Effect of Operating Expense on the Profitability of Nepalese Commercial Banks

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Abstract

This study examines the impact of operating expenses on the profitability of Nepalese commercial banks. Return on assets and return on equity are the selected dependent variables. The selected independent variables are loan loss provision, operational efficiency, capital adequacy ratio, bank size, and inflation. The study is based on secondary data of 13 commercial banks with 104 observations for the study period from 2015/16 to 2022/23. 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 loan loss provision, operational efficiency, capital adequacy ratio, bank size, and inflation on the profitability of Nepalese commercial banks.

The results showed that bank size has a positive impact on return on assets and return on equity. It means that increase in bank size leads to increase in return on assets and return on equity. Similarly, capital adequacy ratio has a positive impact on return on assets and return on equity. It means that increase in capital adequacy ratio leads to increase in return on assets and return on equity. In contrast, loan loss provision has a negative impact on return on assets and return on equity. It means that increase in loan loss provision leads to decrease in return on assets and return on equity. Likewise, operational efficiency has a negative impact on return on assets. It shows that higher the operational efficiency ratio, lower would be the return on assets. Moreover, inflation has a negative impact on return on assets and return on equity. It indicates that increase in inflation leads to decrease in return on assets and return on equity. However, operational efficiency has a positive impact on return on equity. It shows that higher the operational efficiency ratio, higher would be the return on equity.

Keywords: return on assets, return on equity, loan loss provision, operational efficiency, capital adequacy ratio, bank size, inflation

1. Introduction

The banking sector is widely recognized as the driving force behind a country's economy. Evaluating the financial performance of financial institutions primarily involves assessing their profitability. The stability of the banking system is crucial for the effective functioning of the overall financial system and the achievement of economic growth. Profitability, in particular, plays a crucial role in ensuring the stability of the banking system. When a

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bank maintains good profitability, it not only benefits its shareholders but also serves as a channel for capital, supporting investments by individuals and organizations. This, in turn, promotes the development of the entire economy. A robust financial system is essential for facilitating growth and reducing vulnerability to crises within commercial banks. The stability of the financial system is a catalyst for economic growth, as it facilitates the exchange of value (Abubakar and Gani, 2013). Furthermore, a high level of bank capital instills confidence and trust in the public regarding the bank's soundness. A strong profitability position indicates a bank's ability to earn profits and make a significant contribution to the economic growth of a country (Akter and Mahmud, 2014).

Operational efficiency refers to the effectiveness, competence, and skill of a company's management team in making strategic decisions, allocating resources, setting goals, and implementing operational processes. Good management is often associated with efficient and well-organized operations, effective risk management, and a strong focus on achieving the company's objectives. Boateng (2019) defined operating expenses as the cost's banks incur in their day-to-day operations, such as employee salaries, rent, utilities, marketing, and administrative costs. These expenses are subtracted from a bank's revenue to calculate operating income or profit. Shuremo (2016) found that if a bank effectively manages its operating expenses and keeps them low, it can improve its profitability. By reducing costs, banks can increase their operating income and, ultimately, their net profit. This can be achieved through various means, such as optimizing operational processes, negotiating better deals with suppliers, or implementing cost-saving measures (Sapa and Awaluddin, 2022). Banks must strike a balance between managing operating expenses and providing quality services to customers. While reducing expenses is beneficial, it should not come at the expense of customer satisfaction or the bank's ability to compete in the market. So, operating expenses have a direct impact on the profitability of banks. By effectively managing these expenses, banks can improve their financial performance and enhance their overall profitability.

A high-quality management team is more likely to implement robust risk management practices, identifying and mitigating potential risks effectively. This can lead to lower credit losses, reduced exposure to bad loans, and a healthier loan portfolio. As a result, the institution may have fewer unexpected losses that could impact its capital position. A well-managed institution is likely to operate efficiently, which can lead to better profitability and resource allocation. This improved financial performance can contribute to higher capital levels, as earnings can be retained to strengthen the institution's capital base (Abusharba et al., 2013). The operating expenses of a bank play a significant role in determining its profitability. Operating expenses

encompass all the costs incurred by a bank in its day-to-day operations, such as salaries, rent, utilities, marketing expenses, technology costs, and regulatory compliance expenses. These expenses directly affect the bottom line of the bank's financial statements. Higher operating expenses can eat into a bank's revenue, reducing its profitability. Therefore, effective cost management strategies are crucial for banks to maintain profitability. Banks often strive to optimize their operating expenses without compromising the quality of services offered to customers. Banks commonly use a metric called the efficiency ratio to assess their cost management effectiveness. This ratio measures the proportion of a bank's revenue that is consumed by operating expenses. A lower efficiency ratio indicates better cost control and higher profitability (Ariff and Luc, 2008).

According to Siyanbola and Raji (2003), a lower cost efficiency ratio indicates that a smaller portion of the bank's revenue is being consumed by operating expenses. This suggests that the bank is effectively managing its costs, which can lead to higher profitability. Essentially, a lower ratio means that the bank is generating more profit from each unit of revenue, which is a positive indicator of financial health and efficiency. Therefore, banks aim to keep their cost efficiency ratio as low as possible to maximize profitability. Controlling operating expenses can give a bank a competitive advantage in the market. Banks that can offer competitive products and services while keeping their costs low are better positioned to attract customers and generate higher profits. Compliance costs, including those related to regulatory requirements, can significantly contribute to a bank's operating expenses. While necessary for maintaining legal and regulatory compliance, excessive regulatory burdens can strain a bank's profitability. Managing operating expenses effectively is essential for banks to maintain profitability, remain competitive, attract investors, and ensure long-term sustainability in the financial market (Tsolas, 2011).

Ismaulina and Zulfadhli (2017) found a negative impact of operational efficiency on return on assets. Inefficient operations often lead to higher operating costs. This can result from manual processes requiring more manpower, outdated technology requiring frequent maintenance or replacement, and ineffective risk management leading to losses. These increased costs eat into the bank's revenue, reducing profitability. Inefficiencies can also impact revenue generation. For example, slow transaction processing times and poor customer service can drive customers away to competitors, leading to a loss of business. Additionally, ineffective credit risk assessment processes may result in higher loan defaults, reducing interest income. To increase the performance of the firms, it is necessary to increase the efficiency of the financial institution's management (Athanasoglou *et al*., 2008). Al Karim and Alam (2013) concluded that operational cost has significant negative

impact on the financial performance. Similarly, Yesmine and Bhuiyah (2015) found that assets operating efficiency has significant positive impact on the financial performance of bank. In contrary, Teshome *et al*. (2018) concluded that non-performing loans, loan loss provision and operational cost efficiency has significant negative impact on the financial performance of the private commercial bank of Ethiopia. Similarly, Dietrich and Wanzenried (2011) found a negative relationship between cost to income ratio and profitability. Similarly, poor operational performance can damage the bank's reputation, leading to loss of trust among customers and stakeholders. Rebuilding trust and repairing a damaged reputation can be costly and time-consuming, impacting profitability in the long term.

In the context of Nepal, Khatri (2023) examined the impact of financial ratios, operational efficiency and non-performing loans on the profitability of Nepalese commercial banks. The study showed that operational efficiency has a negative impact on return on asset. It indicates that higher the operational efficiency, lower would be the return on asset. Pradhan and Shrestha (2017) examined the impact of capital adequacy and bank operating efficiency on the financial performance of Nepalese commercial banks. The results indicated that total deposits to total assets and bank operating efficiency were the significant variables determining the financial performance of commercial banks in Nepal. Bank operating efficiency, loan ratio, total deposit to total assets, and loan loss provision to total equity had a significantly positive impact on the financial performance of commercial banks. Darlami (2023) examined the impact of credit risk, operational risk and liquidity risk on the profitability of Nepalese commercial banks. The results 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. Sah and Pradhan (2023) analyzed the impact of financial ratios, operational efficiency and non-performing loan on the profitability of Nepalese commercial banks. The study showed that operating efficiency has a negative impact on return on assets and return on equity. It indicates that increase the operating efficiency leads to decrease in return on assets and return on equity of Nepalese commercial banks.

The above discussion shows that empirical evidences vary greatly across the studies on the effect of operating expenses on bank's profitability. Though there are above-mentioned empirical evidence 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 operating expenses on the profitability of Nepalese commercial banks. More specifically, the study examines the effect of operating expenses, inflation, loan loss provision, bank size, and capital adequacy ratio on the profitability 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 13 Nepalese commercial banks for the study period from 2015/16 to 2022/23, leading to a total of 104 observations. The study employed convenience 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 commercial banks	Study period	Observations
1	Siddharth Bank Limited	2015/16 - 2022/23	8
2	Citizens Bank International Limited	2015/16 - 2022/23	8
3	Standard Chartered Bank Nepal Limited	2015/16 - 2022/23	8
4	Himalayan Bank Limited	2015/16 - 2022/23	8
5	Rastriya Banijya Bank Limited	2015/16 - 2022/23	8
6	Prime Commercial Bank Limited	2015/16 - 2022/23	8
7	Everest Bank Limited	2015/16 - 2022/23	8
8	NMB Bank Limited	2015/16 - 2022/23	8
9	Nepal SBI Bank Limited	2015/16 - 2022/23	8
10	Agricultural Development Bank Limited	2015/16 - 2022/23	8
11	Machhapuchchhre Bank Limited	2015/16 - 2022/23	8
12	Sanima Bank Limited	2015/16 - 2022/23	8
13	Prabhu Bank Limited	2015/16 - 2022/23	8
Total number of observations			104

Thus, the study is based on 104 observations.

The model

The model used in this study assumes that profitability depends upon

bank specific factors and operating efficiency. The dependent variables selected for the study are return on assets and return on equity. Similarly, the selected independent variables are loan loss provision, operating efficiency, capital adequacy ratio, bank size and inflation. Therefore, the models take the following forms:

$$ROA_{it} = \beta_0 + \beta_1 LLP_{it} + \beta_2 OE_{it} + \beta_3 BS_{it} + \beta_4 INF_t + \beta_5 CAR_{it} + e_{it}$$

$$ROE_{it} = \beta_0 + \beta_1 LLP_{it} + \beta_2 OE_{it} + \beta_3 BS_{it} + \beta_4 INF_t + \beta_5 CAR_{it} + e_{it}$$

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 shareholders' equity, in percentage.

LLP = Loan loss provision as measured by the amount of total loan loss provision, Rs. in million.

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

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

INF= Inflation as measured by the change in consumer price index, in percentage.

BS = Bank size as measured by total assets, Rs. in billion.

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

Operating efficiency

Operating efficiency, typically measured by metrics such as cost-to-income ratio or efficiency ratio, reflects how well a bank manages its expenses relative to its income. When a bank operates efficiently, it can minimize costs while maximizing revenue, leading to increased profitability (Boateng, 2019). Mehzabin et al. (2023) found that there is significant and positive effect of capital structure, operating efficiency and non-interest income on bank profitability in the context of Asia. Buchory (2015) found a positive association between operating efficiency and bank profitability. Efficiency improvements can result from various factors, including streamlined processes, effective use of technology, optimal staffing levels, and prudent risk management practices. As a bank becomes more efficient, it can enhance its profitability by either increasing its net income or reducing expenses Moreover, Oral and Yolalan (1990) revealed a direct positive relationship between operating efficiency and bank profitability.

Based on this, this study develops the following hypothesis:

H_1: There is a positive relationship between operating efficiency and bank

profitability.

Loan loss provision

Loan loss provision, an essential measure for managing credit risk in the banking sector, has been extensively studied concerning its impact on bank profitability. Several studies have explored this relationship and produced varying results. Alhadab and Alsahawneh (2016) discovered that loan loss provision negatively affects the profitability of Jordanian commercial banks. Ahmad et al. (2014) confirmed this negative relationship between loan loss provision (LLP) and profitability, specifically return on assets (ROA) and return on equity (ROE). In addition, Kaaya and Pastory (2013) utilized panel data analysis to analyze credit risk and performance in Tanzanian commercial banks for the period 2005-2011, concluding that loan loss provision has a negative impact on both return on assets and return on equity. Vong and Chan (2009) examined profitability determinants in banks in Macao from 1993 to 2007. The study reported a significant negative relationship between loan loss provisions and bank profitability. Similarly, Elshaday et al. (2018) revealed a negative and statistically significant effect of loan loss provision on banks' financial performance. Based on this, this study develops the following hypothesis:

H_2: There is a negative relationship between loan loss provision and bank profitability.

Inflation rate

Batsinda and Shukla (2019) focused on the impact of inflation on the profitability of the Bank of Kigali in Rwanda. The study found that demand-pull inflation and monetary inflation had a negative correlation with the profitability of the Bank of Kigali. Additionally, Tan and Floros (2009) argued that the inflation rate adversely affected financial sector performance through credit market frictions before impacting economic growth. Saeed (2014) examined the Bank-related, industry-related and macroeconomic factors affecting bank profitability of the United Kingdom. The study showed a negative relationship between inflation rate and bank profitability. Furthermore, Hooshyari and Moghanloo (2015) explored the influence of inflation on banks' profitability in Iran. The study indicated that inflation, along with factors like net interest margin, liquidity, taxation, capitalization, and cost efficiency, has a negative impact on the profitability of banks. Based on this, this study develops the following hypothesis:

H_3: There is a negative relationship between inflation rate and bank profitability.

Bank size

Sufian and Habibullah (2009) examined the determinants of the profitability of the Chinese banking sector during the post-reform period

of 2000–2005. The study revealed that the more diversified and relatively better capitalized CITY tends to exhibit higher profitability levels. Moreover, Staikouras and Wood (2004) found a significant positive relationship between bank size measures regarding the natural logarithm of total assets and profitability. Kapaya and Raphael (2016) assessed the effects of bank-specific, industry-specific, and macroeconomic determinants on banks' profitability. The study argued that bank size has a positive impact on profitability measured by net interest margin and return on assets. Mule et al. (2015) revealed that there is a positive significant relationship between firm size and profitability implying that a unit change in firm size leads to an increase in return on equity of firms. Based on this, this study develops the following hypothesis:

H_4: There is a positive relationship between bank size and bank profitability.

Capital adequacy ratio

Capital adequacy ratio (CAR) is defined as the ratio of capital to the risk-weighted sum of a bank's assets. Ben Naceur and Goaied (2008) examined the impact of bank specific variables and macroeconomic indicators and financial structure's effect on banking sector's profitability in Tunisia from 1980 to 2000. The study concluded that capital adequacy ratio has a positive effect on profitability. Similarly, Jadhav et al. (2021) found that capital adequacy ratio has a positive impact on profitability. Likewise, Ebenezer et al. (2017) stated that CAR has a positive and significant effect on bank profitability. In addition, Olalekan and Adeyinka (2013) showed a positive and significant relationship between capital adequacy and profitability of bank. Fidanoski et al. (2018); Kusumastuti and Alam (2019) have reported a positive impact of capital adequacy ratio on bank profitability. These findings suggested that higher capital adequacy is associated with increased profitability, as it enhances the perceived safety of banks. Based on this, this study develops the following hypothesis:

H_5: There is a positive relationship between capital adequacy ratio 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 2022/23.

Table 2

Descriptive statistics

This table shows the descriptive statistics of dependent and independent variables of 13 Nepalese commercial banks for the study period from 2015/16 to 2022/23. The dependent variables are ROA (Return on assets as measured by the ratio of net profit to total asset, in percentage) and ROE (Return on equity as measured by the ratio of net income to total

shareholders' equity, in percentage). The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total capital to total risk weighted exposure, in percentage), LLP (Loan loss provision as measured by the amount of total loan loss provision, Rs. in million), OE (Operating efficiency is measured by the ratio of operating expenses to operating income, in percentage), BS (Bank size as measured by total assets, Rs. in billion) and INF (Inflation as measured by the change in consumer price index, in percentage).

Variables	Minimum	Maximum	Mean	Std. Deviation
ROA	0.47	3.23	1.57	0.51
ROE	3.78	24.53	14.34	4.56
CAR	8.55	22.99	13.88	2.50
LLP	11.32	10232.46	2657.22	2145.81
OE	0.13	0.62	0.41	0.09
INF	4.19	9.9	6.08	2.01
BS	40.3	827.81	190.38	162.51

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 Pearson's correlation coefficients of dependent and independent variables of 13 Nepalese commercial banks for the study period from 2015/16 to 2022/23. The dependent variables are ROA (Return on assets as measured by the ratio of net profit to total asset, in percentage) and ROE (Return on equity as measured by the ratio of net income to total shareholders' equity, in percentage). The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total capital to total risk weighted exposure, in percentage), LLP (Loan loss provision as measured by the amount of total loan loss provision, Rs. in million), OE (Operating efficiency is measured by the ratio of operating expenses to operating income, in percentage), BS (Bank size as measured by total assets, Rs. in billion) and INF (Inflation as measured by the change in consumer price index, in percentage).

Variables	ROA	ROE	BS	CAR	LLP	OE	INF
ROA	1						
ROE	0.551**	1					
BS	0.067	0.091	1				
CAR	0.309**	0.279**	0.421**	1			
LLP	-0.287**	-0.452**	-0.302**	-0.036	1		
OE	-0.054	0.152	-0.368**	-0.234**	0.082	1	
INF	-0.034	-0.219*	-0.001	-0.373**	-0.115	0.348**	1

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

five percent levels respectively.

Table 3 shows that bank size has a positive relationship with return on assets. It means that increase in bank size leads to increase in return on assets. Similarly, capital adequacy ratio has a positive relationship with return on assets. It means that increase in capital adequacy ratio leads to increase in return on assets. In contrast, there is a negative relationship between loan loss provision and return on assets. It means that increase in loan loss provision leads to decrease in return on assets. Likewise, operational efficiency has a negative relationship with return on assets. It shows that higher the operational efficiency ratio, lower would be the return on assets. Moreover, inflation has a negative relationship with return on assets. It indicates that increase in inflation leads to decrease in return on assets.

Likewise, the result also shows that bank size has a positive relationship with return on equity. It means that increase in bank size leads to increase in return on equity. Similarly, capital adequacy ratio has a positive relationship with return on equity. It means that increase in capital adequacy ratio leads to increase in return on equity. In contrast, there is a negative relationship between loan loss provision and return on equity. It means that increase in loan loss provision leads to decrease in return on equity. Likewise, operational efficiency has a positive relationship with return on equity. It shows that higher the operational efficiency ratio, higher would be the return on equity. Moreover, inflation has a negative relationship with return on equity. It indicates that increase in inflation leads to decrease in return on equity.

Regression analysis

Having indicated 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 loan loss provision, operating efficiency, capital adequacy ratio, bank size and inflation on return on assets of Nepalese commercial banks.

Table 4

Estimated regression results of loan loss provision, operating efficiency, capital adequacy ratio, bank size and inflation on return on assets

The results are based on panel data of 13 commercial banks with 104 observations for the period of 2015/16 to 2022/23 by using linear regression model. The model is $ROA_{it} = \beta_0 + \beta_1 LLP_{it} + \beta_2 OE_{it} + \beta_3 BS_{it} + \beta_4 INF_t + \beta_5 CAR_{it} + e_{it}$ 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 CAR (Capital adequacy ratio as measured by the ratio of total capital to total risk weighted exposure, in percentage), LLP (Loan loss provision as measured by the amount of total loan loss provision, Rs. in million), OE (Operating efficiency is measured by the ratio of operating expenses to operating income, in percentage), BS (Bank size as measured by total assets, Rs. in billion) and INF (Inflation as measured by the change

in consumer price index, in percentage).

Model	Intercept	Regression coefficients of					Adj. R_bar2	SEE	F-value
		LLP	OE	BS	CAR	INF			
1	1.634 (10.934)**	0.057 (0.620)					0.005	0.501	0.384
2	1.973 (4.229)**		-0.084 (0.920)				0.001	0.499	0.847
3	2.297 (13.968)**			0.399 (4.727)**			0.152	0.460	22.343
4	8.518 (6.172)**				0.422 (5.054)**		0.171	0.455	25.547
5	1.497 (21.573)*					-0.086 (0.932)	0.001	0.499	0.869
6	2.251 (4.075)**	0.091 (0.942)	-0.112 (1.161)				0.002	0.500	0.867
7	3.576 (6.381)**	0.038 (0.436)	-0.221 (2.470)*	0.453 (5.211)**			0.181	0.452	9.760
8	8.058 (2.112)*	0.044 (0.505)	-0.200 (2.201)*	0.152 (0.565)	0.311 (1.188)		0.184	0.451	7.699
9	8.765 (2.249)*	0.029 (0.324)	-0.227 (2.371)*	0.144 (0.538)	0.345 (1.303)	-0.085 (0.905)	0.182	0.452	6.313
10	8.647 (2.157)*	0.030 (0.331)	-0.229 (2.348)*	0.152 (0.552)	0.337 (1.234)	-0.090 (0.888)	0.175	0.454	5.219

Notes:

i. Figures in parenthesis are t-values.

ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.

iii. Return on assets is the dependent variable.

Table 4 shows that the beta coefficients for bank size are positive with return on assets. It indicates that bank size has a positive impact on return on assets. This finding is similar to the findings of Lardic and Terraza (2019). Likewise, beta coefficients for capital adequacy ratios are positive with return on assets. It indicates that capital adequacy ratio has a positive impact on return on assets. This finding is consistent with the findings of Anggari and Dana (2020). However, the beta coefficients for loan loss provision are negative with return on assets. It indicates that loan loss provision has a negative impact on return on assets. This finding is similar to the findings of Charmler et al. (2018). Similarly, the beta coefficients for inflation are negative with return on assets. It indicates that inflation has a negative impact on return on assets. This finding is consistent with the findings of Abbadi and Abu-Rub (2012). In addition, the beta coefficients for operational efficiency are negative with return on assets. It indicates that operational efficiency has a negative impact on return on assets. This finding is similar to the findings of Brastama and Yadnya (2020).

Estimated regression results of loan loss provision, operating efficiency, capital adequacy ratio, bank size and inflation on return on equity of Nepalese commercial banks are presented in Table 5.

Table 5

Estimated regression results of loan loss provision, operating efficiency,

capital adequacy ratio, bank size and inflation on return on equity of Nepalese commercial banks

The results are based on panel data of 13 commercial banks with 104 observations for the period of 2015/16 to 2022/23 by using linear regression model. The model is $ROE_{it} = \beta_0 + \beta_1 LLP_{it} + \beta_2 OE_{it} + \beta_3 BS_{it} + \beta_4 INF_t + \beta_5 CAR_{it} + e_{it}$ where, the dependent variable is ROE (Return on equity as measured by the ratio of net income to total shareholders' equity, in percentage). The independent variables are CAR (Capital adequacy ratio as measured by the ratio of total capital to total risk weighted exposure, in percentage), LLP (Loan loss provision as measured by the amount of total loan loss provision, Rs. in million), OE (Operating efficiency is measured by the ratio of operating expenses to operating income, in percentage), BS (Bank size as measured by total assets, Rs. in billion) and INF (Inflation as measured by the change in consumer price index, in percentage).

Model	Intercept	Regression coefficients of					Adj. R_bar2	SEE	F-value
		LLP	OE	BS	CAR	INF			
1	3.096 (15.650)**	-0.020 (0.222)					0.008	0.663	0.049
2	3.130 (5.057)**		0.001 (0.013)				0.003	0.633	0.001
3	4.010 (18.053)**			0.350 (4.060)**			0.115	0.621	16.484
4	12.524 (6.890)**				0.429 (5.166)**		0.178	0.599	26.687
5	2.882 (33.279)**					-0.339 (3.915)**	0.107	0.624	15.324
6	2.899 (23.105)**						0.030	0.651	4.680
7	3.037 (4.127)**	-0.023 (0.236)	0.008 (0.084)				0.017	0.666	0.028
8	4.531 (5.880)**	-0.068 (0.743)	0.085 (0.915)	0.386 (4.276)**			0.114	0.622	6.115
9	21.728 (4.326)**	-0.050 (0.568)	0.025 (0.277)	0.488 (1.828)	0.903 (3.461)**		0.191	0.594	8.016
10	19.010 (3.809)**	-0.005 (0.063)	0.052 (0.556)	0.467 (1.798)	0.804 (3.134)**	-0.246 (2.715)**	0.233	0.578	8.243
11	19.051 (3.710)**	-0.006 (0.065)	0.052 (0.552)	0.469 (1.758)	0.806 (3.050)**	-0.248 (2.531)*	0.227	0.581	6.809

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 equity is the dependent variable.

Table 5 shows that that the beta coefficients for bank size are positive with return on equity. It indicates that bank size has a positive impact on return on equity. This finding is similar to the findings of Wasiuzzaman and Tarmizi (2010). Likewise, beta coefficients for capital adequacy ratios are positive with return on equity. It indicates that capital adequacy ratio has a positive impact on return on equity. This finding is consistent with the findings of Margono et al. (2020). However, the beta coefficients for loan loss provision are negative with return on equity. It indicates that loan loss provision has a

negative impact on return on equity. This finding is similar to the findings of Lukorito et al. (2014). Similarly, the beta coefficients for inflation rate are negative with return on equity. It indicates that inflation rate has a negative impact on return on equity. This finding is consistent with the findings of Bunyaminu et al. (2021). In addition, the beta coefficients for operational efficiency are positive with return on equity. It indicates that operational efficiency has a positive impact on return on equity. This finding is similar to the findings of Adebisi and Matthew (2015).

4. Summary and conclusion

The banking system plays an important role in the modern economic world. By facilitating the mobilization of depositor funds and directing them toward profitable ventures through lending, banks play a crucial role in the economy. Banks serve as financial mediators, effectively allocating resources to support economic growth and development. As a result, evaluating their performance is essential to preserving financial stability and fostering economic growth. Regarding bank performance, various stakeholders have different expectations and areas of interest. While depositors place a higher priority on security and dependability, regulators concentrate on safety and soundness, investors pursue profitability and shareholder value, and politicians strive for systemic stability and fair access to financial services. An essential component of the financial industry is the measurement of bank performance, which offers information about the stability, efficacy, and efficiency of bank operations. For a variety of stakeholders, including investors, regulators, policymakers, and bank management, knowing and assessing bank performance is crucial because it enables them to make well-informed decisions about risk management, investments, and regulatory compliance.

This study attempts to determine the relationship of loan loss provision, operating efficiency, capital adequacy ratio, bank size and inflation with the profitability of Nepalese commercial banks. The study is based on secondary data of 13 commercial banks with 104 observations for the period from 2015/16 to 2022/23.

The study showed that bank size has a positive effect on return on assets and return on equity. It means that increase in bank size leads to increase in return on assets and return on equity. Larger banks often benefit from economies of scale, allowing them to spread fixed costs over a larger asset base. As the bank grows in size, it can achieve operational efficiencies and reduce per-unit costs, leading to improved profitability measured by ROA and

ROE. Access to cheaper funding can improve the bank's net interest margin and profitability metrics, positively impacting ROA and ROE. Similarly, capital adequacy ratio has a positive effect on return on assets and return on equity. It means that increase in capital adequacy ratio leads to increase in return on assets and return on equity. Adequate capital provides a buffer against unexpected losses and helps banks absorb shocks during economic downturns or adverse market conditions. This risk-absorbing capacity enhances confidence among depositors, creditors, and investors, which can lead to lower funding costs and improved profitability. Likewise, operational efficiency has a positive relationship with return on equity. It shows that higher the operational efficiency ratio, higher would be the return on equity. The study also concluded that bank size and capital adequacy ratio play significant role in determining the profitability of Nepalese commercial banks.

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