Effect of Bad Debts (NPL), Market Capitalization, Operation Cost, Capital Adequacy, Cash Reserve on the Profitability of Nepalese Commercial Banks

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Abstract

This study examines the effect of bad debts, market capitalization, operation cost, capital adequacy ratio and cash reserve ratio on the profitability of Nepalese commercial banks. Return on asset and return on equity are selected as the dependent variables. Similarly, non-performing loan, market capitalization, operation cost, capital adequacy ratio, cash reserve ratio and leverage are selected as the independent variables. This study is based on secondary data of 15 commercial banks with 120 observations for the study period from 2014/15 to 2021/22. The data were collected from Banking and Financial Statistics published by Nepal Rastra Bank, annual reports of the selected commercial banks and reports published by Ministry of Finance. The correlation coefficients and regression models are estimated to test the significance and importance of bad debts (NPL), market capitalization, operation cost, capital adequacy ratio and cash reserve ratio on the profitability of Nepalese commercial banks.

The study showed that non-performing loan has a negative impact on return on assets and return on equity. It indicates that increase in non-performing leads to decrease in return on assets and return on equity. In addition, operation cost has a negative impact on return on assets. It means that increase in operation cost leads to decrease in return on assets. Likewise, capital adequacy ratio has a positive impact on return on assets. It indicates that increase in capital adequacy ratio leads to increase in return on assets. Moreover, leverage ratio has a negative impact on return on assets. It indicates that increase in leverage leads to decrease in return in assets of Nepalese commercial banks. Similarly, market capitalization has a positive impact on return on equity. It indicates that increase in market capitalization leads to increase in return on equity. In addition, operation cost has a negative relationship with return on assets and return on equity. It means that increase in operation cost leads to decrease in return on assets and return on equity.

Keywords: return on asset, return on equity, non-performing loan, market capitalization, operation cost, capital adequacy ratio, cash reserve ratio, leverage

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1. Introduction

Banks can hardly survive without a positive return on capital invested. Profitability is therefore the driven factor for activities of commercial banks. Consequently, banks engage in a variety of products and services for the achievement of this profit or to be profitable. The commonest and most important of these activities is the given out of loans to borrowers seeking financial accommodation. In doing this, it is expected that the borrower pays back the principal and interest. This interest in all bank forms the bedrock of profitability in the banking sector. Commercial banks play a vital role in the economic resource allocation of countries (Ongore, 2013). They contribute to economic growth of the country by making funds available for investors to borrow as well as financial deepening in the country (Otuori, 2013). The main goal of a company is to maximize profits. The success and failures of a bank are measures by profitability performance. The company's profit growth is important for the company's internal and external parties. Profitability of a business indicates the financial ability and tends to enhance the income earning capacity. Profitability analysis helps in critically analyzing and interpreting the current and prospective earning capacities of business corporations. According to Handriani and Robiyanto (2018), profitability is one of the most important goals of financial management besides maximizing the owner's wealth.

Profitability has always been a central measure to determine or to analyse company's performance. Change in bank's profitability could affect the national economic progress as profits influence the investments decision of companies. Therefore, an adequate profitability is important and critical for bank's long- term survival and success. The strong profitability of a bank shows a higher capacity to earn profit and a bigger contribution to the economic growth (Adiatmayani and Panji, 2021). Profitability is affected through various factors of the company that are linked with the revenue and expenses of the banks. Return on assets (ROA) and return on equity (ROE) measures bank profitability which are also the function of internal and external determinants. For any bank, profitability depends on the bank's internal policy decisions as well as external or uncontrollable factors relating to the economy and government regulations. Credit risk is indicated by NPL ratio that is used as a measurement of the bank's business capabilities in managing the risk of problematic loans (Ramadhanti *et al.,* 2019). Likewise, Nagaraja (2020) stated that non-performing assets is creating a huge disturbance in the economic

operation of the Indian banking Industry. Moreover, Non-performing loan are increasing due to lack of risk management, which threatens the profitability of banks. Banking sector can avoid their non-performing loan by adopting methods suggested by the central bank of respective country (Haneef *et al.,* 2012).

Capital formation is an integral part of economic growth and development and it plays an important role in the production and distribution. It is assumed that capital accumulation can facilitate the faster rate of economic growth. The growth of the stock market is measured by its market capitalization. The size of the market capitalization and its growth rate pose a major influence on the growth and development of the economy (Ologunde et al., 2006). The common yardstick to quantify the value of the company is market capitalization or more generally, the wealth created by a firm. It represents the collective value of a company or stock. The success or failure of crucial decisions like mergers, acquisitions, and takeovers have a great impact on the value of a company. Now a days, market capitalization has become a universally accepted indicator of business valuation. It represents the aggregate value of company or stock (Jaya and Sunder, 2012). Thoa *et al. (*2020) showed that liquidity has a significant and negative impact on capital adequacy ratio, which means that when bank have high liquid assets, if the bank does not have strategic management and business policies, the risk will be increase appropriate. Further, Phuong and Duc (2020) pointed out that bank's liquidity may have a positive effect on the capital ratio. Secondly, bank performance is influenced by several intrinsic factors that are institution-specific, such as size, asset quality, and ownership (Le *et al*., 2020).

Poor expenses management is the main contributors to poor profitability (Sufian and Chong 2008). The more efficient the bank's performance in controlling its operational cost, with the existence of cost efficiency, the profit obtained by the bank will be even greater (Sari and Monica, 2016). A bank with a high capital adequacy ratio is considered safe and likely to meet its financial obligations (Dabo *et al.,* 2018). Likewise, Kusumawati *et al*. (2021) implicated that CAR measure the adequacy of capital owned by a bank to support assets containing or generating risk, such as financing provided. The cash reserve ratio, a tool for monetary policy employed by central bank, is the portion of total deposits that commercial banks have to keep with central bank or monetary authority of the nation. To decrease the supply of money in the economy, the central bank will increase the cash reserve ratio and vice

versa. The cash reserve system illustrates how monetary policy tool and bank profitability interact in the private sector. Messai and Jouini (2013) examined the micro and macro determinants of non-performing loans. The study found a negative association between nonperforming loans and return on assets. Similarly, Akter and Roy (2017) assessed the impacts of non-performing loan on profitability of banking sector of Dhaka Stock Exchange. The study found that non-performing loan has negative effect on net interest margin and return on assets.

Hasmiana and Pintor (2022) disclosed that increase in non-performing loan affect the bank's profitability. Likewise, Olalekan and Adeyinka (2013) showed a positive and significant relationship between capital adequacy and profitability of financial institutions in Nigeria. Sufian (2011) examined the profitability of banks in Korea. The result showed that there is a positive and significant relationship between market capitalization and bank profitability. Islamiyah and Sukaris (2023) examined the influence of loan to deposit ratio, operational costs and operational revenue, non-performing loans on profitability in banking companies listed on Indonesia Stock Exchange. The result showed that non-performing loan has a negative impact on return on assets. Likewise, Genchev (2012) examined the effects of market share on bank's profitability. The study found that there is a positive and significant relationship between market capitalization and profitability of banks. Similarly, Christaria and Kurnia (2016) found that operational expense to operating income ratio has a significant impact on banking profitability. Furthermore, Muraina (2018) assessed internal factors affecting profitability of Deposit Money Banks (DMBs) in Nigeria for the period of 2008-2016. The study found that capital adequacy ratio has a positive and significant relationship with profitability. Akinsanmi *et al*. (2022) examined the impact of monetary policy on selected Nigerian banks' profitability. The findings of the study revealed that cash reserve ratio has a negative and insignificant impact on return on equity in the context of Nigerian banks.

In the context of Nepal, Bhattarai (2017) examined the effect of NPL on the profitability of Nepalese commercial banks. The study found that the NPL ratio has a negative effect on ROA whereas NPL ratio has a positive effect on ROE. Likewise, Budhathoki and Rai (2020) revealed that capital adequacy ratio significantly affect bank profitability. Bhattarai (2014) examined the determinants of share price of Nepalese commercial banks. The study showed that there is a positive relationship between market capitalization and profit.

Similarly, Panta and Bedari (2019) found that the level of cost efficiency of Nepalese commercial banks has increased substantially over the period with small-size banks exhibiting higher cost efficiency as compared to medium size.

The above discussion shows that empirical evidences vary greatly across the studies concerning the effect of bad debts (NPL), market capitalization, operation cost, capital adequacy and cash reserve on 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 major objective of this study is to examine the effect of bad debts (NPL), market capitalization, operation cost, capital adequacy and cash reserve on the profitability of Nepalese commercial banks. Specifically, it examines the relationship of non-performing loan, market capitalization, operation cost, capital adequacy ratio, cash reserve ratio and leverage with return on asset and return on equity 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 secondary data which were gathered from 15 commercial banks from 2014/15 to 2021/22, leading to a total of 120 observations. The study has used purposive sampling method to select the banks. 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 banks selected for the study along with the study period and number of observations

S. N.	Name of the banks	Study period	Observations
Public Banks			
1	Agricultural Development Bank Limited	2014/2015- 2021/2022	8
2	Nepal Bank Limited	2014/2015- 2021/2022	8
3	Rastriya Banijya Bank Limited		8
Joint Venture Banks			
4	Nepal SBI Bank Limited	2014/2015- 2021/2022	8
5	Everest Bank Limited	2014/2015- 2021/2022	8
6	NMB Bank Limited	2014/2015- 2021/2022	8
Private Banks			
7	Sanima Bank Limited	2014/2015- 2021/2022	8
8	Siddhartha Bank Limited	2014/2015- 2021/2022	8
9	Machhapuchchhre Bank Limited	2014/2015- 2021/2022	8
10	Sunrise Bank Limited	2014/2015- 2021/2022	8
11	Citizens Bank International Limited	2014/2015- 2021/2022	8
12	Laxmi Bank Limited	2014/2015- 2021/2022	8
13	Prime Commercial Bank limited	2014/2015- 2021/2022	8
14	NIC Asia Bank Limited	2014/2015- 2021/2022	8
15	Standard Chartered Bank Nepal Limited	2014/2015- 2021/2022	8
Total number of observations			**120**

Thus, the study is based on 120 observations.

The model

The model used in this study assumes that the profitability of Nepalese commercial banks depends upon the non-performing loan, market capitalization, operation cost, capital adequacy ratio, cash reserve ratio and leverage. The dependent variables selected for the study are return on asset and return on equity. Similarly, the selected independent variables are non-performing loan, market capitalization, operation cost, capital adequacy ratio, cash reserve ratio and leverage. Therefore, the model takes the following form:

Bank's profitability = f (NPL, MC, OC, CAR, CRR and LEV)

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

$$ROA = \beta_0 + \beta_1 NPL + \beta_2 MC + \beta_3 OC + \beta_4 CAR + \beta_5 CRR + \beta_6 LEV + e$$

$$ROE = \beta_0 + \beta_1 NPL + \beta_2 MC + \beta_3 OC + \beta_4 CAR + \beta_5 CRR + \beta_6 LEV + e$$

Where,

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

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

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

MC= Market capitalization as measured by the number of outstanding shares multiply by current market price per share, Rs in billions.

OC= Operation cost as measured by the ratio of operating expenses to operating income, in percentage.

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

CRR= Cash reserve ratio as measured by reserve requirement by bank deposit, in percentage.

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

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

Non-performing loan

Islamiyah and Sukaris (2023) assessed 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. The result showed that non-performing loan has a negative association with return on assets. Likewise, Kwashie (2022) investigated the impact of credit risk measured by non-performing loans on the financial performance of commercial banks in Ghana. The study found that non-performing loan has a negative impact on the bank profitability. In addition, Collaku and Aliu (2021) revealed that the effect of non-performing loans on the profitability is statistically significant. The result also shows that for each 1% increase in NPL, the return of assets decreases by 0.19 %. Likewise, Do *et al.* (2020) showed that there is a negative relationship between non-performing loan and return on assets. Furthermore, Psaila *et al.* (2019) found that non-performing loans have a negative impact on return on assets (ROA). Based on it, this study

develops the following hypothesis:

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

Market capitalization

The market capitalization of a company refers to the number of its shares outstanding multiplied by its market price per share. Hossain (2022) analysed the impact of corporate governance (CG) on the performance of commercial banks (CB) in Bangladesh. The study found that market capitalization has a positive relationship with firm performance i.e., ROA and ROE. Likewise, Oudat and Ali (2020) examined the effect of bad debt, market capitalization, operation cost, capital adequacy, cash reserves on financial performance. The study found that there is an insignificant positive relationship between market capitalization and profitability. Similarly, Al-Nimer and Alslihat (2015) examined the effect of profitability ration on market capitalization in the Jordanian insurance companies listed in Amman stock exchange (ASE). The study revealed a weak positive relationship between ROE and market capitalization. Likewise, Pan and Pan (2014) examined the impact of macro factors on the profitability of China's commercial banks. The study found that there is a positive relationship between market capitalization and profitability. Based on it, this study develops the following hypothesis:

H_2: There is a positive relationship between market capitalization and bank profitability.

Operation cost

Operational costs relate to the level of the company's operating costs to the company's revenue. Laitupa and Christianty (2023) determined the effect of capital adequacy, liquidity, and operations on the financial performance of banking listed on the Indonesia Stock Exchange (IDX) during the Covid-19 Pandemic. The study found that operation cost has a positive effect on financial performance (ROA). Likewise, Uddin (2022) analyzed the influence of leverage, operating efficiency, non-performing loan, and capital adequacy ratio on the profitability of commercial banks in Bangladesh. The study revealed that BOPO ratio has a positive and insignificant impact on ROA. Furthermore, Dewi and Badjra (2020) revealed that operational costs operating income had a positive and significant effect on Return on Assets (ROA). In a same way, Christaria and Kurnia (2016) found that operational expense to operating income ratio has a significant positive impact on banking

profitability. Based on it, this study develops the following hypothesis:

H_3: There is a positive relationship between operational cost and bank profitability.

Capital adequacy ratio

Capital adequacy ratio is used to forecast whether the capital owned by the bank is enough to cover up a risk of losses. Sriyono and Nabellah (2022) found that level of capital adequacy has a positive effect on profitability. In addition, Dao (2020) investigated the factors affecting the profitability of commercial banks in Asian developing countries, including Vietnam, Malaysia and Thailand. The study revealed that there is a negative relationship between capital adequacy ratio and profitability. Moreover, Sunaryo (2020) concluded that capital adequacy ratio (CAR) has a positive and significant effect on return on asset. Similarly, Muraina (2018) assessed the internal factors affecting profitability of Deposit Money Banks (DMBs) in Nigeria for the period of 2008-2016. The study found that capital adequacy ratio has a positive and significant relationship with profitability. Based on this, this study develops the following hypothesis:

H_4: There is a positive relationship between capital adequacy ratio and bank profitability.

Cash reserve ratio

Cash reserve ratio is specified as a percentage of total deposit of customers held with the central bank. It is one of the monetary policy tools used by the reserve bank to control money supply in the economy (Hirindu, 2017). Uremadu (2012) assessed the effects of Bangladesh Bank practices of employing cash reserve ratio on banking inter mediation activities. The study revealed that cash reserve ratio has negative relation with banks profitability. In addition, Akinleye and Oluwadare (2022) revealed that cash reserve ratio has insignificant negative relationship with profitability. Furthermore, Tamunosiki *et al*. (2017) found that cash reserve ratio has a negative relationship with profitability. Similarly, Mia *et al* (2023) found that cash reserve ratio has negative relation with banks profitability. In the same way, Edem (2017) concluded that cash reserve ratio has a positive relationship with ROE. Molyneux and Thornton (1992) analyzed the relationship between reserve requirement ratio and banks profitability in European bank. The study revealed that CRR is negatively associated with bank profitability. Based on it, the study develops the following hypothesis.

H_5: There is a negative relationship between cash reserve ratio and bank profitability.

Leverage

Surayya and Kadang (2022) analyzed the effect of public ownership structure, capital structure, and credit risk on profitability in Foreign Exchange National Private Commercial Banks. The results revealed that leverage ratio has a positive and significant influence on the profitability of the banking sector. Likewise, Karim *et al*. (2022) revealed that leverage ratio is positively related to profitability and market return. Moreover, Mehzabin *et al*. (2023) concluded that leverage ratio has a positive significant influence on the profitability of the banking sector. In addition, Isayas (2022) found that leverage has a positive and statistically significant effect on the profitability of banks. Further, Bunyaminu *et al.* (2021) revealed that leverage exerts a significant positive effect on bank's profit. Khan *et al.* (2021) concluded that there is significant and negative relationship between profitability and leverage. Based on it, this study develops the following hypothesis:

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

3. Results and discussion

Descriptive statistics

Table 2 presents the descriptive statistics of the selected dependent and independent variables during the period 2014/15 to 2021/22.

Table 2

Descriptive statistics

This table shows the descriptive statistics of dependent and independent variables of 15 Nepalese commercial banks for the study period from 2014/2015 to 2021/2022. The dependent variables are ROA (Return on assets as measured by the ratio of net profit to total assets, in percentage) and ROE (Return on equity as measured by the ratio of net income to total equity, in percentage). The independent variables are NPL (Non- performing loan as measured by non-performing loan to total loan, in percentage), MC (Market capitalization as measured by number of outstanding share multiply by current market price per share, Rs in billion), OC (Operation cost as measured by the ratio of operating expenses to operating income, in percentage), CAR(Capital adequacy ratio as measured by ratio of total capital to total risk weighted exposure, in percentage), CRR (Cash reserve ratio as measured by reserve requirement by bank deposit, in percentage) and LEV (Leverage ratio as measured by the ratio of total debt to total assets, in percentage).measured by the ratio of total debt to total assets, in percentage).

Variables	Minimum	Maximum	Mean	Std. Deviation
ROA	0.55	3.57	1.58	0.508
ROE	6.26	69.56	14.51	6.39
NPL	0.01	5.35	1.31	1.23
MC	2.05	114.90	36.21	19.69
OC	21.28	78.25	43.67	9.30
CAR	7.49	22.99	14.03	2.58
CRR	3	6	4.87	1.27
LEV	81.20	95.65	88.73	2.99

Source: SPSS output

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 person's correlation coefficient of dependent and independent variables of 15 Nepalese commercial banks for the study period from 2014/2015 to 2021/2022. The dependent variables are ROA (Return on assets as measured by the ratio of net profit to total assets, in percentage) and ROE (Return on equity as measured by the ratio of net income to total equity, in percentage). The independent variables are NPL (Non-performing loan as measured by non-performing loan to total loan, in percentage), MC (Market Capitalization as measured by number of outstanding share multiply by current market price per share, Rs in billion), OC (Operation cost as measured by the ratio of operating expenses to operating income, in percentage), CAR(Capital adequacy ratio as measured by ratio of total capital to total risk weighted exposure, in percentage), CRR (Cash reserve ratio as measured by reserve requirement by bank deposit, in percentage) and LEV (Leverage ratio as measured by the ratio of total debt to total assets, in percentage).

Variables	ROA	ROE	NPL	MC	OC	CAR	CRR	LEV
ROA	1							
ROE	0.506**	1						
NPL	-0.355**	-0.138	1					
MC	-0.020	0.064	-0.253**	1				
OC	-0.372**	-0.128	-0.280**	0.027	1			
CAR	0.322**	-0.183*	0.060	0.337**	-0.144	1		
CRR	0.513**	0.390**	0.061	-0.323**	-0.420**	-0.065	1	
LEV	-0.466**	0.355**	-0.215*	0.023	0.228*	-0.621**	-0.104	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 is negatively correlated to return on assets. It indicates that increase in non-performing leads to decrease

in return on assets. Similarly, market capitalization has a negative relationship with return on assets. It indicates that increase in market capitalization leads to decrease in return on assets. In addition, operation cost has a negative relationship with return on assets. It means that increase in operation cost leads to decrease in return on assets. Likewise, 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. 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. Moreover, leverage ratio has a negative relationship with return on assets. It indicates that increase in leverage leads to decrease in return in assets of Nepalese commercial banks.

Similarly, the result also shows that there is a negative relationship between non-performing loan and return on equity. It indicates that increase in non-performing loan leads to decrease in return on equity. Similarly, market capitalization has a positive relationship with return on equity. It indicates that increase in market capitalization leads to increase in return on equity. In addition, operation cost has a negative relationship with return on equity. It means that increase in operation cost leads to decrease in return on equity. Likewise, capital adequacy ratio has a negative relationship with return on equity. It indicates that increase in capital adequacy ratio leads to decrease in return on equity. Furthermore, there is a positive relationship between cash reserve ratio and return on equity. It indicates that increase in cash reserve ratio leads to increase in return on equity. Moreover, leverage has a positive relationship with return on equity. It indicates that increase in leverage leads to increase in return on equity of Nepalese commercial banks.

Regression analysis

Having indicated the Pearson's correlation coefficients, the regression analysis has been carried out and results are presented in Table 4 and Table 5. More specifically, Table 4 shows the regression results of non-performing loan, market capitalization, operation cost, capital adequacy ratio, cash reserve ratio and leverage on return on assets of Nepalese commercial banks.

Table 4

Estimated regression results of non-performing loan, market capitalization, operation cost, capital adequacy ratio, cash reserve ratio and leverage with return on assets of Nepalese commercial banks

The results are based on panel data of 15 commercial banks with 120 observations for the period of 2014/2015 -2021/2022 by using the linear regression model and the model is ROA= $\beta 0 + \beta 1$ NPL + $\beta 2$ MC+ $\beta 3$ OC + $\beta 4$ CAR +$\beta 5$CRR + $\beta 6$ LEV + eit where, the dependent

variable is ROA (Return on assets as measured by the ratio of net profit to total assets, in percentage). The independent variables are NPL (Non- performing loan as measured by non-performing loan to total loan, in percentage), MC(Market Capitalization as measured by number of outstanding share multiply by current market price per share, Rs in billion), OC (Operation cost as measured by the ratio of operating expenses to operating income, in percentage), CAR(Capital adequacy ratio as measured by ratio of total capital to total risk weighted exposure, in percentage), CRR(Cash reserve ratio as measured by reserve requirement by bank deposit, in percentage) and LEV (Leverage ratio as measured by the ratio of total debt to total assets, in percentage).

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		NPL	MC	OC	CAR	CRR	LEV			
1	1.388 (21.772)**	-0.147 (4.125)**						0.119	0.477	17.015
2	1.570 (16.00)**		-0.001 (0.214)					0.009	0.495	0.046
3	2.466 (11.835)**			-0.020 (4.351)**				0.131	0.474	18.927
4	0.690 (2.816)**				0.063 (3.691)**			0.096	0.483	13.626
5	0.581 (3.659)**					0.205 (6.495)**		0.257	0.438	42.191
6	8.619 (7.010)**						-0.079 (5.729)**	0.211	0.452	32.821
7	1.330 (11.356)**	-0.145 (3.412)**	0.002 (0.647)					0.080	0.472	5.845
8	2.542 (13.575)**	-0.213 (5.969)**	0.002 (1.090)	-0.030 (7.518)**				0.391	0.384	24.724
9	1.780 (6.723)**	-0.172 (4.874)**	-0.001 (0.504)	-0.028 (7.139)**	0.057 (3.859)**			0.460	0.362	24.653
10	0.515 (1.485)	-0.157 (4.915)**	0.002 (1.086)	-0.018 (4.364)**	0.057 (4.313)**	0.150 (5.038)**		0.560	0.327	29.292
11	6.838 (4.756)**	-0.089 (2.701)*	0.003 (1.805)	-0.013 (3.515)**	0.016 (1.031)	0.146 (5.349)**	-0.066 (4.510)**	0.628	0.300	32.253

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 beta coefficients for non-performing loan are negative with return on asset. It indicates that non-performing loan has negative impact on return on assets. This finding is similar with the findings of Do *et al.* (2020). 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 assets. This finding is Consistent to the findings of Sriyono and Nabellah (2022). Likewise, 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 asset. The findings is contradicts with the findings of Mia *et al.*(2023). On the other hand, the beta coefficient for market capitalization has a negative impact on return on asset. This finding is contradicts with the findings of Hossain (2022). Similarly, the beta coefficients for operation cost are negative with return on asset. It indicates that operation cost has a negative

impact on return on asset. This finding is consistent with the findings of Dewi and Badjra (2020) Likewise, the beta coefficients of leverage are negative with return on asset. It indicates that leverage has a negative impact on return on asset. This finding is consistent with the findings of Khan *et al.* (2021).Table 5 shows the estimated regression results of non-performing loan, market capitalization, operation cost, capital adequacy ratio, cash reserve ratio and leverage with return on equity of Nepalese commercial banks.

Table 5

Estimated regression results of non-performing loan, market capitalization, operation cost, capital adequacy ratio, cash reserve ratio and leverage with return on equity of Nepalese commercial banks

The results are based on panel data of 15 commercial banks with 120 observations for the period of 2014/2015 -2021/2022 by using the linear regression model and the model is ROE= β0 + β1 NPL + β2 MC+ β3 OC + β4 CAR +β5 CRR + β6 LEV + eit where, the dependent variable is ROE (Return on equity as measured by the ratio of net profit to total shareholder equity, in percentage). The independent variables are NPL (Non- performing loan as measured by non-performing loan to total loan, in percentage), MC(Market Capitalization as measured by number of outstanding share multiply by current market price per share, Rs in billion), OC (Operation cost as measured by the ratio of operating expenses to operating income, in percentage), CAR(Capital adequacy ratio as measured by ratio of total capital to total risk weighted exposure, in percentage), CRR (Cash reserve ratio as measured by reserve requirement by bank deposit, in percentage) and LEV (Leverage ratio as measured by the ratio of total debt to total assets, in percentage).

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		NPL	MC	OC	CAR	CRR	LEV			
1	13.576 (16.004)**	-0.715 (1.513)						0.011	6.352	2.289
2	13.309 (18.337)**		0.012 (0.676)					0.005	3.657	0.456
3	18.357 (6.563)**			-0.088 (1.405)				0.008	6.361	1.975
4	20.882 (6.535)**				-0.454 (2.027)*			0.525	6.305	4.107
5	4.986 (2.329)*					1.954 (4.597)**		0.145	5.907	21.137
6	-52.823 (3.236)**						0.759 (4.127)**	0.119	5.996	17.035
7	14.354 (16.018)**	-0.630 (1.943)	0.003 (0.170)					0.020	3.612	2.122
8	22.106 (14.348)**	-0.193 (0.657)	0.007 (0.424)	-0.194 (5.846)**				0.249	3.163	13.237
9	25.403 (11.116)**	-0.015 (0.048)	0.020 (1.176)	-0.206 (6.175)**	-0.246 (1.934)			0.267	3.124	11.115
10	13.221 (4.554)**	-0.157 (0.587)	0.049 (3.129)**	-0.109 (3.243)**	-0.241 (2.167)*	1.444 (5.792)**		0.438	2.735	18.305
11	-58.779 (5.338)**	-0.615 (2.435)*	0.037 (2.739)**	-0.156 (5.363)**	0.231 (1.977)*	1.483 (7.075)**	0.754 (6.705)**	0.603	2.299	29.074

Notes

i. Figure 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 equity is the dependent variable.

Table 5 shows that the beta coefficients for non-performing loan are negative with return on equity. It indicates that non-performing loan has a negative impact on return on equity. This finding is similar to the findings of Kwashie (2022). Similarly, the beta coefficients for market capitalization are positive with return on equity. It indicates that market capitalization has a positive impact on return on equity. This finding is consistent with the findings of Oudat and Ali (2020). Similarly, the beta coefficients for cash reserve ratio are positive with return on equity. It indicates that cash reserve ratio has a positive impact on return on equity. This finding is inconsistent with the findings of Osakwe and Nwakaego (2022). Likewise, the beta coefficients for leverage are positive with return on equity. It indicates that leverage has a positive impact on return on equity. This finding is similar to the findings of Mehzabin *et al*. (2023). On the other hand, the beta coefficients for operation cost are negative with return on equity. It indicates that operation cost has a negative impact on return on equity. This finding is consistent with the findings of Kuraeni and Isnaeni (2022).). Likewise, the beta coefficients for capital adequacy ratio are negative with return on equity. It indicates that capital adequacy ratio has a negative impact on return on equity. This finding is consistent with the findings of Dao (2020).

4. Summary and conclusion

Banking is considered as the important and influential sectors for the economy of the country. The growth and development of financial institution in the economy is largely determined by the level of profit gained in its operational activities. Profitability is one of the significant components of the business including the banking world because it contributes to maintain destructive macroeconomic financial tremors through absorbing and contributes financially to stabilize the financial system. Profitability is a measurement of efficiency- and ultimately its success or failure.

This study attempts to examine the effect of bad debts (NPL), market capitalization, operation cost, capital adequacy, cash reserve on the profitability of Nepalese commercial banks. The study is based on the secondary data of 15 commercial banks with 120 observations for the period from 2014/2015 to 2021/2022.

The study showed that market capitalization, operation cost, non-performing loan and leverage have a negative impact on return on assets. However, capital adequacy ratio and cash reserve ratio have positive impact on return on assets. On the other hand, market capitalization and cash reserve ratio have a positive impact on return on equity. However, operation cost, non-

performing loan and capital adequacy ratio have negative impact on return on equity. The study also concluded that cash reserve ratio followed by leverage is the most influencing factor that explains the change in the return on assets of selected Nepalese commercial banks. Similarly, the study also concluded that cash reserve ratio is the most influencing factor that explains the change in the return on equity of Nepalese commercial banks.

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