Effect of Capital Adequacy, Non-Performing Loan, Operational Efficiency, Net Interest Margin, and Loan to Deposit Ratio on Profitability of Nepalese Commercial Banks

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Abstract

This study examines the effect of capital adequacy ratio, non-performing loan, operational efficiency, net interest margin, and loan to deposit ratio on profitability of Nepalese commercial banks. Return on assets and earnings per share are the selected dependent variables. The selected independent variables are net interest margin, loan to deposit ratio, leverage, capital adequacy ratio, operating efficiency, and non-performing loans. The study is based on secondary data of 18 commercial banks with 126 observations for the study period from 2015/16 to 2021/22. The data were collected from Bank Supervision Report published by 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 capital adequacy ratio, non-performing loan, operational efficiency, net interest margin, and loan to deposit ratio on the profitability of Nepalese commercial banks.

The study showed that non-performing loan has a negative impact on return on assets and earnings per share. It means that increase in non-performing loan leads to decrease in return on assets and earnings per share. In addition, loan-to-deposit ratio has a positive impact on return on assets. It indicates that increase in loan-to-deposit ratio leads to increase in return on assets. In contrast, loan-to-deposit ratio has a negative impact on earnings per share. It indicates that increase in loan-to-deposit ratio leads to decrease in earnings per share. Similarly, the study also showed that net interest margin has a positive impact on return on assets and earnings per share. It means that higher the net interest margin, higher would be the return on assets and earnings per share. Moreover, operating efficiency has a negative impact on return on assets and earnings per share. It shows that higher the operating efficiency, lower would be the return on assets and earnings per share. Furthermore, capital adequacy ratio has a positive impact on return on assets. It shows that higher the capital adequacy ratio, higher would be the return on assets.

Keywords: net interest margin, loan to deposit ratio, leverage, capital adequacy ratio, operating efficiency, and non-performing loans, return on assets

1. Introduction

The banking sector is the driving force for a country's economy. The financial performance of a financial institution is evaluated by determining the

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profitability. The stability of the banking system is a prerequisite for an effective financial system and achieving economic growth. In particular, profitability is one of the key factors to ensure the stability of the banking system. With good profitability, the bank can benefit its own shareholders and continue to be a channel of capital to support other investments of individuals and organizations, thereby promoting the development of the whole economy. A strong financial system plays a critical role in enabling growth and reducing vulnerability to crises among commercial banks. Stability of the financial system in an economy is an important catalyst for economic growth due to its function in facilitating exchange of value. The high level of bank capital boosts the confidence and trust of the public about the soundness of the bank (Carmona *et al.,* 2019). Commercial banks play important role for the development of the countries through the resource mobilization. Without sound and effective regulation, financial systems can become unstable, triggering crises that can devastate the real economy. Banks play a pivotal role in the shaping up of the economy of a country. Profit is the major reason behind every one to take greater amount of risk and make business successful. It is the central source of investment fund. In banking sector, the importance of banks' profitability can be appraised at the micro and macro levels of the economy (Kosmidou, 2008).

Dietrich and Wanzenried (2011) asserted that profitability is an indicator of the bank's competitive position in banking market and of the quality of its management, ensuring the health of the banking system. Profitability is a measure of firm's efficiency. Bank's profitability provides an important source of equity especially if reinvested into the business. This should lead to safe banks, and as such high profits could promote financial stability. Farkasdi *et al.* (2021) determined the determinants of profitability in commercial banks in Germany. The study showed a positive relationship between capital adequacy ratio and profitability measured by return on equity. Al-Chahadah *et al*. (2022) examined the relationship between liquidity risk and the profitability among commercial banks listed on the Amman Stock Exchange. The results showed no statistically significant relationship between the liquidity risk indicators and the majority of profitability indicators. However, the cash reserve ratio (CRR) index was statistically significant with the utilization ratio (UR). Additionally, there was a statistically significant relationship between the return on equity and the legal reserve ratios and the funds' investment. Similarly, Al-Husainy *et al*. (2021) analyzed the effect of liquidity risk and credit risk on the profitability of commercial banks in Iraq. The findings illustrated that liquidity risk has a positive significant association with bank profitability. Meanwhile, credit risk has an adverse significant association with bank profitability. Nguyen (2020) explored the impact of capital adequacy on bank profitability in the context of Vietnam. The study

showed that bank capital adequacy has a positive impact on return on assets of small-sized banks in Vietnam. Almumani (2013) found that the cost income ratio is the major endogenous factors under the control of management that determines the profitability of the commercial banks in Jordan. This study also showed that there is a negative relationship between cost to income ratio and bank efficiency and stability of Jordanian commercial banks.

Khalid *et al*. (2021) assessed the impact of credit risk management on the financial performance of banking sector in Sudan. The result showed that there is a positive relationship between the banks' financial performance and capital adequacy ratio. Similarly, Khan and Ali (2016) examined the impact of liquidity on profitability of commercial banks in Pakistan. The study found that there is a significant positive relationship between liquidity with profitability of banks in Pakistan. Likewise, Mahdi and Abbes (2018) analyzed the relationship between capital, risk and liquidity: a comparative study between Islamic and conventional banks in MENA region. The study found a positive impact of the net interest margin on the liquidity of the banking industry of conventional banks indicating that the most profitable banks maintain higher liquidity ratios. Similarly, Fungacova and Poghosyan (2011) found a significant positive relationship between banks liquidity and profitability. Hakim and Sugianto (2017) specified that ratio of loans to deposit significantly influence the health of the bank. In addition, Christaria and Kurnia (2016) assessed the impact of financial ratios, operational efficiency and non-performing loan towards commercial bank profitability. The study revealed that capital adequacy ratio, loan deposit ratio and non-performing loan simultaneously, have a significant positive impact on ROA. Furthermore, Samad (2015) investigated the impact of bank specific characteristics and macroeconomic variables on the banks' profitability of Bangladesh banking industry. The study concluded that loan deposit ratio has a significant positive impact on the profitability of Bangladesh commercial banks.

In addition, Jolevski (2017) assessed non-performing loans and profitability indicators in the context of the Republic of Macedonia. The result confirmed that there is a moderately high negative correlation between the non-performing loans ratio and rates of return on equity and return on assets. Ozurumba (2016) analyzed the impact of non-performing loans on the performance of selected commercial banks in Nigeria. The study revealed that the effect of non-performing loans on commercial banks' performance is negative. Boda and Zimkova (2021) stated that the level of loan to deposit ratio (LDR) has significant effect on profitability (ROA). Similarly, Inggawati *et al.* (2018) assessed the influence of loan to deposit ratio, loan operational of income operational and nonperforming loan toward profitability of Bank Perkreditan Rakyat in Sidoarjo Regency. The study asserted that there is inverse relationship between the ratio of loans to

deposits and bank profitability. Likewise, Awulo *et al.* (2019) investigated the impact of liquidity on profitability of bank in the context of commercial bank of Ethiopi. The study revealed that loan to deposit ratio negatively affects return on assets. Likewise, Putri and Dewi (2021) indicated that LDR does not have a positive effect on financial performance with the assumption that a low LDR will cause the company's liquidity to increase and in the end, it will also increase the quantity of idle funds which will have a direct impact on financial performance. Moreover, Vuyst and Rotsaert (2019) assessed the determinants of the loan-to-deposit ratio and its influence on bank profitability in the Belgian banking sector. The study observed that there is a negative and statistically significant relation between ROA and LDR.

In the context of Nepal, Pandey (2023) showed that loan to deposit ratio and capital adequacy ratio have a positive impact on return on assets. However, asset growth, non-performing loans, loan loss provision and bank size have a negative impact on return on assets. Similarly, capital adequacy ratio, loan to deposit ratio and non-performing loans and loan loss provision have a positive impact on net interest margin. In addition, Darlami (2023) analyzed the impact of credit risk, operational risk and liquidity risk on the profitability of Nepalese commercial banks. The study showed that non-performing loan, loan loss provision, leverage ratio, loan to deposit ratio and cost to income ratio have negative impact on return on assets. However, capital adequacy ratio has positive impact on return on assets. Likewise, capital adequacy ratio, non-performing loan, loan loss provision, leverage ratio, loan to deposit ratio and cost to income ratio have negative impact on return on equity. Shahi (2023) concluded that loan ratio followed by capital adequacy ratio and GDP growth rate is the most influencing factor that explains the changes in the profitability in terms of return on assets. Likewise, the study also concluded that the most dominant factor that determines the return on equity is liquidity ratio followed by deposit ratio and loan ratio in the context of Nepalese commercial banks.

The above discussion shows that empirical evidences vary greatly across the studies concerning the impact of capital adequacy, non-performing loan, operational efficiency and loan to deposit ratio on the 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 objective of the study is to examine the effect of capital adequacy, non-performing loan, operational efficiency, net interest margin and loan to deposit ratio on profitability of Nepalese commercial banks. Specifically, it examines the relationship of capital adequacy, non-performing

loan, operational efficiency, net interest margin, and loan to deposit ratio with return on assets and earnings per share 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 section draws the conclusion.

2. Methodological aspects

The study is based on the secondary data which were collected from 18 Nepalese commercial banks from 2015/16 to 2021/22, leading to a total of 126 observations. The study employed purposive sampling method. The main sources of data collected from the Bank Supervision Report published by Nepal Rastra Bank (NRB) and annual reports of the selected 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	Nepal Bank Limited	2015/16- 2021/22	7
2	Agricultural Development Bank Limited	2015/16- 2021/22	7
3	Nabil Bank Limited	2015/16- 2021/22	7
4	Nepal SBI Bank limited	2015/16- 2021/22	7
5	NMB Bank Limited	2015/16- 2021/22	7
6	Himalayan Bank Limited	2015/16- 2021/22	7
7	Everest Bank Limited	2015/16- 2021/22	7
8	Global IME Bank Limited	2015/16- 2021/22	7
9	Siddhartha Bank Limited	2015/16- 2021/22	7
10	NIC Asia Bank Limited	2015/16- 2021/22	7
11	Machhapuchchhre Bank Limited	2015/16- 2021/22	7
12	Sanima Bank Limited	2015/16- 2021/22	7
13	Sunrise Bank Limited	2015/16- 2021/22	7
14	Laxmi Bank Limited	2015/16- 2021/22	7
15	Nepal Investment Bank Limited	2015/16- 2021/22	7
16	Century Commercial Bank Limited	2015/16- 2021/22	7
17	Citizens Bank International Limited	2015/16- 2021/22	7
18	Kumari Bank Limited	2015/16- 2021/22	7
Total number of observations			**126**

Thus, the study is based on the 126 observations.

The model

The model used in this study assumes that the bank's profitability depends upon different firm specific factors. The dependent variables selected for the study are return on assets and earnings per share. Similarly, the selected independent variables are leverage, loan to deposit ratio, net interest margin, capital adequacy ratio, non-performing loan and operating efficiency. Therefore, the model takes the following form:

ROA = f (NIM, NPL, CAR, LTD, LEV, OE).

EPS = f (NIM, NPL, CAR, LTD, LEV, OE).

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

$$ROA = \beta_0 + \beta_1 \, NIM + \beta_2 \, NPL + \beta_3 \, CAR + \beta_4 \, LDR + \beta_5 \, LEV + \beta_6 \, OE + e_{it}$$

$$EPS = \beta_0 + \beta_1 \, NIM + \beta_2 \, NPL + \beta_3 \, CAR + \beta_4 \, LDR + \beta_5 \, LEV + \beta_6 \, OE + e_{it}$$

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

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

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

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

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

LTD = Loan- to-deposit ratio as measured by the ratio of total loans to total deposits, in percentage.

LEV = Leverage ratio as measured by the ratio of total debt to total assets, in percentage.

OE = Operating efficiency as measured by the ratio of operating expenses to operating income, in percentage.

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

Net interest margin

Net interest margin (NIM) is used to measure the ability of bank management to generate interest income by considering the performance of banks to disburse loans, given that the operational income of banks is highly dependent on the difference between interest and credit disbursed. The greater the NIM achieved by the bank, the higher the interest income on earning assets managed by the bank concerned, thereby increasing the bank's profit (ROA) (Ben Naceur and Goaied, 2008). Silaban (2017) determined the Bank's health level consisting of capital adequacy ratio, net interest margin, and non-performing loans partially or simultaneously on bank profitability based on data from the Indonesian Stock Exchange. The results indicate that capital adequacy ratio does not have a significant effect on bank profitability. Net interest margin improves the growth of bank profitability. Osborne (1980) found a strong positive relationship between capital adequacy ratio and profitability of US banks during 1980s. Based on it, this study develops the following hypothesis.

H_1: There is a positive relationship between net interest margin and profitability.

Non-performing loan

The main goal of every banking institution is to operate profitably to maintain stability and sustainable growth. However, the existence of high levels of non-performing loans (NPLs) in the banking industry negatively affects the level of private investment, impair a bank's ability to settle its liabilities when they fall due and constrain the scope of bank credit to borrowers. Akter and Roy (2017) analyzed the impact of non-performing loan (NPL) on profitability of listed banks in Dhaka Stock Exchange (DSE) during 2008 to 2013. The study showed that non-performing loan is one of the major factors of influencing banks profitability and it has statistically significant negative impact on net profit margin (NPM) of listed banks for the study periods. Poor management in the banking institutions results in bad quality loans, and therefore, escalates the level of non-performing loans (Khan et al., 2020). The results also showed that the operating efficiency and profitability indicators have a negative association with NPLs but were statistically significant. Kwashie (2022) showed that the non-performing loans have a negative impact on the measures of financial performance. Based on it, this study develops the following hypothesis.

H_2: There is a negative relationship between non-performing loan and profitability.

Capital adequacy ratio

To assess bank soundness, the capital adequacy ratio (CAR) is used

as an indicator to assess capital. This is used to measure the adequacy of capital owned by banks to support assets that contain or cause risks. Capital adequacy ratio is measured as the summation of primary and supplementary capital divided by risk weighted assets. Agbeja et al. (2015) examined the association between capital adequacy ratio and bank profitability in Nigeria using linear approach. The study showed that banks with more equity capital are perceived to have more safety and such advantage can be translated into higher profitability. Similarly, Kumar et al. (2020) investigated the relationship between monetary policy and bank profitability in New Zealand. The study revealed that capital adequacy ratio is positively related to return on assets. A high capital adequacy ratio can enable the bank increase its scope of profitable investments. On the other hand, a bank with a low capital adequacy ratio will most likely have a narrow scope of profitable investments (Edem, 2017). Based on it, this study develops the following hypothesis.

H_3: There is a positive relationship between capital adequacy ratio and bank profitability.

Loan-to-deposit ratio

Loan to deposit ratio is the ratio of total loan provided by the banks out of the deposit collected. Doan and Bui (2021) investigated the impact of liquidity on bank profitability of 26 Vietnamese commercial banks using GMM estimation. The results revealed that profitability (ROA) was negatively influenced by liquid asset ratio and positively correlated to loan-to-deposit ratio. Similarly, Sawitri (2018) analyzed the influence of third-party funds, Bank Indonesia Certificates, and non-performing loans on return on assets and loan deposit ratio and the effect of loan deposit ratio on return on assets of commercial banks in Indonesia. The study showed that there is a significant positive effect of loan deposit ratio on return on assets of commercial banks in Indonesia. Suroso (2022) analyzed the effect of capital adequacy ratio (CAR) and loan to deposit ratio (LDR) on the profits of public banks in the Indonesia stock exchange. The study identified that loan to deposit ratio has a positive effect on profitability. Based on it, this study develops the following hypothesis.

H_4: There is a positive relationship between loan-to-deposit ratio and bank profitability.

Leverage ratio

Akhtar et al. (2011) examined the impact of how the bank-specific factors of profitability affects the performance of Islamic banks of Pakistan from period 2006 to 2009. The study found a positive relationship between gearing ratio, debt ratio and bank profitability. Mahmud et al. (2016) assessed

the bank specific variables that affect the profitability of commercial banks of Bangladesh. The study showed that gearing ratio (risk), liquidity, debt ratio, non-performing loan ratio and operating expense ratio have negative effect on the bank profitability of Bangladesh. Obamuyi (2012) determined the relationship of different bank specific and macro-economic variable with profitability of 20 commercial banks of Nigeria using employed fixed effect model. The study reported that bank capital, size, interest income and expense management efficiency and favorable economic conditions contribute to higher bank performance and growth. However, debt ratio and nonperforming loans have negative influence on bank growth. Based on it, this study develops the following hypothesis.

H$_5$: There is a negative relationship between leverage ratio and bank profitability.

Operating efficiency

Operating efficiency refers to efficient management. Ali et al. (2011) examined the profitability indicators of public and private commercial banks of Pakistan explored in 2006-2009. The study revealed that efficient asset management and economic growth establish positive and significant relation with profitability in both models (measured by ROA and ROE). The high credit risk and capitalization lead to lower profitability measured by return on assets (ROA). The operating efficiency tends to exhibit the higher profitability level as measured by return on equity. Bashir (2003) reported a positive relationship between operational efficiency and bank profitability, which is supported by the efficiency wage theory. Petria et al. (2015) reported operational efficiency as one of the important factors for banks' profitability in the EU. Based on it, this study develops the following hypothesis.

H$_6$: There is a positive relationship between operating efficiency and bank profitability.

3. Results and discussion

Descriptive statistics

Table 2 presents the descriptive statistics of selected dependent and independent variables during the period 2015/16 to 2021/22.

Table 2

Descriptive statistics

This table shows the descriptive statistics of dependent and independent variables of 18 Nepalese commercial banks for the study period from 2015/16 to 2021/22. The dependent variables are ROA (Return on assets as measured by the ratio of net profit to total asset, in

percentage) and EPS (Earnings per share as measured by the ratio of profit to outstanding shares, in Rs.). The independent variables are 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 the ratio of non-performing loans to total loans, 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 the ratio of total loans to total deposits, in percentage), LEV (Leverage ratio as measured by the ratio of total debt to total assets, in percentage) and OE (Operating efficiency as measured by the ratio of operating expenses to operating income, in percentage).

Variables	Minimum	Maximum	Mean	Std. Deviation
ROA	0.70	2.77	1.53	0.42
EPS	10.15	59.86	25.15	10.087
LEV	80.40	93.96	88.29	2.45
LDR	65.38	107.01	87.39	6.18
NIM	1.87	5.60	3.055	0.64
CAR	10.20	20.41	13.66	1.86
NPL	0.01	4.60	1.19	0.92
OE	14.00	64.86	42.71	8.64

Source: SPSS output

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 coefficients of dependent and independent variables of 18 Nepalese commercial banks for the study period from 2015/16 to 2020/21. The dependent variables are ROA (Return on assets as measured by the ratio of net profit to total asset, in percentage) and EPS (Earnings per share as measured by the ratio of profit to outstanding shares, in Rs.). The independent variables are 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 the ratio of non-performing loans to total loans, 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 the ratio of total loans to total deposits, in percentage), LEV (Leverage ratio as measured by the ratio of total debt to total assets, in percentage) and OE (Operating efficiency as measured by the ratio of operating expenses to operating income, in percentage).

Variables	ROA	EPS	LEV	LDR	NIM	CAR	NPL	OE
ROA	1							
EPS	0.686**	1						
LEV	-0.486**	-0.113	1					
LDR	0.297**	-0.488**	-0.056	1				
NIM	0.693**	0.538**	-0.498**	-0.128	1			
CAR	0.151	-0.009	-0.630**	0.237**	0.398**	1		
NPL	-0.195*	-0.086	-0.612**	0.054	0.448**	0.400**	1	
OE	-0.642**	-0.438**	0.211*	0.313**	-0.105	0.128	0.092	1

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

Table 3 shows that net interest margin has a positive relationship with return on assets. It means that increase in net interest margin leads to increase in return on assets. However, there is a negative relationship between non-performing loan and return on assets. It means that increase in non-performing loan leads to decrease in return on assets. Furthermore, there is a positive relationship between capital adequacy ratio and 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 positive relationship with return on assets. It shows that higher the loan-to-deposit ratio, higher would be the return on assets. In addition, leverage ratio has a negative relationship with return on assets. It indicates that increase in leverage ratio leads to decrease in return on assets. Similarly, this study shows that there is a negative relationship between operating efficiency and return on assets. It means that higher the operating efficiency, lower would be the return on assets.

Similarly, the result also shows that net interest margin has a positive relationship with earnings per share. It means that increase in net interest margin leads to increase in earnings per share. However, there is a negative relationship between non-performing loan and earnings per share. It means that increase in non-performing loan leads to decrease in earnings per share. Furthermore, there is a negative relationship between capital adequacy ratio and earnings per share. It indicates that increase in capital adequacy ratio leads to decrease in earnings per share. In contrast, loan-to-deposit ratio has a negative relationship with earnings per share. It shows that higher the loan-to-deposit ratio, lower would be the earnings per share. In addition, leverage ratio has a negative relationship with earnings per share. It indicates that increase in leverage ratio leads to decrease in earnings per share. Further, this study shows that there is a negative relationship between operating efficiency and earnings per share. It means that higher the operating efficiency, lower would be the 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 leverage, loan to deposit ratio, net interest margin, capital adequacy ratio, non-performing loan and operating efficiency with return on assets of Nepalese commercial banks.

Table 4

Estimated regression results of leverage, loan to deposit ratio, net interest margin, capital adequacy ratio, non-performing loan and operating efficiency with return on assets of Nepalese commercial banks

The results are based on panel data of 18 commercial banks with 126 observations for the period of 2015/16-2021/22 by using the linear regression model and the model is ROA = β_0 + β_1 LEV + β_2 LDR + β_3 NIM + β_4 CAR + β_5 NPL + β_6 OE + e_{it} where, the dependent variable is ROA (Return on assets as measured by the ratio of net profit to total asset, in percentage). The independent variables are 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 the ratio of non-performing loans to total loans, 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 the ratio of total loans to total deposits, in percentage), LEV (Leverage ratio as measured by the ratio of total debt to total assets, in percentage) and OE (Operating efficiency as measured by the ratio of operating expenses to operating income, in percentage).

Model	Intercept	Regression coefficients of						Adj. R_bar²	SEE	F-value
		LEV	LDR	NIM	CAR	NPL	OE			
1	8.981 (7.472)**	-0.084 (6.20)**						0.230	0.372	38.443
2	3.316 (6.419)**		0.020 (3.463)**					0.081	0.407	11.992
3	0.138 (1.028)			0.457 (10.676)**				0.477	0.307	113.967
4	1.062 (3.803)**				0.034 (1.696)			0.015	0.421	2.875
5	1.425 (23.496)**					-0.089 (2.216)*		0.030	0.418	4.910
6	2.880 (19.507)**						-0.032 (9.317)**	0.407	0.327	86.809
7	11.217 (9.134)**	-0.088 (6.892)**	0.022 (4.443)**					0.332	0.347	31.995
8	5.217 (4.123)**	-0.038 (3.131)**	0.016 (3.890)**	0.365 (7.836)**				0.550	0.285	51.447
9	7.961 (5.573)**	-0.065 (4.696)**	0.012 (2.896)**	0.394 (8.723)**	0.064 (3.594)**			0.590	0.272	45.614
10	10.337 (7.207)**	-0.092 (6.464)**	0.011 (2.768)**	-0.436 (10.109)**	0.065 (3.952)**	-0.140 (4.414)**		0.645	0.253	46.007
11	5.308 (4.731)**	-0.38 (3.360)**	0.003 (0.976)**	0.417 (13.576)**	0.026 (2.081)*	-0.061 (2.581)*	-0.024 (10.814)**	0.820	0.180	95.187

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 leverage ratio are negative with return on asset. It indicates that leverage ratio has a negative impact on return on asset. This finding is similar to the findings of Akhtar et al. (2011). Similarly, the beta coefficients for net interest margin are positive with return on asset. It indicates that net interest margin has a positive impact on return on asset. This finding is consistent with the findings of Osborne (1980). Similarly, the beta coefficients for capital adequacy ratio are positive with return on asset. It indicates that capital adequacy ratio has a positive impact on return on asset. This finding is similar to the findings of Edem (2017). On the other hand, the beta coefficients for loan to deposit ratio are positive with return on asset. It indicates that loan to deposit ratio has a positive impact on return on asset. This finding is consistent with the findings of Doan and Bui (2021). Similarly, the beta coefficients for operating efficiency are negative with return on asset. It indicates that operating efficiency has a negative impact on return on asset. This finding is consistent with the findings of Petria et al. (2015). Furthermore, the beta coefficients for non-performing loan are negative with return on asset. It indicates that non-performing loan has a negative impact on return on asset. This finding is similar to the findings of Kwashie (2022).

Table 5 shows the estimated regression results of leverage, loan to deposit ratio, net interest margin, capital adequacy ratio, non-performing loan and operating efficiency with earnings per share of Nepalese commercial banks.
Table 5

Estimated regression results of leverage, loan to deposit ratio, net interest margin, capital adequacy ratio, non-performing loan and operating efficiency with earning per share of Nepalese commercial banks

The results are based on panel data of 18 commercial banks with 126 observations for the period of 2015/16-2021/22 by using the linear regression model and the model is EPS = β_0 + β_1 LEV + β_2 LDR+ β_3 NIM+ β_4 CAR + β_5 NPL + β_6 OE + e_{it} where, the dependent variable is EPS (Earnings per share as measured by the ratio of profit to outstanding shares, in Rs.). The independent variables are 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 the ratio of non-performing loans to total loans, 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 the ratio of total loans to total deposits, in percentage), LEV (Leverage ratio as measured by the ratio of total debt to total assets, in percentage) and OE (Operating efficiency as measured by the ratio of operating expenses to operating income, in percentage).

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5	1.425 (23.496)**					-0.089 (2.216)*		0.030	0.418	4.910
6	2.880 (19.507)**						-0.032 (9.317)**	0.407	0.327	86.809
7	11.217 (9.134)**	-0.088 (6.892)**	0.022 (4.443)**					0.332	0.347	31.995
8	5.217 (4.123)**	-0.038 (3.131)**	0.016 (3.890)**	0.365 (7.836)**				0.550	0.285	51.447
9	7.961 (5.573)**	-0.065 (4.696)**	0.012 (2.896)**	0.394 (8.723)**	0.064 (3.594)**			0.590	0.272	45.614
10	10.337 (7.207)**	-0.092 (6.464)**	0.011 (2.768)**	-0.436 (10.109)**	0.065 (3.952)**	-0.140 (4.414)**		0.645	0.253	46.007
11	5.308 (4.731)**	-0.38 (3.360)**	0.003 (0.976)**	0.417 (13.576)**	0.026 (2.081)*	-0.061 (2.581)*	-0.024 (10.814)**	0.820	0.180	95.187

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 leverage are negative with earnings per share. It indicates that leverage has a negative impact on earnings per share. This finding is consistent with the findings of Obamuyi (2012). Similarly, the beta coefficients for loan to deposit ratio are negative with earnings per share. It indicates that loan to deposit ratio has a negative impact on earnings per share. This finding is similar to the findings of Suroso (2022). Likewise, the beta coefficients for net interest margin are positive with earnings per share. It indicates that net interest margin has a positive impact on earnings per share. This finding is consistent with the findings of Silaban (2017). Similarly, the beta coefficients for capital adequacy ratio are negative with earnings per share. It indicates that capital adequacy ratio has a negative impact on earnings per share. This finding is similar to the findings of Agbeja et al. (2015). Similarly, the beta coefficients for operating efficiency are negative with earnings per share. It indicates that operating efficiency has a negative impact on earnings per share. This finding is consistent with the findings of Bashir (2003).

4. Summary and conclusion

The banking sector is the driving force for a country's economy. Bank performance greatly affects the level of public trust, so it is important for banks to maintain good performance. Poor bank performance will lead to

failure and lead to financial crises that will have negative consequences for economic development. Profit is one of the main goals of the banking industry. Profitability is the company's ability to earn profits or a measure of the effectiveness of company management. A high level of profitability indicate that the bank is working efficiently. A high level of profitability can also illustrate that the productivity of the bank is getting better, and can show the development of the bank itself. Therefore, profitability is very important both for the bank itself and for the customers.

This study attempts to analyze the examine the effect of capital adequacy, non-performing loan, operational efficiency, net interest margin, and loan to deposit ratio on profitability of Nepalese commercial banks. The study is based on secondary data of 18 commercial banks with 126 observations for the period from 2015/16 to 2021/22.

The study showed that capital adequacy ratio, leverage ratio, non-performing loan, operational efficiency and loan to deposit ratio have a negative impact on earnings per share. Similarly, the study showed that net interest margin has a negative impact on earnings per share. Moreover, the study also showed that capital adequacy ratio, net interest margin, and loan to deposit ratio have positive impact on return on assets. Likewise, the study revealed that non-performing loan, operational efficiency and leverage ratio have a negative impact on return on assets. The study concluded that net interest margin followed by operating efficiency is the most influencing factor that explains the changes in the return on assets of selected Nepalese commercial banks. Similarly, the study also concluded that net interest margin followed by loan to deposit ratio is the most influencing factor that explains the changes in the earnings per share in context of selected Nepalese commercial banks.

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