

Internal and External Factors Affecting Earnings of Nepalese Commercial Banks

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Abstract

This study examines the impact of external and internal factors on the earnings in the context of Nepalese commercial banks. Return on assets and return on equity are the selected dependent variables. The selected independent variables are bank size, capital adequacy ratio, non-performing loans, inflation rate, GDP growth rate, and interest rate. The study is based on secondary data for a sample of 14 commercial banks, which include 3 public sector banks, 3 joint venture banks, and 8 private sector banks for the period of 8 years from 2015/16 to 2022/23, leading to total 112 observations. 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 internal and external factors on earnings of Nepalese commercial banks.

The study shows that the bank interest rate has a positive impact on return on assets and return on equity. It indicates that higher the bank interest rate, higher would be the return on assets and return on equity. However, non-performing loans have a negative impact on return on assets and return on equity. It indicates that higher the non-performing loan, lower would be the return on assets and return on equity. Moreover, capital adequacy ratio, GDP growth rate, and inflation rate have a positive impact on return on assets. It indicates that the higher the capital adequacy ratio, GDP growth rate, and inflation rate, higher would be the return on assets. Contrarily, capital adequacy ratio, GDP growth rate, and inflation rate have a negative impact on return on equity. It indicates that higher the capital adequacy ratio, GDP growth rate, and inflation rate, lower would be the return on equity.

Keywords: bank size, capital adequacy ratio, non-performing loans, inflation rate, GDP growth rate, interest rate, return on assets, return on equity

1. Introduction

Banks are the principal source of credit or loanable funds for the public and the government. Commercial banks sell deposits and make loans to businesses and individuals (Rose and Hudgins, 2008). The long-term feasibility of a bank depends on its ability to generate sufficient earnings to protect and enhance its capital and reward its shareholders. Earnings are an important indicator of financial health, as well as an early indicator of weakness. The factors affecting the performance and profitability of banks are generally classified into internal managerial factors and external environmental factors. The long-term feasibility and sustainability of a bank are largely determined by its ability to generate sufficient earnings. These earnings play a crucial role in protecting and enhancing the bank's capital, which serves as the foundation for the institution's financial stability, risk absorption capacity, and growth potential. Without robust and consistent earnings, a bank may face challenges in maintaining its operations, complying with regulatory requirements, and adapting to changing market conditions. Capital protects a bank from unexpected losses due to loan defaults, bad investments, or market downturns. The higher the capital base, the better the bank can absorb financial shocks without compromising its solvency (Weersainghe and Perera, 2013).

San and Heng (2013) investigated the factors that affect the profitability of commercial banks in Malaysia. The study found that bank size, capital adequacy, and GDP growth have a positive impact on profitability, while inflation has a negative impact. Abate and Mesfin (2019)

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investigated the factors that affect the profitability of commercial banks in Ethiopia. The study found that bank size, capital adequacy, and GDP growth have a positive impact on profitability. Lipunga (2014) investigated the determinants of profitability for listed commercial banks in developing countries, with a specific focus on Malawi. The study found that bank size, capital adequacy, and GDP growth have a positive impact on profitability. Nuhiu et al. (2017) examined the determinants of profitability for commercial banks in Kosovo through the analysis of financial performance indicators. The study found that bank size, capital adequacy, and GDP growth have a positive impact on profitability. Dietrich and Wanzenried (2014) scrutinized the determinants of commercial banking profitability across low, middle, and high income countries. The study found that bank size, capital adequacy, and GDP growth generally have a positive impact on profitability. Staikouras and Wood (2004) investigated the determinants of profitability for European banks. The study found that bank size, capital adequacy, and GDP growth have a positive impact on profitability. Lelissa (2014) investigated the determinants of performance for commercial banks in Ethiopia. The study found that bank size, capital adequacy, and GDP growth have a positive impact on performance. Sayedi (2014) examined the impacts of liquidity, market power, and interest rate on the profitability of banks in Nigeria. In terms of return on assets as a determinant of profitability, the study showed that market power has a significant positive impact, liquidity has an insignificant positive impact, while interest rate has an insignificant negative impact on it. Contrarily, in terms of return on equity as a determinant of profitability, market power has an insignificant positive impact, liquidity has a significant positive impact, while interest rate has an insignificant negative impact. Onuonga (2014) analyzed the profitability of the top six commercial banks in Kenya. The study found that bank size, capital adequacy, and management efficiency have a positive impact on profitability, while asset quality and liquidity have a negative impact.

Mbekomize and Mapharing (2017) analyzed the determinants of profitability for commercial banks in Botswana. The study found that bank size, capital adequacy, and GDP growth have a positive impact on profitability. Almunani (2013) investigated the impact of managerial factors on the profitability of commercial banks in Jordan. The study found that management efficiency, management quality, and management decisions have a positive impact on profitability. Kanwal and Nadeem (2013) investigated the impact of macroeconomic variables on the profitability of listed commercial banks in Pakistan. The study found that GDP growth and interest rates have a positive impact on profitability, while inflation and the exchange rate have a negative impact. Gul et al. (2011) explored the factors that affect the profitability of banks in Pakistan. The study found that bank size, capital adequacy, and GDP growth have a positive impact on profitability, while inflation has a negative impact. Olweny and Shipho (2011) investigated the effects of banking sectoral factors on the profitability of commercial banks in Kenya. The study found that bank size, capital adequacy, and banking industry growth have a positive impact on profitability, while competition has a negative impact. Ongore and Kusa (2013) investigate the determinants of financial performance for commercial banks in Kenya. The study found that bank size, capital adequacy, and GDP growth have a positive impact on financial performance.

Jadah et al. (2020) investigated the internal and external determinants that affect the profitability of Iraqi banks. The study found that bank size, capital adequacy, and GDP growth have a positive impact on profitability, while inflation has a negative impact. Sarwar et al. (2018) assessed the internal and external determinants that affect the profitability of commercial banks in Pakistan. The study found that bank size, capital adequacy, and GDP growth have a positive impact

on profitability, while inflation has a negative impact. Bekhet et al. (2020) examined the effects of internal and external factors on the profitability of Jordanian commercial banks. The study found that bank size, capital adequacy, and GDP growth have a positive impact on profitability, while inflation has a negative impact. Endri and Marlina (2020) investigated the impact of internal and external factors on the net interest margin of banks in Indonesia. The study found that bank size, capital adequacy, and GDP growth have a positive impact on the net interest margin, while inflation has a negative impact. Jeris (2021) explored the factors that influence the profitability of banks in a developing economy, with a specific focus on Bangladesh. The study found that bank size, capital adequacy, and GDP growth have a positive impact on profitability, while inflation has a negative impact. Weersainghe and Perera (2013) inspected the determinants of profitability for commercial banks in Sri Lanka. The study found that bank size, capital adequacy, and GDP growth have a positive impact on profitability, while inflation has a negative impact. Dang et al. (2021) investigated the factors that affect the profitability of listed commercial banks in Vietnam. The study found that bank size, capital adequacy, GDP growth, and agriculture finance have a positive impact on profitability, while inflation has a negative impact. Aljbiri (2013) explored the factors that affect the profitability of Gumhoria Bank, the biggest commercial bank in Libya. The study found that bank size, capital adequacy, and GDP growth have a positive impact on profitability, while inflation has a negative impact.

In Nepalese context, Shrestha and Chaurasiya (2023) examined the impact of liquidity management and profitability of joint venture commercial banks in Nepal. The result showed that there is an insignificant impact of credit to deposit ratio, capital adequacy ratio, and cash reserve ratio on return on assets of joint venture commercial banks in Nepal. Without a strong earnings foundation, a bank may struggle to remain viable over the long term, especially in the face of changing market conditions and economic challenges. Earnings generated by a bank through its operations are critical for protecting and enhancing capital in the long run. Banks face a variety of risks, including credit risk (due to loan defaults), market risk (due to fluctuating asset values), and operational risk (from fraud or mismanagement). To mitigate these risks, banks require sufficient earnings. Strong earnings give banks the flexibility to diversify their asset portfolio, spreading risk across different sectors, markets, and financial products. This reduces the concentration risk in any one area and enhances the bank's overall stability. Chhetri (2023) observed credit risk, liquidity risk and profitability in Nepalese commercial banks. The study revealed that CAR has a positive and statistically significant effect on ROE whereas investment ratio has a negative and statistically significant effect on ROE. The study also revealed that capital ratio has a negative and statistically significant effects on ROE, at the same time, capital adequacy ratio, investment ratio, and capital ratio also have significant impact on ROE.

The above discussion shows that studies dealing with the impact of internal and external factors on the earnings of commercial banks are of greater significance. Hence, this study focuses on examining the impact of internal and external factors on the earnings of commercial banks in Nepal. Although empirical evidence exists for other countries and Nepal, there are no more recent data-based findings in Nepal. This study has been conducted to support one perspective.

The major purpose of this study is to examine the impact of internal and external factors on the earnings in the context of Nepalese commercial banks. Specifically, it examines the effect of bank size, capital adequacy ratio, non-performing loans, inflation rate, GDP growth rate, and interest rate in the earnings in the context of Nepalese commercial banks.

The remainder of this study is organized as follows: Section two describes the sample, data and methodology. Section three presents the empirical results and the final section draws the conclusion.

2. Methodological aspects

The study is based on the secondary data which were gathered from 14 Nepalese commercial banks from 2015/16 to 2022/23, leading to a total of 112 observations. The study employed stratified 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 Banks	Study Period	Observations
Public Banks			
1	Nepal Bank Limited	2015/16 - 2022/23	8
2	Agricultural Development Bank Limited	2015/16 - 2022/23	8
3	Nepal Investment Mega Bank Limited	2015/16 - 2022/23	8
Joint Venture Banks			
4	NMB Bank Limited	2015/16 - 2022/23	8
5	Everest Bank Limited	2015/16 - 2022/23	8
6	Standard Chartered Bank Nepal Limited	2015/16 - 2022/23	8
Private Banks			
7	NIC Asia Bank Limited	2015/16 - 2022/23	8
8	Himalayan Bank Limited	2015/16 - 2022/23	8
9	Prime Commercial Bank Limited	2015/16 - 2022/23	8
10	Siddhartha Bank Limited	2015/16 - 2022/23	8
11	Nepal SBI Bank Limited	2015/16 - 2022/23	8
12	Sanima Bank Limited	2015/16 - 2022/23	8
13	Citizens Bank International Limited	2015/16 - 2022/23	8
14	Machhapuchchhre Bank Limited	2015/16 - 2022/23	8
Total number of observations			112

Source: Annual reports

Thus, the study is based on 112 observations.

The model

The model used in this study assumes that earnings of banks depends upon internal and external factors. The dependent variables selected for the study are return on assets and return on equity. Similarly, the selected independent variables are inflation rate, gross domestic product, interest rate, bank size, capital adequacy ratio, and non-performing loans. Therefore, the models take the following forms:

$$ROA = \beta_0 + \beta_1 BNK + \beta_2 CAR + \beta_3 NPL + \beta_4 INF + \beta_5 GDP + \beta_6 INT + e_{it}$$

$$ROE = \beta_0 + \beta_1 BNK + \beta_2 CAR + \beta_3 NPL + \beta_4 INF + \beta_5 GDP + \beta_6 INT + e_{it}$$

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 equity, in percentage.

BNK = Bank size as measured by taking the natural logarithm of total assets given in billions.

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

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

INF = Inflation rate as measured by the GDP deflator, in percentage

GDP = GDP growth as measured by the change in Gross Domestic Product as measured by the change in total value of all goods and services produced within the country's borders, in percentage.

INT = Bank rate as measured by interest rate charged to commercial banks for short-term loan, in percentage.

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

Bank size

Bank size and profitability exhibit a positive relationship, meaning that as a bank's size increases, its profitability tends to improve. This relationship is driven by economies of scale, diversification of revenue streams, and enhanced market power. Larger banks often have greater financial resources, technological advantages, and operational efficiency, which contribute to higher profitability. Large banks could create economies of scale that lower the average cost and has a positive impact on bank profits (Athanasoglou et al., 2008). Gul et al. (2011) investigated the factors that affect the profitability of banks in Pakistan and found that bank size had a positive impact on profitability. Almazari (2014) investigated the impact of internal factors on the profitability of banks in Saudi Arabia and Jordan. The study found that bank size has a positive impact on profitability. Ariyadasa (2017) investigated the factors that influence the profitability of commercial banks in Sri Lanka. The study found that bank size has a positive impact on profitability. Bekhet et al. (2020) investigated the effects of internal and external factors on the profitability of Jordanian commercial banks and found that bank size had a positive impact on profitability. Jadah et al. (2020) investigate the internal and external determinants that affect the profitability of Iraqi banks. The study showed that bank size had a positive impact on profitability. Based on this, the study developed the following hypothesis:

H₁: There is a positive relationship between the bank size and bank profitability.

Capital adequacy ratio

The capital adequacy ratio has a positive relationship with profitability indicating that as the capital adequacy ratio increases, a bank's profitability tends to improve. This relationship is grounded in the role of adequate capital in enhancing financial stability, supporting loan growth, and mitigating risks, all of which contribute to higher profitability. Mbekomize and Mapharing (2017) analyzed the determinants of profitability for commercial banks in Botswana. The study found that capital adequacy had a positive impact on profitability. Neupane (2020) investigated

the determinants of profitability for commercial banks in Nepal. The study showed that capital adequacy has a positive impact on profitability. Nguyen and Nguyen (2021) analyzed the internal factors that affect the profitability of listed banks on the Vietnam Stock Market. The study showed that capital adequacy has a positive impact on profitability. Nuhiu et al. (2017) investigated the determinants of profitability for commercial banks in Kosovo through the analysis of financial performance indicators and found that capital adequacy has a positive impact on profitability. Onuonga (2014) analyzed the profitability of the top six commercial banks in Kenya. The study found that capital adequacy has a positive impact on profitability. San and Heng (2013) investigated the factors that affect the profitability of commercial banks in Malaysia and found that capital adequacy has a positive impact on profitability. Based on this, the study developed the following hypothesis:

H₂: There is a positive relationship between the capital adequacy ratio and bank profitability.

Non-performing loans

Non-performing Loans (NPL) or non-performing assets (NPA) refer to those kinds of loans that are unable to be repaid (Symss et al., 2018). Azar and Kouyoumjian (2016) examined the determinants of bank profitability in Lebanon. The study found that asset quality indicated by non-performing loans had a notable negative effect on profitability. Firtescu and Roman (2015) investigated the factors influencing the profitability of commercial banks. The study found that non-performing loans negatively impacted profitability in Bulgaria and Romania. Islam et al. (2017) identified the determinants of profitability for private commercial banks in Bangladesh, concluding that the non-performing loans to total loans ratio has the most significant impact on profitability. Do et al. (2020) analyzed the effect of non-performing loans on profitability of commercial banks in Vietnam. The study revealed that when the rate of nonperforming loans increases, the bank's ROA will decrease, resulting in lower profitability. Adebisi and Matthew (2015) analyzed the impact of non-performing loans on firms' profitability of banks in Nigeria and showed that there is a relation between the non-performing loans and return on assets of Nigerian Banks. Furthermore, Patwary and Tasneem (2019) analyzed the impact of non-performing loans on the profitability of banks in Bangladesh and found that non-performing loan ratio is statistically significant to return on assets. Based on this, the study develops the following hypothesis:

H₃: There is a negative relationship between the non-performing loans and bank profitability.

Inflation rate

San and Heng (2013) investigated the factors that affect the profitability of commercial banks in Malaysia. The study found that inflation, which is a macroeconomic factor, has a negative impact on profitability. Abate and Mesfin (2019) investigated the factors that affect the profitability of commercial banks in Ethiopia and found that inflation has a negative impact on profitability or earnings. Moreover, Lipunga (2014) investigated the determinants of profitability for listed commercial banks in developing countries. The study showed that inflation has a negative impact on profitability. Similarly, Mbekomize and Mapharing (2017) analyzed the determinants of profitability for commercial banks in Botswana and found that inflation has a negative impact on profitability. Ur Rehman et al. (2018) investigated the internal and external factors that affect bank profitability and found that inflation has a negative impact on profitability. Furthermore, Kanwal and Nadeem (2013) investigated the impact of macroeconomic variables on the

profitability of listed commercial banks in Pakistan. The study showed that inflation has a negative impact on profitability. Based on this, the study develops the following hypothesis:

H₄: There is a negative relationship between inflation and bank profitability.

Gross domestic product growth

Phan et al. (2020) studied the factors of profitability of commercial banks in Vietnam from 2008 to 2018. According to the study, GDP has a positive effect on profitability. Albertazz and Gambacorta (2009) revealed that GDP affects both loan loss provisions through credit portfolio quality and net interest income through bank lending activities, both of which influence high bank profit. According to Ngweshemi and Isiksal (2021), the GDP growth rate shows positive but statistically insignificant effects on profitability in both ROA and ROE models. San and Heng (2013) investigated the factors that affect the profitability of commercial banks in Malaysia and found that GDP growth has a positive impact on profitability along with bank size and capital. Based on this, the study develops the following hypothesis:

H₅: There is a positive relationship between GDP growth and bank profitability.

Interest rate

Firtescu and Roman (2015) investigated the factors influencing the profitability of commercial banks in Bulgaria and Romania. The study found that for external determinants, interest rate levels influenced net interest margins, which affected profitability. Gharaibeh (2015) examined the key determinants of the profitability of Islamic and conventional commercial banks in Bahrain and found that the interest rate is one of the main determinants of commercial banks profitability measured by ROE. Kanwal and Nadeem (2013) investigated the impact of macroeconomic variables on the profitability of listed commercial banks in Pakistan. The study found that the interest rate has a positive impact on profitability. Khan et al. (2015) examined the impact of bank-specific and macroeconomic factors on the profitability of banks in the banking sector of Pakistan and found that the interest rate significantly influences the profitability of banks in Pakistan. Saeed (2014) investigated the impact of bank-specific, industry-specific, and macroeconomic factors on the profitability of banks in the United Kingdom, and the interest rate was found to affect bank profitability among other macroeconomic factors. Sayedi (2014) examined the impacts of liquidity, market power, and interest rate on the profitability of banks in Nigeria and found that interest rates have an insignificant negative impact on profitability (ROA and ROE). Based on this, the study develops the following hypothesis:

H₆: There is a positive relationship between the interest rate and 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 14 Nepalese commercial banks for the study period of 2015/16 to 2022/23. The dependent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage) and ROE (Return on equity as measured by the ratio of net income to total equity, in percentage). The independent variables are BNK (Bank size as measured by taking natural logarithm of total assets given in a billion), CAR (Capital adequacy ratio as measured by the ratio of total capital to total risk weighted exposure, in percentage), NPL (Non-performing loan as measured by the ratio of non-performing loans to total loans, in percentage), INF (Inflation rate as measured by the GDP deflator, in percentage), GDP (GDP growth as measured by the change in Gross Domestic Product which is measured as the change in total value of all goods and services produced within the country's borders, in percentage) and INT (Bank Interest Rate as measured by interest rate charged to commercial banks for short-term loan, in percentage).

Variables	Minimum	Maximum	Mean	Standard Deviation
ROA	1.06	1.95	1.58	0.35
ROE	9.54	23.84	13.85	6.19
BNK	25.1	26.26	25.7	0.27
CAR	12.79	15.29	14.25	2.14
NPL	1.07	2.65	1.35	1.08
INF	8.3	3.2	5.79	1.83
GDP	9	-2.4	4.46	3.79
INT	8	5.5	6.56	0.74

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 coefficient matrix of dependent and independent variables of 14 Nepalese commercial banks for the study period from 2014/15 to 2021/22. The dependent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage) and ROE (Return on equity as measured by the ratio of net income to total equity, in percentage). The independent variables are BNK (Bank size as measured by taking natural logarithm of total assets given in a billion), CAR (Capital adequacy ratio as measured by the ratio of total capital to total risk weighted exposure, in percentage), NPL (Non-performing loan as measured by the ratio of non-performing loans to total loans, in percentage), INF (Inflation rate as measured by the GDP deflator, in percentage), GDP (GDP growth as measured by the change in Gross Domestic Product which is measured as the change in total value of all goods and services produced within the country's borders, in percentage) and INT (Bank Interest Rate as measured by interest rate charged to commercial banks for short-term loan, in percentage).

Variables	ROA	ROE	BNK	CAR	NPL	INF	GDP	INT
ROA	1							
ROE	0.737*	1						
BNK	-0.928**	-0.873**	1					
CAR	0.198	-0.406	-0.041	1				
NPL	-0.578	-0.398	0.574	-0.355	1			
INF	0.039	-0.259	0.063	0.063	0.314	1		
GDP	0.195	-0.004	-0.031	-0.106	0.145	0.399	1	
INT	0.667	0.877**	-0.775*	-0.422	-0.021	0.067	0.213	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 negative relationship with return on assets. It indicates that increase in bank size leads to decrease in return on assets. Similarly, capital adequacy ratio has a positive relationship with the return on assets. It indicates that increase in capital adequacy ratio leads to increase in return on assets. In addition, non-performing loan ratio has a negative relationship with the return on assets. It indicates that increase in non-performing loan ratio leads to decrease in return on assets. Furthermore, there is a positive relationship between the inflation rate and return on assets. It indicates that increase in inflation rate leads to increase in return on assets. Further, there is a positive relationship between the GDP growth rate and return on assets. It indicates that increase in GDP growth rate leads to increase in return on assets. Moreover, bank interest rate has a positive relationship with the return on assets. It indicates that higher the bank interest rate, higher would be the return on assets.

Similarly, bank size has a negative relationship with return on equity. It indicates that increase in bank size leads to a decrease in return on equity. Similarly, 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. Moreover, non-performing loan ratio has a negative relationship with return on equity. It indicates that increase in the non-performing loan ratio leads to decrease in return on equity. Furthermore, there is a negative relationship between the inflation rate and return on equity. It indicates that increase in inflation rate leads to decrease in return on equity. Further, there is a negative relationship between the GDP growth rate and return on equity. It indicates that increase in GDP growth rate leads to decrease in return on equity. However, the bank interest rate has a positive relationship with return on equity. It indicates that higher the bank's interest rate, higher would be the return on equity.

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 bank size, capital adequacy ratio, non-performing loan, inflation rate, GDP growth rate, and interest rate on return on assets of Nepalese commercial banks.

Table 4

Estimated regression results of bank size, capital adequacy ratio, non-performing loan, inflation rate, GDP growth rate, and interest rate on return on assets of Nepalese commercial banks

The results are based on panel data of 14 commercial banks with 112 observations for the period from 2015/16 to 2022/23 by using the linear regression model and the model is $ROA = \beta_0 + \beta_1 BNK + \beta_2 CAR + \beta_3 NPL + \beta_4 INF + \beta_5 GDP + \beta_6 INT + e_{it}$ where the dependent variable is ROA (Return on assets as measured by the ratio of net income to total assets, in percentage). The independent variables are BNK (Bank size as measured by taking natural logarithm of total assets given in billion), CAR (Capital adequacy ratio as measured by the ratio of total capital to total risk weighted exposure, in percentage), NPL (Non-performing loan as measured by the ratio of non-performing loans to total loans, in percentage), INF (Inflation rate as measured by the GDP deflator, in percentage), GDP (GDP growth as measured by the change in Gross Domestic Product which is measured as the change in total value of all goods and services produced within the country's borders, in percentage) and INT (Bank Interest Rate as measured by interest rate charged to commercial banks for short-term loan, in percentage).

Model	Intercept	Regression coefficients of						Adj.R_bar ²	SEE	F-value
		BNK	CAR	NPL	INF	GDP	INT			
1	22.286	-0.805						0.839	0.143	37.389
	(6.579)**	(6.115)**								
2	0.337		0.087					0.121	0.371	0.244
	(0.134)		(0.494)							

3	2.127			-0.405				0.223	0.315	3.011
	(6.307)**			(1.735)						
4	1.531				0.008			0.165	0.385	0.009
	(3.177)*				(0.095)					
5	1.493					0.018		0.122	0.378	0.238
	(6.936)**					(0.487)				
6	-0.538						0.322	0.353	0.287	4.814
	(-0.555)						(2.194)			
7	21.139	-0.8	0.07					0.842	0.142	19.662
	(6.004)**	(6.131)**	(1.063)							
8	21.267	-0.806	0.072	-0.01				0.803	0.158	10.497
	(4.757)**	(4.431)*	(0.894)	(0.06)						
9	20.838	-0.786	0.062	-0.028	0.019			0.756	0.176	6.428
	(4.128)*	(3.806)*	(0.666)	(0.145)	(0.486)					
10	20.431	-0.776	0.072	-0.029	0.005	0.017		0.728	0.186	4.748
	(3.816)	(3.55)	(0.732)	(0.143)	(0.109)	(0.83)				
11	19.146	-0.734	0.078	-0.044	0.005	0.017	0.022	0.457	0.263	1.981
	(0.551)	(0.637)	(0.381)	(0.089)	(0.082)	(0.536)	(0.038)			

Notes:

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

Table 4 shows that the beta coefficients for bank size are negative with the return on assets. It indicates that bank size has a negative impact on the return on assets. This finding is inconsistent with the findings of Nguyen and Nguyen (2021). In addition, the beta coefficients for the capital adequacy ratio are positive with the return on assets. It indicates that the capital adequacy ratio has a positive impact on the return on assets. This finding is similar to the findings of Onuonga (2014). Furthermore, the beta coefficients for the non-performing loan ratio are negative with the return on assets. It indicates that the non-performing loan ratio has a negative impact on the return on assets. This finding is consistent with the findings of Do et al. (2020). Likewise, the beta coefficients for inflation rate is positive with return on assets. It indicates that the inflation rate has a positive impact on the return on assets. This finding contradicts with the findings of Abate and Mesfin (2019). Moreover, the beta coefficients for GDP growth rate are positive with return on assets. It indicates that the GDP growth rate has a positive impact on the return on assets. This finding is consistent with the findings of Ngweshemi and Isiksal (2021). Likewise, the beta coefficients for the interest rate are positive with the return on assets. It indicates that the interest rate has a positive impact on the return on assets. This finding is similar to the findings of Khan et al. (2015).

Table 5 shows the regression results of bank size, capital adequacy ratio, non-performing loan, inflation rate, GDP growth rate, and interest rate on return on equity of Nepalese commercial banks.

Table 5

Estimated regression results of bank size, capital adequacy ratio, non-performing loan, inflation rate, GDP growth rate, and interest rate on return on equity of Nepalese commercial banks

The results are based on panel data of 14 commercial banks with 112 observations for the period from 2015/16 to 2022/23 by using the linear regression model and the model is $ROE = \beta_0 + \beta_1 BNK + \beta_2 CAR + \beta_3 NPL + \beta_4 INF + \beta_5 GDP + \beta_6 INT + e_{it}$ where the dependent variable is ROE (Return on equity as measured by the ratio of net income to total equity, in percentage). The independent variables are BNK (Bank size as measured by taking natural logarithm of total assets given in billion), CAR (Capital adequacy ratio as measured by the ratio of total capital to total risk weighted exposure, in percentage), NPL (Non-performing loan as measured by the ratio of non-performing loans to

total loans, in percentage), INF (Inflation rate as measured by the GDP deflator, in percentage), GDP (GDP growth as measured by the change in Gross Domestic Product which is measured as the change in total value of all goods and services produced within the country's borders, in percentage) and INT (Bank Interest Rate as measured by interest rate charged to commercial banks for short-term loan, in percentage).

Model	Intercept	Regression coefficients of						Adj.R_bar ²	SEE	F-value
		BNK	CAR	NPL	INF	GDP	INT			
1	260.283 (4.638)**	-9.585 (4.392)**						0.723	2.379	19.286
2	46.025 -1.555		-2.257 (1.089)					0.026	4.463	1.186
3	18.646 (3.887)**			-3.529 (1.062)				0.018	4.481	1.128
4	17.542 (2.977)*				-0.64 (0.655)			0.089	4.718	0.43
5	13.861 (4.994)**					-0.005 (0.011)		0.167	4.884	0.012
6	-21.301 (-2.699)*						5.354 (4.478)**	0.731	2.344	20.051
7	300.487 (11.114)**	-9.784 (9.768)**	-2.46 (4.851)**					0.942	1.091	57.626
8	291.222 (8.845)**	-9.308 (6.943)**	-2.603 (4.378)*	-0.687 (0.593)				0.933	1.169	33.552
9	301.16 (14.754)**	-9.775 (11.703)**	-2.357 (6.31)**	-0.176 (0.229)	-0.451 (2.781)			0.975	0.713	69.479
10	301.401 (12.039)**	-9.781 (9.572)*	-2.363 (5.137)*	-0.177 (0.188)	-0.442 (2.066)	-0.01 (0.105)		0.963	0.871	21.214
11	157.995 (2.261)	-5.089 (2.197)	-1.735 (4.245)	-1.563 (1.553)	-0.402 (3.058)	-0.057 (0.908)	2.462 (2.102)	0.986	0.529	84.877

Notes:

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

Table 5 shows that the beta coefficients for bank size are negative with return on equity. It indicates that bank size has a negative impact on return on equity. This finding is inconsistent with the findings of Ngweshemi and Isiksal (2021). Likewise, the beta coefficients for the capital adequacy ratio are negative with return on equity. It indicates that the capital adequacy ratio has a negative impact on the return on equity. This finding is similar to the findings of Nguyen and Nguyen (2021). The beta coefficients for the non-performing loan ratio are negative with return on equity. It indicates that the non-performing loan ratio has a negative impact on return on equity. This finding is consistent with the findings of Patwary and Tasneem (2019). Similarly, the beta coefficients for the inflation rate are negative with return on equity. It indicates that the inflation rate has a negative impact on return on equity. This finding is similar to the findings of Mbekomize and Mapharing (2017). Moreover, the beta coefficient for GDP growth rate are negative with return on equity. It indicates that GDP growth rate has a negative impact on return on equity. This finding is consistent with the findings of Jadah et al. (2020). Furthermore, the beta coefficients for the interest rate are positive with a return on equity. It indicates that the interest rate has a positive impact on return on equity. This finding is similar to the findings of Gharaibeh (2015).

4. Summary and conclusion

The long-term feasibility of a bank heavily relies on its ability to generate sufficient earnings to both protect and enhance capital. Earnings serve as a fundamental source of financial strength, enabling banks to manage risks, meet regulatory requirements, support growth, and build investor confidence. Without a strong earnings foundation, a bank may struggle to remain viable over the long term, especially in the face of changing market conditions and economic challenges.

Earnings generated by a bank through its operations are critical for protecting and enhancing capital in the long run. Banks face a variety of risks, including credit risk (due to loan defaults), market risk (due to fluctuating asset values), and operational risk (from fraud or mismanagement). To mitigate these risks, banks require sufficient earnings. Strong earnings give banks the flexibility to diversify their asset portfolio, spreading risk across different sectors, markets, and financial products. This reduces the concentration risk in any one area and enhances the bank's overall stability.

This study attempts to examine the effect of internal and external factors on the earnings of commercial banks in Nepal. The study is based on secondary data of 14 commercial banks with 112 observations for the period from 2015/16 to 2022/23.

The major conclusion of this study is that the bank interest rate has a positive impact on return on assets and return on equity. However, bank size and non-performing loans have a negative impact on return on assets and return on equity. Moreover, the capital adequacy ratio, GDP growth rate, and inflation rate have a positive impact on return on assets. Contrarily, the capital adequacy ratio, GDP growth rate, and inflation rate have a negative impact on return on equity. The study shows that larger banks often face operational inefficiencies and higher regulatory costs, while a rise in NPLs reduces asset quality, increasing loan loss provisions and lowering profitability. The study also concludes that a well-capitalized bank, a growing economy, and moderate inflation contribute to higher returns on assets. A stronger CAR provides a cushion against financial risks, while GDP growth fosters credit expansion and business activity, improving asset returns.

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