables used in this study along with the hypothesis formulation:

Non-performing loan

Marshal and Onyekachi (2014) found that there is a positive relationship between ratio of non- performing loans to loan and advances (LogNPL) and banks performance (LogROA). In addition, Inggawati *et al.* (2018) revealed that non-performing loan has a significant negative impact on profitability. Likewise, Collaku and Aliu (2021) showed a significant negative relationship between non-performing loan and profitability as measured by return on assets. Dewi and Badjra (2020) revealed that non-performing loan is

negatively related to profitability. Further, Hersugondo *et al.* (2021) concluded that non-performing asset (NPA), as a whole, has a negative effect on the bank performance. In addition, Anggriani and Muniarty (2020) stated that banks should lower the level of non-performing loan to increase return on assets suggesting a negative relationship between non-performing loan and profitability. Endri *et al.* (2020) found that NPL negatively and significantly affect the banks' performance (NIM ratio). Moreover, Uddin (2022) revealed that NPL have a negative relationship and insignificant impact on the profitability. Based on it, this study develops the following hypothesis:

H_1: There is a negative relationship between non-performing loan and bank profitability.

Capital adequacy ratio

Nguyen (2020) showed that bank capital adequacy has a positive impact on return on assets of small-sized banks in Vietnam. Jadhav *et al.* (2021) found that capital adequacy ratio has a positive impact on profitability. Similarly, Iftikhar (2016) found that capital adequacy ratio has a positive and significant impact on financial performance. Likewise, Ebenezer *et al.* (2017) stated that CAR has a positive and significant effect on bank profitability. In addition, Arseto (2022) revealed that capital adequacy ratio and profitability have positive effect on profitability. Moreover, Nahar *et al.* (2020) identified a positive relationship between capital adequacy ratio and profitability. Singh and Milan (2023) found that capital adequacy is positively related with bank's performance, but inversely related with bank's interest margin income. Further, Saniç and Yüncü (2021) concluded that CAR and NIM have positive relationship. Based on it, this study develops the following hypothesis:

H_2: There is a positive relationship between capital adequacy ratio and bank profitability.

Loan to deposit ratio

Astuti *et al.* (2023) found that loan to deposit ratio has a significant positive effect on return on assets. Mohanty and Krishnankutty (2018) showed that return on asset has a negative and significant relationship with loan to deposit ratio. However, Steven and Toni (2020) found that loan to deposit ratio has a positive relationship with profitability. Harun (2016) found that loan to deposit ratio has a positive significant effect on profitability. In addition, Nugraha *et al.* (2021) stated that loan to deposit ratio has a significant positive effect on return on assets. Likewise, Gurung and Gurung (2022) revealed that loan to deposit, known as credit deposit ratio, has a significant positive impact on the return on assets and net interest margin of commercial banks.

Kalimashi *et al.* (2022) found that loan to deposit ratio have positive impact on ROA and negative impact on NIM. Amjath and Begum (2022) showed that loan to deposit ratio has positive relationship. Moreover, Sihotang *et al.* (2022) concluded that there is a positive and significant relationship between loan-to-deposit ratio and ROA. Based on it, this study develops the following hypothesis:

H_3: There is a positive relationship between loan to deposit ratio and bank profitability.

Cash reserve ratio

Akinleye and Oluwadare (2022) revealed that cash reserve ratio exerts a negative and significant effect on return on assets. Likewise, Mia *et al.* (2023) found that CRR has negative relation with return on assets. Oganda *et al.* (2018) stated that cash reserve ratio has a negative relationship with bank's profitability in Kenya. Joseph and Adelegan (2023) showed that cash reserve ratio has a positive relationship with NIM. In addition, Olagunju and Isiaka (2021) concluded that cash reserve requirement has an inverse and significant relationship with profitability of banks. Based on it, this study develops the following hypothesis:

H_4: There is a negative relationship between cash reserve ratio and bank profitability.

BOPO ratio

Aeni and Wahyuni (2023) showed that BOPO has a significant effect on ROA at BPRS Amanah Rabbaniah Banjaran. In addition, Murtiningsih and Tohirin (2023) concluded that operating income operating costs in the short term and long term has a significant influence on return on assets. Kusumastuti (2019) found that there is negative and significant relationship between cost-to-income ratio (BOPO) and ROA. Similarly, Sitompul (2019) concluded that operational cost of operational income had a significant negative effect on return on assets. In addition, Hasmiana and Pintor (2022) showed that there is negative relationship between BOPO and profitability. Moreover, according to Farooq *et al.* (2021) BOPO has a negative association with ROA and NIM. Based on it, this study develops the following hypothesis:

H_5: There is a negative relationship between operating cost ratio and bank profitability.

Exchange rate

Onyancha and Muturi (2023) concluded that exchange rate affected financial performance of commercial banks. Similarly, Njagi and Nzai (2022)

found that exchange rate volatility has a negative and significant effect on performance of commercial banks. Likewise, Elhussein and Osman (2019) claimed that the study documents that foreign exchange rate fluctuations have a weak negative effect on Sudanese banks' financial performance. Further, Katusiime (2021) concluded that exchange rate significantly and negatively affects bank's profitability. Moreover, Ibekwe (2021) concluded that exchange rate fluctuation has a negative and insignificant effect on return on asset. Based on it, this study develops the following hypothesis:

H_6: There is a negative relationship between exchange rate and bank profitability.

3. Results and discussion

Descriptive statistics

Table 2 presents the descriptive statistics of selected dependent and independent variables during the period 2014/15 to 2021/222.

Table 2

Descriptive statistics

This table shows the descriptive statistics of dependent and independent variables of 14 Nepalese commercial banks for the study period of 2014/15 to 2021/22. The dependent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage) and NIM (Net interest margin as measured by the ratio of net interest income to total assets, in percentage). The independent variables are NPL (Non-performing loan as measured by the ratio of non-performing loan to total loan, in percentage), CAR (Capital adequacy ratio as measured by the ratio of total capital to total assets, in percentage), LDR (Loan to deposit ratio as measured by the ratio of total loans to total deposits, in percentage), CRR (Cash reserve ratio as measured by the ratio of cash balance with NRB to total deposits, in percentage), BOPO (Operating cost ratio as measured by the ratio of operating expenses to operating income, in percentage) and EXR (Exchange rate as measured by the rate of last day of each reporting fiscal year, in NPR/USD).

Variables	Minimum	Maximum	Mean	Std. Deviation
ROA	0.550	3.220	1.630	0.500
NIM	1.871	5.670	3.160	0.721
NPL	0.010	5.350	1.381	1.331
CAR	7.490	22.990	13.951	2.511
LDR	48.920	107.010	83.921	9.581
CRR	2.010	24.270	8.330	4.710
BOPO	20.350	78.251	41.140	8.820
EXR	100.160	121.731	111.080	7.170

Correlation analysis

Having indicated the descriptive statistics, Pearson's correlation coefficients are computed and the results are presented in Table 3.

Table 3

Pearson's correlation coefficients matrix

This table shows the bivariate Pearson's correlation coefficient matrix of dependent and independent variables of 14 Nepalese commercial banks for the study period from 2014/15 to 2021/22. The dependent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage) and NIM (Net interest margin as measured by the ratio of net interest income to total assets, in percentage). The independent variables are NPL (Non-performing loan as measured by the ratio of non-performing loan to total loan, in percentage), CAR (Capital adequacy ratio as measured by the ratio of total capital to total assets, in percentage), LDR (Loan to deposit ratio as measured by the ratio of total loans to total deposits, in percentage), CRR (Cash reserve ratio as measured by the ratio of cash balance with NRB to total deposits, in percentage), BOPO (Operating cost ratio as measured by the ratio of operating expenses to operating income, in percentage) and EXR (Exchange rate as measured by the rate of last day of each reporting fiscal year, in NPR/USD).

Variables	ROA	NIM	NPL	CAR	LDR	CRR	BOPO	EXR
ROA	1							
NIM	0.648**	1						
NPL	-0.287**	-0.569**	1					
CAR	0.256**	0.242*	-0.037	1				
LDR	-0.190*	-0.029	-0.137	0.090	1			
CRR	0.314**	0.041	-0.065	0.021	-0.566**	1		
BOPO	-0.272**	-0.129	0.379**	-0.096	0.078	-0.134	1	
EXR	-0.448**	-0.281**	-0.118	0.202*	0.381**	-0.466**	0.194*	1

Note: The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent levels respectively.

Table 3 shows that non-performing loan has a negative relationship with return on assets. It indicates that increase in non-performing loan leads to decrease in return on assets. Similarly, capital adequacy ratio has a positive relationship with return on assets. It indicates that increase in capital adequacy ratio leads to increase in return on assets. In contrast, loan to deposit ratio has a negative relationship with return on assets. It indicates that increase in loan to deposit ratio leads to decrease in return on assets. Furthermore, there is a positive relationship between cash reserve ratio and return on assets. It indicates that increase in cash reserve ratio leads to increase in return on assets. Further, there is a negative relationship between operating cost ratio and return on assets. It indicates that increase in operating cost ratio leads to decrease in return on assets. Moreover, exchange rate has a negative

relationship with return on assets. It indicates that higher the exchange rate, lower would be the return on assets.

Similarly, non-performing loan has a negative relationship with net interest margin. It indicates that increase in non-performing loan leads to decrease in net interest margin. Similarly, capital adequacy ratio has a positive relationship with net interest margin. It indicates that increase in capital adequacy ratio leads to increase in net interest margin. In contrast, loan to deposit ratio has a negative relationship with net interest margin. It indicates that increase in loan to deposit ratio leads to decrease in net interest margin. Furthermore, there is a positive relationship between cash reserve ratio and net interest margin. It indicates that increase in cash reserve ratio leads to increase in net interest margin. Further, there is a negative relationship between operating cost ratio and net interest margin. It indicates that increase in operating cost ratio leads to decrease in net interest margin. Likewise, exchange rate has a negative relationship with net interest margin. It indicates that higher the exchange rate, lower would be the net interest margin.

Regression analysis

Having indicated Pearson's correlation coefficients, the regression analysis has been carried out and the results are presented in Table 4. More specifically, it shows the regression results of non-performing loan, capital adequacy ratio, loan to deposit ratio, cash reserve ratio, operating cost ratio and exchange rate on return on assets of Nepalese commercial banks.

Table 4

Estimated regression results of non- performing loan, capital adequacy ratio, loan to deposit ratio, cash reserve ratio, operating cost ratio and exchange rate on return on assets of Nepalese commercial banks

The results are based on panel data of 14 commercial banks with 112 observations for the period from 2014/15 to 2021/22 by using the linear regression model and the model is ROA $= \beta_0 + \beta_1 NPL + \beta_2 CAR + \beta_3 LDR + \beta_4 CRR + \beta_5 BOPO + \beta_6 EXR + e_{it}$ where, the dependent variable is ROA (Return on assets as measured by the ratio of net income to total assets, in percentage). The independent variables are NPL (Non-performing loan as measured by the ratio of non-performing loan to total loan, in percentage), CAR (Capital adequacy ratio as measured by the ratio of total capital to total assets, in percentage), LDR (Loan to deposit ratio as measured by the ratio of total loans to total deposits, in percentage), CRR (Cash reserve ratio as measured by the ratio of cash balance with NRB to total deposits, in percentage), BOPO (Operating cost ratio as measured by the ratio of operating expenses to operating income, in percentage) and EXR (Exchange rate as measured by the rate of last day of each reporting fiscal year, in NPR/USD).

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		NPL	CAR	LDR	CRR	BOPO	EXR			
1	1.482 (22.68)**	-0.107 (3.148)**						0.074	0.479	9.911
2	0.922 (3.554)**		0.051 (2.776)**					0.057	0.483	7.707
3	2.459 (5.978)**			-0.01 (2.026)*				0.027	0.491	4.105
4	1.353 (14.770)**				0.033 (3.470)**			0.029	0.475	12.044
5	2.264 (10.382)**					-0.015 (2.968)**		0.074	0.481	8.810
6	5.087 (7.715)**						-0.031 (5.253)**	0.193	0.447	27.589
7	0.738 (2.908)**	-0.111 (3.371)**	0.053 (3.025)**					0.138	0.462	9.899
8	1.484 (3.325)**	-0.102 (3.117)**	0.056 (3.230)**	-0.009 (2.018)*				0.162	0.456	8.143
9	0.332 (0.606)	-0.121 (3.868)**	0.051 (3.792)**	-0.001 (0.252)	0.036 (3.354)**			0.234	0.435	9.499
10	1.081 (2.062)*	-0.178 (5.648)**	0.044 (2.887)**	-0.004 (0.752)	0.035 (3.501)**	-0.022 (4.719)**		0.361	0.398	13.563
11	3.463 (4.572)**	-0.151 (4.947)**	0.059 (4.027)**	-0.005 (1.137)	0.021 (1.962)	-0.018 (3.851)**	-0.025 (4.063)**	0.443	0.371	15.708

Notes:

i. Figures in parenthesis are t-values.
ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.
iii. Return on assets is dependent variable.

Table 4 shows that that the beta coefficients for non- performing loan are negative with return on assets. It indicates that non-performing loan has a negative impact on return on assets. This finding is not consistent with the findings of Wahyuni and Umam (2023). Similarly, the beta coefficients for capital adequacy ratio are positive with return on assets. It indicates that capital adequacy ratio has a positive impact on return on assets. This finding is similar to the findings of Tibebe and Gujral (2022). In contrast, the beta coefficient for loan to deposit ratio are negative with return on assets. It indicates that loan to deposit ratio has a negative impact on return on assets. This finding is similar to the findings of Mondol and Wadud (2022). Moreover, the beta coefficients for cash reserve ratio are positive with return on assets. It indicates that cash reserve ratio has a positive impact on return on assets. This finding is similar to the findings of Uremadu (2012). Likewise, the beta coefficients for BOPO ratio are negative with return on assets. It indicates that BOPO ratio has a negative impact on return on assets. This finding is consistent with the findings of Hasmiana and Pintor (2022. Moreover, the beta coefficients for exchange rate are negative with return on assets. It indicates that exchange rate has a negative impact on return on assets. This finding is similar to the findings of Njagi and Nzai (2022).

Estimated regression results of non-performing loan, capital adequacy

ratio, loan to deposit ratio, cash reserve ratio, operating cost ratio and exchange rate on net interest margin of Nepalese commercial banks are presented in Table 5.

Table 5

Estimated regression results of non- performing loan, capital adequacy ratio, loan to deposit ratio, cash reserve ratio, operating cost ratio and exchange rate on net interest margin of Nepalese commercial banks

The results are based on panel data of 14 commercial banks with 112 observations for the period from 2014/15 to 2021/22 by using the linear regression model and the model is NIM $=\beta_0 + \beta_1$ NPL $+ \beta_2$ CAR$+ \beta_3$ LDR$+ \beta_4$ CRR $+ \beta_5$ BOPO $+\beta_6$ EXR$+ e_{it}$ where, the dependent variable is NIM (Net interest margin as measured by the ratio of net interest income to total assets, in percentage). The independent variables are NPL (Non-performing loan as measured by the ratio of non-performing loan to total loan, in percentage), CAR (Capital adequacy ratio as measured by the ratio of total capital to total assets, in percentage), LDR (Loan to deposit ratio as measured by the ratio of total loans to total deposits, in percentage), CRR (Cash reserve ratio as measured by the ratio of cash balance with NRB to total deposits, in percentage), BOPO (Operating cost ratio as measured by the ratio of operating expenses to operating income, in percentage) and EXR (Exchange rate as measured by the rate of last day of each reporting fiscal year, in NPR/USD).

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		NPL	CAR	LDR	CRR	BOPO	EXR			
1	2.730 (33.503)**	-0.309 (7.266)**						0.318	0.597	52.797
2	2.182 (5.774)**		0.076 (2.618)**					0.053	0.704	6.854
3	3.342 (5.497)**			-0.002 (0.307)				0.008	0.726	0.094
4	3.104 (22.172)**				0.006 (0.428)			0.007	0.726	0.183
5	2.723 (8.347)**					-0.011 (1.359)		0.008	0.720	1.847
6	6.305 (6.137)**						-0.028 (3.071)**	0.071	0.697	9.429
7	1.663 (5.33)**	-0.314 (7.759)**	0.071 (3.528)**					0.382	0.568	35.371
8	1.499 (2.684)**	-0.316 (7.705)**	0.075 (3.471)**	-0.002 (0.354)				0.377	0.570	23.434
9	0.844 (1.184)	-0.327 (7.883)**	0.073 (3.351)**	-0.008 (1.145)	0.021 (1.464)			0.384	0.567	18.297
10	1.064 (1.421)	-0.344 (7.647)**	0.07 (3.237)**	-0.009 (1.238)	0.02 (1.427)	-0.007 (0.970)		0.384	0.567	14.818
11	4.314 (3.965)**	-0.304 (7.025)**	0.092 (4.334)**	-0.011 (1.636)	-0.001 (0.047)	-0.001 (0.146)	-0.034 (3.910)**	0.457	0.533	16.566

Notes:

i. Figures in parenthesis are t-values.
ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.
iii. Net interest margin is dependent variable.

Table 5 shows that the beta coefficients for non-performing loan are negative with net interest margin. It indicates that non-performing loan has a negative impact on net interest margin. This finding is not consistent with the

findings of Ardelia and Lubis (2023). Similarly, the beta coefficients for capital adequacy ratio are positive with net interest margin. It indicates that capital adequacy ratio has a positive impact on net interest margin. This finding is similar to the findings of Sarakiri (2023). In contrast, the beta coefficient for loan to deposit ratio are negative with net interest margin. It indicates that loan to deposit ratio has a negative impact on net interest margin. This finding is similar to the findings of Thinh *et al.* (2022). Moreover, the beta coefficients for cash reserve ratio are positive with net interest margin. It indicates that cash reserve ratio has a positive impact on net interest margin. This finding is similar to the findings of Joseph and Adelegan (2023). Likewise, the beta coefficients for BOPO ratio are negative with net interest margin. It indicates that BOPO ratio has a negative impact on net interest margin. This finding is not consistent with the findings of Hasmiana and Pintor (2022). Moreover, the beta coefficients for exchange rate are negative with net interest margin. It indicates that exchange rate has a negative impact on net interest margin. This finding is similar to the findings of Njagi and Nzai (2022).

4. Summary and conclusion

Risk is defined as anything that can create hindrances in the way of achievement of certain objectives. It can be because of either internal factors or external factors, depending upon the type of risk that exists within a particular situation. Taking risk is core to the Bank's business, and risks are an inevitable consequence of being in business (Mudanya and Muturi, 2018). The bank's aim is therefore to achieve an appropriate balance between risk and return and minimize potential adverse effects on its performance.

This study attempts to examine the impact of financial risk factors on the profitability of Nepalese commercial bank. The study is based on secondary data of 14 commercial banks for the study period from 2014/15 to 2021/22, leading to a total of 112 observations.

The major conclusion of this study is that capital adequacy ratio and cash reserve ratio have positive impact on return on assets and net interest margin. It indicates that higher the capital adequacy ratio and cash reserve ratio, higher would be the return on assets and net interest margin. However, non-performing loan, loan to deposit ratio, operating expenses to operating income and exchange rate have negative impact on return on assets and net interest margin. It indicates that higher the non-performing loan, loan to deposit ratio, operating expenses to operating income and exchange rate, lower would be the return on assets and net interest margin.

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