Impact of Capital Adequacy on Profitability of Nepalese Commercial Banks

Smita Thapa*

Abstract

This study examines the impact of capital adequacy ratio on the profitability of Nepalese commercial banks. Return on assets and earnings per share are the selected dependent variables. The selected independent variables are capital adequacy ratio, Tier I capital, Tier II capital, non-performing loan, liquidity and total deposit. The study is based on secondary data of 11 commercial banks with 110 observations for the study period from 2013/14 to 2022/23. The data were collected from Banking and Financial Statistics published by Nepal Rastra Bank and annual report of respective commercial banks. The correlation coefficients and regression models are estimated to test the significance and importance of capital adequacy ratio on the profitability of Nepalese commercial banks.

The study showed that capital adequacy ratio has a positive impact on return on assets and earnings per share. It indicates that increase in capital adequacy ratio leads to increase in return on assets and earnings per share. Similarly, Tier I capital has a positive impact on return on assets and earnings per share. It indicates that increase in core capital leads to increase in return on assets and earnings per share. In contrast, Tier II capital has a negative impact on return on assets and earnings per share. It indicates that increase in supplementary capital leads to decrease in return on assets and earnings per share. Likewise, non-performing loan has a negative impact on return on assets. It indicates that increase in non-performing loan leads to decrease in return on assets. Furthermore, liquidity has a positive impact on return on assets and earnings per share. It indicates that increase in liquidity ratio leads to increase in return on assets and earnings per share. In addition, total deposit has a negative impact on return on assets and earnings per share. It indicates that increase in total deposit leads to decrease in return on assets and earnings per share.

Keywords: capital adequacy ratio, Tier I capital, Tier II capital, non-performing loan, liquidity, total deposit, earnings per share

1. Introduction

Capital adequacy refers to the amount of equity capital and other securities which a bank holds as reserves against risky assets as a hedge against the probability of bank failure. Capital adequacy is used to determine whether a bank has enough capital to support the risk on its balance sheet i.e., it is used to mitigate bank solvency problem. However, the assessment of capital adequacy for precautionary purposes is problematic at best due to rapidly changing economic and financial services industry (Agbeja et al., 2015). Capital level is used by most regulators to restrict credit expansion.

* Ms. Thapa is a Freelance Researcher, Kathmandu, Nepal. E-mail: esuthapa92@gmail.com

Capital levels are indeed a fundamental tool used by regulators to control credit expansion and ensure the stability of financial institutions. By imposing capital requirements, regulators aim to ensure that banks and other financial institutions have enough capital to absorb losses during adverse economic conditions or financial shocks (Olalekan and Adeyinka, 2013). This helps mitigate the risk of bank failures and systemic crises. Capital requirements typically mandate that financial institutions maintain a certain level of capital relative to their risk-weighted assets. Higher capital requirements mean that banks must hold more capital, which limits their ability to extend credit excessively or engage in overly risky activities. This, in turn, reduces the likelihood of insolvency and helps safeguard the overall stability of the financial system (Madugu et al., 2020).

Profitability is an indicator of the bank's competitive position in banking industry, quality of its management and ensuring the health of the banking system. A sound and profitable banking system in a better position endures negative distress and contributes more significantly to the growth of the financial system (Aburime, 2009). A healthy banking system is more resilient to economic shocks and financial distress. It can withstand negative events such as economic downturns, market volatility, or sudden credit defaults without collapsing. This stability is essential for maintaining confidence in the financial system and preventing systemic crises. Sound banking institutions prioritize effective risk management practices. They assess and mitigate risks in their lending activities, investment portfolios, and operations. By maintaining appropriate levels of capital and liquidity, they can absorb losses and navigate challenging economic environments without jeopardizing their solvency. Profitable banks are better positioned to extend credit to individuals and businesses (Oral and Yolalan, 1990). They have the resources and confidence to lend money, which supports consumption, investment, and overall economic activity. A robust banking sector fuels growth by providing the necessary financial lubrication for businesses to expand and innovate. According to Ruziqa (2013), the widely used measures of profitability include the return on asset (ROA), return on equity (ROE), earnings per share (EPS) and net interest margin (NIM).

Amissah and Opoku (2023) examined the effect of capital adequacy requirement on profitability of the selected banks listed on Ghana Stock Exchange banks between 2013 and 2018. The study found that capital adequacy ratio is negatively and insignificantly correlated to the return on assets of banks listed on Ghana Stock Exchange. The study also found that capital adequacy ratio has a positive and significant effect on the return on

equity. Nyanyuki *et al.* (2022) examined the effects of capital adequacy ratio on financial performance of commercial banks in Kenya. The study utilized secondary data sourced from financial statement published at Nairobi security stock exchange from the period 2015 to 2019. The study concluded that capital adequacy has a negative but significant effect on financial performance of commercial banks in Kenya. Moreover, Uddin (2022) investigated the effect of leverage, operating efficiency, non-performing loan, and capital adequacy ratio on profitability of commercial banks in Bangladesh. The study used secondary data collected from annual reports of sample banks which covered balanced panel data for a period of four years from 2017 to 2020. The study revealed that the capital adequacy ratio has a positive and significant effect on return on assets. In addition, Anggari *et al.* (2020) identified the effect of capital adequacy ratio, third party funds, loan to deposit ratio, bank size on profitability in banking companies on Indonesia Stock Exchange (BEI) using financial reports published on the Indonesia Stock Exchange website. The study concluded that the capital adequacy ratio, third party fund and bank size have a positive and significant effect on profitability. Meanwhile, loan to deposit ratio has a positive and insignificant effect on the profitability of banking companies listed in the Indonesia Stock Exchange.

Swandewi and Purnawati (2021) examined the effect of non-performing loans on return on assets with a capital adequacy ratio as a mediator. The study concluded that capital adequacy ratio has a positive and significant relationship with return on assets. Bashir *et al.* (2023) investigated the effect of Basel capital regulations on the various proxies of the financial performance of the Pakistani commercial banks. The study indicated that Basel II and Basel III capital regulations have affected the banks' profitability differently. Capital regulations of Basel II have positive significant effect on banks profitability while capital requirements of Basel III have statistically insignificant and not affected the financial performance of Pakistani banks, pointing towards the ineffectiveness of Basel III capital regulations. In addition, the study found that capital regulations did not significantly affect bank profitability during the financial crisis of 2008. Overall, the study of the Generalized Method of Moments (GMM) technique showed that Basel capital regulations enhance the financial performance of the Pakistani banking sector. Nguyen (2020) analyzed the impact of capital adequacy on bank profitability in the context of Basel II Accord implementation in Vietnam. The study showed that bank capital adequacy, net interest margin, and non-interest income measures are positively correlated to profitability indicators. For small-sized banks, capital adequacy has a positive impact on return on assets

meanwhile it has no significant impact on profitability for large-sized banks in Vietnam. Furthermore, Datta and Al Mahmud (2018) assessed the impact of capital adequacy ratio on profitability of the commercial banks operating in Bangladesh listed on the Dhaka Stock Exchange. The result showed that capital adequacy ratio has positive effect on the profitability. The study also found a positive relationship between operating efficiency and profitability.

Chandrasegaran (2020) assessed the relationship between the capital adequacy requirements and profitability and to examine the effect of capital adequacy requirements on profitability of banking industry in Sri Lanka. Capital adequacy ratio, core capital ratio, asset quality, risk-weighted assets to total assets ratio, tier 1 capital to total assets were used as the proxies for the capital adequacy requirements. Non-interest income to average assets, net interest margin and return on assets were used as the proxies for the profitability. The results of the multiple regression analysis showed that capital adequacy ratio had a positive significant relationship with non-interest income to average assets. Tier 1 capital to total assets had a negative significant relationship with non-interest income to average assets. Asset quality had a negative significant relationship with net interest margin.

In the context of Nepal, Bhattarai (2021) examined capital adequacy ratio and financial performance of commercial banks in Nepal. The study revealed that supplementary capital is highly spread in comparison to core capital ratio. There is low degree of positive relationship of return on assets with core capital ratio and supplementary capital ratio. Similarly, the study also showed that core capital ratio and total capital fund ratio positively influence on return on assets and return on equity. Chhetri (2021) investigated the effect of credit risk on the performance of commercial banks in Nepal over the period of 5 years from 2015 to 2020 of seventeen commercial banks with 85 observations by using pooled data regression model. The study revealed that capital adequacy ratio and bank size have negative and statistically no significant impact on the financial performance of the commercial banks in Nepal. Credit to deposit ratio has positive but no significant relationship with the financial performance (ROA). Gautam (2020) identified the financial performance analysis of Nepalese financial institutions in the framework of CAMEL. The study showed that capital adequacy ratio has a significant positive relationship with return on assets.

The above discussion shows that empirical evidences vary greatly across the studies on the impact of capital adequacy ratio on the bank profitability. 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 main purpose of the study is to analyze the impact of capital adequacy ratio on the bank profitability in the context of Nepalese commercial banks. Specifically, it examines the relationship of capital adequacy ratio, Tier I capital, Tier II capital, non-performing loan, liquidity and total deposit on return on assets and earnings per share in the context 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 conclusion.

2. Methodological aspects

The study is based on the secondary data which were collected from 11 Nepalese commercial banks from 2013/14 to 2022/23, leading to a total of 110 observations. The study has employed convenience sampling method. The main sources of data include Banking and Financial Statistics published by Nepal Rastra Bank, and annual report of respective commercial 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
1	Agricultural Development Bank Limited	2013/14 - 2022/23	10
2	Everest Bank Limited	2013/14 - 2022/23	10
3	NIC Asia Bank Limited	2013/14 - 2022/23	10
4	Machhapuchchhre Bank Limited	2013/14 - 2022/23	10
5	Himalayan Bank Limited	2013/14 - 2022/23	10
6	Nepal Bank Limited	2013/14 - 2022/23	10
7	Nepal SBI Bank Limited	2013/14 - 2022/23	10
8	Prime Commercial Bank Limited	2013/14 - 2022/23	10
9	Standard Chartered Nepal Bank Limited	2013/14 - 2022/23	10
10	Siddhartha Bank Limited	2013/14 - 2022/23	10
11	Sanima Bank Limited	2013/14 - 2022/23	10
Total number of observations			**110**

Thus, the study is based on the 110 observations.

The model

The model used in this study assumes that bank probability depends on capital adequacy ratio and other financial ratios. The dependent variables selected for the study are return on assets and earnings per share. Similarly, the selected independent variables in this study are capital adequacy ratio, Tier I capital, Tier II capital, non-performing loan, liquidity and total deposit. Therefore, the models take the following forms:

$ROA = \beta_0 + \beta_1 CAR + \beta_2 Tier\ I + \beta_3 Tier\ II + \beta_4 NPL + \beta_5 LIQ + \beta_6 TD + e$

$EPS = \beta_0 + \beta_1 CAR + \beta_2 Tier\ I + \beta_3 Tier\ II + \beta_4 NPL + \beta_5 LIQ + \beta_6 TD + \mathbf{e}$

Where,

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

EPS = Earnings per share as measured by the ratio of net profit to the weighted average shares outstanding, in Rs.

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

Tier I = Tier I capital as measured by the ratio of total Tier I capital to risk weighted exposure, in percentage.

Tier II = Tier II capital as measured by the ratio of total Tier II capital to risk weighted exposure, in percentage.

NPL= Nonperforming loan as measured by the ratio of non-performing loans to total loans, in percentage.

LIQ = Liquidity as measured by cash reserve ratio, in percentage.

TD = Total deposits, Rs. in billion.

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

Capital adequacy ratio

Capital adequacy ratio is a comparison between the amount of core capital and supplementary capital with risk weighted assets (RWA). Uddin (2022) found that there is a significant and positive relationship between capital adequacy ratio and return on assets. A higher CAR indicates that a bank has more capital available to cover its potential losses, making it more resilient to economic downturns and financial shocks. Likewise, Anggari *et al.* (2020) concluded that capital adequacy has a positive and significant effect on profitability. Similarly, Swandewi and Purnawati (2021) revealed

that capital adequacy ratio has a positive and significant relationship with return on assets. Further, Datta and Al Mahmud (2018) found that capital adequacy ratio has positive effect on the profitability. Furthermore, Nguyen (2020) revealed that capital adequacy is positively correlated to profitability. Based on it, this study develops the following hypothesis:

H_1: There is a positive relationship between capital adequacy ratio and bank profitability.

Tier I capital

Tier I capital is considered the highest quality of capital as it consists mainly of common equity, which represents ownership in the bank. Common equity provides a cushion against losses and can absorb losses without triggering insolvency, thus enhancing the bank's stability and resilience. Rangkuti (2021) examined the effects of Tier-1 capital to risk management and profitability on performance using multiple fixed effect panel data model. The study revealed that core capital ratio is positively related to banks profitability. Similarly, Coccorese and Girardone (2021) concluded that there is a strong positive linear relationship between return on asset and core capital. Likewise, Sari and Rahayu (2018) examined the effects of Tier-1 capital, risk management, and profitability on performance of Indonesian commercial banks. The study found that Tier I capital has a positive relation with bank profitability. Furthermore, Tran et al. (2016) found that core capital has a positive and significant impact on banks financial performance. Based on it, the study develops the following hypothesis:

H_2: There is a positive relationship between Tier I capital and bank's profitability.

Tier II capital

Supplementary capital (Tier II) includes reserves which have been passed through the profit and loss account and all other capital instruments eligible and acceptable for capital purposes. Amissah (2023) stated that Tier II has a positive and insignificant relationship with return on assets. Tier II capital adds to a bank's overall capital base, providing additional buffers against unexpected losses. While Tier II capital may be less permanent than Tier I capital, it still contributes to the bank's ability to absorb losses without jeopardizing solvency. This enhanced resilience can indirectly support profitability by reducing the likelihood of significant disruptions to operations. Similarly, Shabani (2019) assessed that there is a positive and significant impact of Tier II on return on assets. Further, Alzoubi (2018) concluded a

positive relationship between Tier II and profitability of banks measured by return on assets. Based on it, the study develops the following hypothesis:

H_3: Tier II capital has a positive relationship with banks profitability.

Non-performing loan

High levels of non-performing loans adversely affect bank net profit through provisioning of doubtful debts and write-offs of bad debts (Ombaba, 2013). Islamiyah and Sukaris (2023) found that non-performing loans has negative and significant impact on return on assets. Non-performing loans can weaken a bank's capital adequacy ratio if provisions for these loans deplete the bank's capital reserves. A lower capital adequacy ratio may restrict the bank's ability to lend and grow its business, potentially limiting its profitability in the long run. Similarly, Do *et al.* (2020) showed that non-performing loan has a statistically significant and negative impact on the bank's profitability. Likewise, Nwosu *et al.* (2020) concluded that non-performing has negative impact on the profitability. Based on it, this study develops the following hypothesis:

H_4: There is a negative relationship between non- performing loan and banks profitability.

Liquidity

Liquidity measures the firm's ability to use its near cash or "quick" assets to retire its liabilities. Paul *et al.* (2021) concluded that there is a positive impact of liquidity on the profitability in the commercial banking sector of Bangladesh. Similarly, Thinh and Vietnam (2022) revealed there is a positive correlation between liquidity and the profitability of the banks. Likewise, Haddad *et al.* (2022) found that there is a significant and positive relationship between the deposit ratio and Jordan banks' performance. Further, Alali (2019) found that there as significant positive relationship between liquidity with profitability of the banks. Similarly, Alim *et al.* (2021) revealed that liquidity has a significant and positive impact on banks profitability. Based on it, this study develops the following hypothesis:

H_5: There is a positive relationship between liquidity ratio and bank profitability.

Total deposit

Deposits are the main source of banks funding and are the lowest cost of funds. More deposit a bank will get, it will be able to provide more loan opportunities to customers and generate further profits (Lee and Hsieh, 2013). On the other hand, bank's inability of not releasing money through loans

may decrease its profitability level because then bank has to pay interest to depositors on their fixed, time, or term deposits. Shafee *et al.* (2021) found that deposit ratio has a significant positive relation with return on asset. Similarly, Haddad et al. (2022) revealed that there is a significant and positive relationship between the deposit ratio and Jordan banks' performance. Likewise, Zaman *et al.* (2011) showed that total deposit to total assets showed a positive and significant relationship with bank profitability indicator in Pakistan. Similarly, Farkasdi *et al.* (2021) found that deposit has a significant positive impact on profitability. Furthermore, Rokhmat *et al.* (2023) revealed that savings has a significant effect on ROE of commercial banks in Indonesia. Based on it, this study develops the following hypothesis:

H_6: There is a positive relationship between total deposit and banks profitability.

3. Results and discussion

Descriptive statistics

Table 2 presents the descriptive statistics of the selected dependent and independent variables during the period 2013/14 to 2022/23.

Table 2

Descriptive statistics

This table shows the descriptive statistics of dependent and independent variables of 11 Nepalese commercial banks for the study period from 2013/14 to 2022/23. The dependent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage) and EPS (Earnings per share as measured by the ratio of net profit to the weighted average shares outstanding, in Rs). The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total capital to risk weighted exposure, in percentage), Tier I (Core capital ratio as measured by the ratio of total Tier I capital to risk weighted exposure, in percentage), Tier II (Supplementary capital ratio as measured by the ratio of total Tier II capital to risk weighted exposure, in percentage), NPL (Non-performing loan as measured by the ratio of non-performing loan to total loan, in percentage), LIQ (Liquidity as measured by the cash reserve ratio, in percentage) and TD (Total deposit, Rs. in billion).

Variables	Minimum	Maximum	Mean	Std. Deviation
ROA	0.47	3.12	1.59	0.52
EPS	5.30	86.04	28.99	13.84
CAR	4.55	22.99	13.81	2.64
Tier I	3.92	21.41	11.67	2.89
Tier II	0.38	5.15	2.15	1.16
NPL	0.01	7.00	1.44	1.57
LIQ	2.89	37.52	17.62	9.61
TD	11.36	311.37	105.07	62.38

Source: SPSS version 22

Correlation analysis

Having indicated the descriptive statistics, Pearson's correlation coefficients are computed and 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 11 Nepalese commercial banks for the study period of 2013/14 to 2022/23. The dependent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage) and EPS (Earnings per share as measured by the ratio of net profit to the weighted average shares outstanding, in Rs). The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total capital to risk weighted exposure, in percentage), Tier I (Core capital ratio as measured by the ratio of total Tier I capital to risk weighted exposure, in percentage), Tier II (Supplementary capital ratio as measured by the ratio of total Tier II capital to risk weighted exposure, in percentage), NPL (Non-performing loan as measured by the ratio of non-performing loan to total loan, in percentage), LIQ (Liquidity as measured by the cash reserve ratio, in percentage) and TD (Total deposit, Rs. in billion).

Variables	ROA	EPS	CAR	Tier I	Tier II	NPL	LIQ	TD
ROA	1							
EPS	0.660**	1						
CAR	0.389**	0.102	1					
Tier I	0.500**	0.110	0.914**	1				
Tier II	-0.359**	-0.041	0.006	-0.399**	1			
NPL	-0.007	0.022	-0.089	-0.034	-0.112	1		
LIQ	0.102	0.152	0.073	0.047	0.038	0.100	1	
TD	-0.266**	-0.124	0.098	-0.020	0.274**	0.159	-0.223*	1

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

Table 3 shows the 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. Similarly, Tier I capital has a positive relationship with return on assets. It indicates that increase in core capital leads to increase in return on assets. In contrast, Tier II capital has a negative relationship with return on assets. It indicates that increase in supplementary capital leads to decrease in return on assets. Likewise, 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. Furthermore, liquidity has a positive relationship with return on assets. It indicates that increase in liquidity ratio leads to increase in return on assets. In addition, total deposit has a negative relationship with return on assets. It indicates that increase in total deposit

leads to decrease in return on assets.

Similarly, capital adequacy ratio has a positive relationship with earnings per share. It indicates that increase in capital adequacy ratio leads to increase in earnings per share. Similarly, Tier I capital has a positive relationship with earnings per share. It indicates that increase in core capital leads to increase in earnings per share. In contrast, Tier II capital has a negative relationship with earnings per share. It indicates that increase in supplementary capital leads to decrease in earnings per share. Likewise, non-performing loan has a positive relationship with earnings per share. It indicates that increase in non-performing loan leads to increase in earnings per share. Furthermore, liquidity has a positive relationship with earnings per share. It indicates that increase in liquidity leads to increase in earnings per share. Further, total deposit has a negative relationship with earnings per share. It indicates that increase in total deposit leads to decrease in earnings per share.

Regression analysis

Having indicated the Pearson's correlation coefficients, the regression analysis has been carried out and the results are presented in Table 4 and Table 5. More specifically, Table 4 shows the regression results of shows the regression results of capital adequacy ratio, Tier I capital, Tier II capital, non-performing loan, liquidity and total deposit on return on assets of Nepalese commercial banks.

Table 4

Estimated regression results of capital adequacy ratio, Tier I capital, Tier II capital, non-performing loan, liquidity and total deposit on return on assets of Nepalese commercial banks

The results are based on panel data of 11 commercial banks with 110 observations for the period from 2013/14 to 2022/23 by using the linear regression model and the model is ROA $= \beta_0 + \beta_1$ CAR $+ \beta_2$ Tier I $+ \beta_3$ Tier II $+ \beta_4$ NPL $+ \beta_5$ LIQ $+ \beta_6$ TD + e, 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 CAR (Capital adequacy ratio as measured by the ratio of total capital to risk weighted exposure, in percentage), Tier I (Core capital ratio as measured by the ratio of total Tier I capital to risk weighted exposure, in percentage), Tier II (Supplementary capital ratio as measured by the ratio of total Tier II capital to risk weighted exposure, in percentage), NPL (Non-performing loan as measured by the ratio of non-performing loan to total loan, in percentage), LIQ (Liquidity as measured by the cash reserve ratio, in percentage) and TD (Total deposit, Rs. in billion).

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		CAR	Tier I	Tier II	NPL	LIQ	TD			
1	0.527 (2.138)*	0.077 (4.390)**						0.144	0.483	19.271
2	0.537 (2.967)**		0.090 (5.997)**					0.243	0.454	35.965
3	1.937 (19.624)**			-0.161 (3.992)**				0.120	0.489	15.933
4	1.595 (23.250)**				-(0.002) (0.076)			0.009	0.526	0.006
5	1.492 (14.314)**					0.006 (1.063)		0.001	0.522	1.131
6	6.845 (3.739)**						-0.480 (2.872)**	0.062	0.505	8.247
7	0.867 (3.587)**	0.810 (2.025)*	0.158 (4.321)**					0.264	0.448	20.594
8	0.862 (3.571)**	0.459 (0.952)	0.380 (0.792	-0.546 (1.124)				0.266	0.447	14.154
9	0.850 (3.338)**	0.461 (0.948)	0.381 (0.787)	-0.545 (1.113)	-0.003 (0.111)			0.288	0.261	10.511
10	0.809 (3.120)**	0.394 (0.800)	0.316 (0.644)	-0.481 (0.971)	-0.006 (0.218)	0.004 (0.218)	-0.004 (0.874)	0.259	0.451	8.543
11	5.083 (2.909)**	0.409 (0.851)	0.325 (0.679)	-0.460 (0.951)	-0.011 (0.391)	0.001 (0.177)	-0.401 (2.472)*	0.294	0.440	8.491

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 asset is the dependent variable.

Table 4 shows that the beta coefficients for the capital adequacy ratio are positive with return on assets. It indicates that capital adequacy ratio has a positive impact with return on assets. This finding is similar to the findings of Nguyen (2020). Likewise, the beta coefficients for Tier I capital ratio are positive with return on assets. It indicates that core capital ratio has a positive impact with return on assets. This finding is consistent with the findings of Coccorese and Girardone (2021). Moreover, the beta coefficients for non-performing loan ratio are negative with return on assets. It indicates that non-performing loan ratio has a negative impact on return on assets. This finding is similar to the findings of Islamiyah and Sukaris (2023). Likewise, the beta coefficients for liquidity ratio are positive with return on assets. It indicates that liquidity ratio has a positive impact on return on assets. This finding is similar to the findings of Thinh and Vietnam (2022). In addition, the beta coefficients for the total deposit are negative with return on assets. It indicates total deposit has a negative impact with return on assets. This finding is consistent the findings of Lee and Hsieh (2013).

Table 5 shows the regression results of shows the regression results of capital adequacy ratio, Tier I capital, Tier II capital, non-performing loan, liquidity and total deposit on earnings per share of Nepalese commercial

banks.

Table 5

Estimated regression results of capital adequacy ratio, Tier I capital, Tier II capital, non-performing loan, liquidity and total deposit on earnings per share of Nepalese commercial banks

The results are based on panel data of 11 commercial banks with 110 observations for the period from 2013/14 to 2022/23 by using the linear regression model and the model is EPS = $\beta_0 + \beta_1$ CAR + β_2 Tier I + β_3 Tier II + β_4 NPL + β_5 LIQ + β_6 TD + e, where the dependent variable is EPS (Earnings per share as measured by the ratio of net profit to the weighted average shares outstanding, in Rs.). The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total capital to risk weighted exposure, in percentage), Tier I (Core capital ratio as measured by the ratio of total Tier I capital to risk weighted exposure, in percentage), Tier II (Supplementary capital ratio as measured by the ratio of total Tier II capital to risk weighted exposure, in percentage), NPL (Non-performing loan as measured by the ratio of non-performing loan to total loan, in percentage), LIQ (Liquidity as measured by the cash reserve ratio, in percentage) and TD (Total deposit, Rs. in billion).

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		CAR	Tier I	Tier II	NPL	LIQ	TD			
1	21.605	0.535						0.001	13.834	1.136
	(3.061)**	(1.066)								
2	22.859		0.526					0.003	13.822	1.318
	(4.153)**		(1.148)							
3	30.051			-0.492				0.008	13.894	0.184
	(10.728)**			(0.429)						
4	28.765				0.193			0.009	13.957	0.051
	(15.804)**				(0.226)					
5	25.134					0.219		0.014	13.744	2.557
	(9.151)**					(1.599)				
6	93.783						-5.923	0.006	13.799	1.681
	(1.876)						(1.297)			
7	22.640	0.054	0.481					0.006	13.886	0.654
	(3.022)**	(0.043)	(0.425)							
8	22.618	2.489	1.945	-2.462				0.016	13.950	0.441
	(3.005)**	(0.165)	(0.130)	(0.162)						
9	21.570	2.786	2.202	-2.632	0.250			0.024	14.063	0.364
	(2.714)**	(0.184)	(0.146)	(0.172)	(0.287)					
10	19.477	0.614	1.112	-0.600	0.096	0.206		0.014	13.992	0.704
	(2.422)*	(0.040)	(0.073)	(0.039)	(0.110)	(1.431)				
11	75.731	0.413	0.988	-0.882	0.323	0.164	-5.283	0.013	13.989	0.761
	(1.364)	(0.027)	(0.065)	(0.057)	(0.358)	(1.093)	(1.024)			

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. Earnings per share is the dependent variable.

Table 5 shows that the beta coefficients for the capital adequacy ratio are positive with earnings per share. It indicates that capital adequacy ratio has a

positive impact with earnings per share. This finding is similar to the findings of Datta and Al Mahmud (2018). Likewise, the beta coefficients for core capital ratio are positive with earnings per share. It indicates that core capital ratio has a positive impact with earnings per share. This finding is consistent to the findings of Sari and Rahayu (2018). Moreover, the beta coefficients for non-performing loan ratio are positive with earnings per share. It indicates that non-performing loan ratio has a positive impact with earnings per share. This finding contradicts with the findings of Nwosu *et al.* (2020). Likewise, the beta coefficients for liquidity ratio are positive with earnings per share. It indicates that liquidity ratio has a positive impact with earnings per share. This finding is similar to the findings of Paul *et al.* (2021).

4. Summary and conclusion

A healthy banking system efficiently allocates capital to productive uses, fostering economic growth and development. When banks are profitable and well-managed, they are more effective at performing this intermediation function. a sound and profitable banking system is not only better equipped to withstand negative shocks but also plays a crucial role in fostering economic growth and stability. It serves as a cornerstone of the financial infrastructure, facilitating the efficient allocation of capital and resources within the economy.

This study attempts to examine the impact of capital adequacy ratio on the profitability of Nepalese commercial banks. The study is based on secondary data of 11 commercial banks with 110 observations for the period from 2013/14 to 2022/23.

The major conclusion of this study is that capital adequacy ratio, core capital ratio and liquidity ratio have a positive impact return on assets and earnings per share. It indicates that higher the capital adequacy ratio, core capital ratio and liquidity ratio, higher would be the return on assets and earnings per share. However, supplementary capital and total deposit have a negative impact on return on assets and earnings per share. It indicates that higher the supplementary capital and total deposit, lower would be the return on assets and earnings per share. Moreover, the study concluded that non-performing loan has a negative impact on return on assets. It indicates that higher the non-performing loan, lower would be the return on assets. Likewise, the study also concluded that capital adequacy ratio, core capital ratio and supplementary capital ratio are the most influencing factor that

explains the changes in the return on asset of Nepalese commercial banks.

References

Aburime, U. T., 2009. Impact of political affiliation on bank profitability in Nigeria. *African Journal of Accounting, Economics, Finance, and Banking Research* 4(4), 61-75.

Agbeja, O., O. J. Adelakun, and F. I. Olufemi, 2015. Capital adequacy ratio and bank profitability in Nigeria: A linear approach. *International Journal of Novel Research in Marketing Management and Economics* 2(3), 91-99.

Alali, S. M., 2019. The impact of bank liquidity on the profitability of commercial banks: An applied study on Jordanian commercial banks for the period (2013/2017). *International Journal of Economics and Financial Issues* 9(5), 24-28.

Alim, W., A. Ali, and M. R. Metla, 2021. The effect of liquidity risk management on financial performance of commercial banks in Pakistan. *MPRA Paper No. 112482*

Alzoubi, T., 2018. Determinants of bank profitability: Islamic versus conventional banks. *Banks and Bank Systems* 13(3), 106-113.

Amissah, M., and O. A. Opoku, 2023. Effect of capital adequacy requirement on profitability of selected banks listed on Ghana stock exchange. *Journal of Management Studies and Development* 2(1), 13-25.

Anggari, N. L. S., and Dana, I. M. 2020. The effect of capital adequacy ratio, third party funds, loan to deposit ratio, bank size on profitability in banking companies on IDX. *American Journal of Humanities and Social Sciences Research* 4(12), 334-338.

Bashir, A., M. Khan, M. Sajid, and S. Sorooshian, 2023. Basel accord capital regulations and financial risk management: Empirical evidence from Pakistan's financial institutions. *Accounting* 9(1), 1-8.

Bhattarai, D. R., 2021. Capital adequacy ratio and financial performance of commercial banks in Nepal. *Tribhuvan University Journal* 36(1), 96-105.

Chandrasegaran, L., 2020. Capital adequacy requirements and profitability: An empirical study on banking industry in Sri Lanka. *Journal of Economics and Business* 3(2), 56-68.

Chhetri, G. R., 2021. Effect of credit risk management on financial performance of Nepalese commercial banks. *Journal of Balkumari College* 10(1), 19-30.

Coccorese, P., and C. Girardone, 2021. Bank capital and profitability: Evidence from a global sample. *The European Journal of Finance* 27(9), 827-856.

Datta, C. K., and A. Al Mahmud, 2018. Impact of capital adequacy on profitability under Basel II accord: Evidence from commercial banks of Bangladesh. *European journal of business and management 10*(8), 48-58.

Do, H., T. Ngo, and Q. Phung, 2020. The effect of non-performing loans on profitability of commercial banks: Case of Vietnam. *Accounting* 6(3), 373 386.

Farkasdi, S., B. Septiawan, and E. S. Alghifari, 2021. Determinants of commercial banks profitability: evidence from Germany. *Jurnal Riset Akuntansi Kontemporer* 13(2), 82-88.

Gautam, K. R., 2020. Financial performance analysis of Nepalese financial institutions in the framework of CAMEL. *Janapriya Journal of Interdisciplinary Studies* 9(1), 56-74.

Haddad, H., A. Q. Luma, B. Y. Almansour, and N. A. Rumman, 2022. Bank specific and macroeconomic determinants of commercial bank profitability: in Jordan from 2009-2019. *Montenegrin Journal of Economics* 18(4), 155-166.

Islamiyah, D., and S. Sukaris, 2023. The influence of loan to deposit ratio, operational costs and operational revenue, non-performing loans on profitability in banking companies listed on the Indonesia Stock Exchange. *Journal Universitas Muhammadiyah Gresik Engineering, Social Science, and Health* 2(1), 8-18.

Lee, C. C., and M. F. Hsieh, 2013. The impact of bank capital on profitability and risk in Asian banking. *Journal of International Money and Finance* 32(2), 251 281.

Madugu, A. H., M. Ibrahim, and J. O. Amoah, 2020. Differential effects of credit risk and capital adequacy ratio on profitability of the domestic banking sector in Ghana. *Transnational Corporations Review* 12(1), 37-52.

Nguyen, T. H., 2020. Impact of bank capital adequacy on bank profitability under Basel II accord: evidence from Vietnam. *Journal of Economic Development* 45(1), 31-46.

Nwosu, C., D. Okedigba, and D. Anih, 2020. Non-performing loans and profitability of the Nigerian commercial banks. *Economic and Financial Review* 58(3),

35-58.

Nyanyuki, M. N., A. Nyanga'u, and M. Onwonga, 2022. Evaluation of the effects of capital adequacy on financial performance of commercial banks in Kenya. *International Academic Journal of Economics and Finance* 3(7), *113-126.*

Olalekan, A., and S. Adeyinka, 2013. Capital adequacy and banks' profitability: Empirical evidence from Nigeria. *American International Journal of Contemporary Research* 3(10), 87-93.

Ombaba, K. B. M., 2013. Assessing the factors contributing to non–performance loans in Kenyan banks. *European Journal of Business and Management* 5(32), 155-162.

Oral, M., and R. Yolalan, 1990. An empirical study on measuring operating efficiency and profitability of bank branches. *European Journal of Operational Research* 46(3), 282-294.

Paul, S. C., P. K. Bhowmik, and M. N. Famanna, 2021. Impact of liquidity on profitability: A study on the commercial banks in Bangladesh. *Advances in Management and Applied Economics* 11(1), 73-90.

Rangkuti, Z., 2021. The effects of Tier-1 capital to risk management and profitability on performance using multiple fixed effect panel data model. *Measuring Business Excellence* 25(2), 121-137.

Rokhmat, N., S. Zulaihati, and S. Susanti, 2023. The effect of deposits and non-performing loans on bank profitability: (Case study on conventional commercial banks listed on the Indonesia Stock Exchange for the period 2015 2021). *Journal of Management, Accounting, General Finance and International Economic Issues* 2(2), 416-435.

Ruziqa, A., 2013. The impact of credit and liquidity risk on bank financial performance: The case of Indonesian Conventional Bank with total asset above 10 trillion Rupiah. *International Journal of Economic Policy in Emerging Economics* 6(2), 93-106.

Sari, E., and S. M. Rahayu, 2018. The effects of Tier-1 capital, risk management, and profitability on performance of Indonesian Commercial Banks. *International Journal of Law and Management* 60(5), 1074-1086.

Shabani, H., F. Morina, and V. Misiri, 2019. The effect of capital adequacy on returns of assets of commercial banks in Kosovo. *European Journal of Sustainable*

Development 8(2), 201-201.

Shafee, N. B., S. Suhaimi, H. Hashim, M. A. Mustafa, and S. N. H. Mohd, 2021. The profitability of commercial banks in Malaysia. *Studies of Applied Economics* 39(10), 1-12.

Swandewi, N. K. M., and N. K. Purnawati, 2021. Capital adequacy ratio mediates the effect of non-performing loan on returns on assets in public commercial banks. *American Journal of Humanities and Social Sciences Research* 5(1), 651-656.

Thinh, T. Q., and D. A. T. Vietnam, 2022. The impact of liquidity on profitability–evidence of Vietnamese listed commercial banks. *Banks and Bank Systems* 17(1), 94-103.

Tran, V. T., C. T. Lin, and H. Nguyen, 2016. Liquidity creation, regulatory capital, and bank profitability. *International Review of Financial Analysis* 48(1), 98-109.

Uddin, M. K., 2022. Effect of leverage, operating efficiency, non-performing loan, and capital adequacy ratio on profitability of commercial banks in Bangladesh. *European Journal of Business and Management Research* 7(3), 289-295.

Zaman, K., S. Javaid, J. Anwar, and A. Ghafoor, 2011. Determinants of bank profitability in Pakistan: Internal factor analysis. *Yaşar Üniversitesi E Dergisi* 6(23), 3794-3804.