

Bank-Specific Factors and Macroeconomic Factors in the Financial Performance of Commercial Banks in Nepal

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Abstract

This study examines the macroeconomic and bank-specific elements that affect Nepal's commercial banks' financial performance. The financial information used in the study was taken from the 2012–2021 annual reports of the sampled banks. It covers the nine commercial banks that are active in Nepal at the time of the study. Descriptive and causal research designs were employed in the study. The performance of banks is evaluated using ROA, ROE, and NIM. The GDP growth rate and inflation rate are used as stand-ins for macroeconomic indicators. Credit risk, size, liquidity, asset quality, managerial effectiveness, and capital adequacy are the main internal elements affecting bank success. Financial ratios have been utilized in this study to analyze the banks' profitability. Bank-specific characteristics are also measured using financial ratios. The impact of macroeconomic and bank-specific factors on bank performance has been determined using a regression model. Banks have decreased their credit risk by decreasing non-performing assets. Because of the generally positive annual increase in GDP, the macroeconomic variable known as GPD has benefited the banks. Inflation and GDP have suffered over the past two years as a result of the COVID-19 pandemic. The top banks in terms of financial performance are NABIL, ADBL, and SCBN. The key factors influencing the profitability of Nepalese commercial banks include management effectiveness, capital base, credit risk, GDP, and inflation, according to the results of the regression study. Commercial banks' performance as assessed by ROA and NIM would improve with increased management efficiency. Commercial banks' performance as evaluated by ROE would improve with increases in capital base, liquidity, managerial effectiveness, and credit risk. In a similar vein, commercial banks' profitability is supported by GDP and inflation rates.

Keywords: capital adequacy, asset quality, management efficiency, liquidity, size, credit risk, economic growth, and inflation.

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Background of the study

Nepal's economic growth depends heavily on its commercial banks. Constantly, they transfer money from depositors to investors. Retailers and wholesalers that deal in commodities are given loans by the banks to stock their inventory (Baral, 2005). They also assist in the transportation of products by offering a variety of services, including issuing drafts, granting overdraft protection, and discounting and accepting bills of exchange. Furthermore, by offering foreign exchange facilities to importers and exporters of products, they fund both the imports and exports of developing nations (Gautam et al. 2021).

(Athanasoglou et.al, 2008) Commercial banks rigorously implement the central bank's monetary policy, which aids in a nation's economic growth. For the central bank's monetary management policy to be successful and meet the needs of an expanding economy, commercial banks are essential. To carry out their intermediation

function efficiently, commercial banks must be profitable. As a result, commercial banks must produce sufficient revenue to pay for the operational costs incurred throughout business operations. Stated differently, commercial banks must be profitable in order to survive over the long term. In addition, commercial banks play a significant part in the nation's economic expansion. In 2014, Owoputi et al. Banks that perform well financially give their shareholders money or non-financial rewards for their investments, which in turn attracts more capital and ultimately contributes to the expansion of the national economy.

Commercial banks that function well pay their investors back for their capital and have a significant impact on both the expansion of the banks and the overall economic prosperity of nations. However, commercial banks' subpar performance causes bank failure, a subsequent crisis, and detrimental consequences on economic growth through contagion. Thus, this implies that the performance of commercial banks depends on several variables, including specific and external.

Sibakoti and Pokharel (2022) analyzed management efficiency and liquidity have a positive impact on bank performance, whereas capital adequacy and asset quality management have a negative impact on bank performance. An approach to assessing a company's financial statements that contain important financial variables using recognized tools and methodologies to determine its financial strengths and weaknesses is similar to the idea behind performance analysis. An organization's financial health must be routinely examined to preserve and safeguard the interests of shareholders, lenders, depositors, and other stakeholders. Financial performance analysis is similar to this (Gautam, 2020).

In the Nepalese context, Kandel (2019) observed that managerial efficiency has little effect on both ROA and ROE, but liquidity has a moderate impact on bank performance. ROA is heavily influenced by earnings and liquidity positions, but ROE is more influenced by asset quality, liquidity, and earnings. Conversely, Gautam (2020) discovered that ROA has a strong negative correlation with asset quality but a strong positive correlation with capital sufficiency and ROE. According to the Gautam (2020) study, ROE has a substantial negative correlation with capital sufficiency but a significant positive correlation with asset quality and ROA. In addition, Hamal's (2020) study discovered a statistically significant negative correlation between size and financial performance, and long-term investment.

Mbella and Magloire (2017) state that since the Great Depression of 1929, academic research has been very interested in the performance of commercial banks. How successfully a bank delivers its goods and services to its clientele is referred to as bank performance. Financial performance (liquidity, solvency, efficiency, and profitability) and market competition are the two primary components of performance. Financial performance, or the extent to which financial goals are being or have been achieved, will be the focus of this study. (Alam and others, 2011) Commercial banks are a crucial component of the financial system; without them, commercial operations would not be able to run smoothly and effectively. Through their branch banking network, commercial banks facilitate the mobilization of savings. Despite the low earnings of people in underdeveloped nations like Nepal, banks encourage individuals to save by offering a range of deposit plans tailored to each depositor's needs. They also mobilize the few wealthy people's idle savings. The banks mobilize savings and direct them toward profitable ventures. As a result, they support a developing nation's capital formation. Commercial banks use a variety of methods to fund the industrial sector. They offer industry short-, medium-, and long-term loans.

The measurement of an organization's operational and policy outcomes in terms of monetary worth is known as financial performance. By assessing a company's financial performance, decision-makers may objectively assess the financial outcomes of its strategy and operations. Typically, the ratios are employed to assess an organization's financial success. However, Padachi (2006) a company's value is anticipated to be positively impacted by a well-planned and executed financial management system. Financial analysis is the process of examining the accomplished statement to determine whether the outcomes align with the company's goals, identifying any issues that may have been in the past, present, or are expected to arise in the future, and offering suggestions for resolving the issues (Pradhan, 1986).

A number of economic factors influence banks' overall performance and profitability. Commercial banks' profitability is influenced by a number of factors, including their income and expenses. Knowledge of the elements influencing banks' profitability is crucial. Both internal and external variables can be classified as drivers of

bank performance (Khrawish, 2011). Accordingly, the effects of the external and internal factors influencing commercial bank profitability are examined to demonstrate how they affect the bank's expenses and earnings (Pradhan & Shrestha, 2016).

For other stakeholders, such as investors, bank management, and depositors, bank performance is crucial. According to Hamid and Azmi (2011), bank performance gives investors and depositors alike clues on whether to take money out of a bank or make an investment in a competitive financial market. Similarly, to maintain the stability of the banking system and the financial system overall, regulators worldwide will utilize analysis of bank performance for regulatory reasons and to keep an eye on trends or any relevant concerns. Analyzing how bank-specific factors affect Nepal's commercial banks' performance is the aim of this study. It specifically looks at the capital adequacy ratio, asset quality, management effectiveness, liquidity management, and size of commercial banks to assess their performance. Return on assets is negatively correlated with asset quality and liquidity management but positively correlated with the capital adequacy ratio, management effectiveness, and gross domestic product (Gautam, 2018).

Research Hypothesis

Based on the above literature, the following hypotheses have been formulated:

Hypothesis 1:

H_0 : There is no significant impact of bank-specific variables on the financial performance of commercial banks.

H_1 : There is a significant impact of bank-specific variables on the financial performance of commercial banks.

Hypothesis 2:

H_0 : There is no significant impact of macroeconomic variables on the financial performance of commercial banks.

H_1 : There is a significant impact of macroeconomic variables on the financial performance of commercial banks.

Research Methodology

The techniques employed in data collecting and analysis to address the study's research questions are covered.

Research Design

Descriptive and causal research designs have been used in this research. A descriptive research design has helped to find out the facts and search for adequate information about the bank-specific variables and macroeconomic variables. A descriptive research design has been employed in describing the status of bank performance in terms of ROA, NIM, and ROE. Descriptive research design has also been used to analyze the financial ratios of the variables taken as proxies of bank-specific variables and also to describe the status of macroeconomic variables. It has used causal research design to analyze the impact of bank-specific variables and macroeconomic variables on the performance of a bank. For this, the study employed multiple regression analysis by using linear regression models. The study's dependent variable is bank performance. Three proxy variables, ROA, NIM, and ROE have been used to measure bank performance. Independent variables are bank specific and macroeconomic variables. Bank specific variables consist of capital adequacy, assets management, management efficiency, liquidity, credit risk, and bank size and macro-economic variables consist of gross domestic product and inflation rate.

Population and Sample

Twenty commercial banks are operating in Nepal as of mid-July, 2021 (Nepal Rastra Bank, 2020). These 27 commercial banks are defined as the population of this study. The study has taken nine banks as samples by using a stratified random sampling method. It is a method of sampling that involves the division of a population into smaller subgroups known as strata. In stratified random sampling or stratification, the strata are formed based on members' shared attributes or characteristics, such as income or educational attainment. First, the total population was divided into three strata based on ownership structure, (i) joint venture banks, (ii) private banks, and (iii) public banks. Next, three samples were drawn from each stratum by using the lottery method. The list of the

sample banks is presented in Table 1.

Table 1

List of Sample Banks

S.No.	Name of the sample banks	Ownership structure	Study Period
1	Nabil Bank Limited (NABIL)	Joint venture bank	2011/12 - 2020/21
2	Standard Chartered Bank Nepal Limited (SCBN)	Joint venture bank	2011/12 - 2020/21
3	Everest Bank Limited (EBL)	Joint venture bank	2011/12 - 2020/21
4	Siddhartha Bank Limited (SBL)	Domestic-Private bank	2011/12 - 2020/21
5	Sanima Bank Limited (SANIMA)	Domestic-Private bank	2011/12 - 2020/21
6	NIC Asia Bank Limited (NICA)	Domestic-Private bank	2011/12 - 2020/21
7	Agricultural Development Bank Limited (ADBL)	Domestic-Private bank	2011/12 - 2020/21
8	Nepal Bank Limited (NBL)	Domestic-Private bank	2011/12 - 2020/21
9	Rastriya Banijya Bank Limited (RBBL)	Domestic-Private bank	2011/12 - 2020/21

Nature and Source of Data

The data is quantitative in nature. This study's data came from a secondary source. Nepal Rastra Bank's (NRB) annual reports of the sample banks and Nepal's macroeconomic indicators are the sources of the data. These materials were retrieved from the NRB and sample banks' websites. The sample banks' annual reports provided the bank-specific data, while Nepal's Macroeconomic Indicators provided the macroeconomic data. The ten-year period from 2012 to 2021 was the focus of the investigation.

Data Collection

Cross-sectional time-series data served as the foundation for our investigation. The information was gathered from Nepal's macroeconomic indicators and bank annual reports, which were released by the NRB. The necessary information was gathered by looking through the websites of the NRB and nine sample banks. The income statement, balance sheet, and annexes of each bank's annual report were the sources of the financial information. The Macroeconomic Indicators of Nepal, an NRB publication, provided the macroeconomic statistics (Nepal Rastra Bank, 2021).

Method and Tools of Data Analysis

Quantitative data is the foundation of our investigation. Both descriptive and inferential statistics have been applied to the data analysis. Descriptive analysis has been done using tables, mean, standard deviation, and ratio analysis. For inferential analysis, regression analysis and the correlation coefficient have been employed.

Financial Tools

As this research focuses on financial performance analysis, financial instruments are more useful since they aid in determining the firm's financial strengths and shortcomings. Even though there are many other kinds of tools, ratio analysis has been the main focus of this study because this is thought to be the most suitable tool.

A method for quantifying the link between two sets of financial data, the ratio informs others about the advantages and disadvantages of financial data. Return on equity (ROE), return on assets (ROA), net interest margin (NIM), capital adequacy ratio (CAR), asset quality (AQ), management effectiveness (ME), liquidity management (LM), bank size (SIZ), credit risk (CR), GDP, and inflation rate (INF) were all employed in this study.

Return on Asset

Return on asset (ROA) is a financial ratio that gives the percentage of return (profit) that a company is producing to its overall resources (total assets). The ROA is the net income for the year divided by total assets, usually the

average value over the year. The ROA reflects the ability of a bank's management to generate profits from the bank's assets employed for the business.

Return on Equity

The ratio of return on equity (ROE) is an internal performance measure of shareholder value, and it is by far the most popular tool. Return on equity is the return to shareholders on their equity. Siraj and Pillai (2012) describe that ROE measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. This ratio is calculated as net profit after tax divided by the average total shareholder's equity fund.

Net Interest Margin

Net interest margin (NIM) represents the difference between the generated interest income and the interest expense relative to the interest-earning assets. The margin is set by the intermediaries at the level that covers all the costs and risks that are related to financial intermediation. (Angbazo 1997) quotes that an optimal margin should generate enough income to expand the capital base as the bank exposes itself to more risk. This ratio is calculated as net interest income divided by the average loan and advances.

Models and Variables

Econometric Models

The following models have been used to study the impact of bank-specific variables and macroeconomic factors on the financial performance of commercial banks. According to this model, financial performance is a function of the capital adequacy ratio, management efficiency, asset quality, liquidity ratio, credit risk, GDP, and inflation rate. Hence, the models take the following form:

Model 1

$$ROA = \beta_0 + \beta_1 CAR + \beta_2 AQ + \beta_3 ME + \beta_4 LM + \beta_5 SIZE + \beta_6 CR + e \dots \dots \dots (1)$$

Model 2

$$ROE = \beta_0 + \beta_1 CAR + \beta_2 AQ + \beta_3 ME + \beta_4 LM + \beta_5 SIZE + \beta_6 CR + e \dots \dots \dots (2)$$

Model 3

$$NIM = \beta_0 + \beta_1 CAR + \beta_2 AQ + \beta_3 ME + \beta_4 LM + \beta_5 SIZE + \beta_6 CR + e \dots \dots \dots (3)$$

Model 4

$$ROA = \beta_0 + \beta_1 CAR + \beta_2 AQ + \beta_3 ME + \beta_4 LM + \beta_5 SIZE + \beta_6 CR + \beta_7 GDP + \beta_8 INF + e \dots \dots \dots (4)$$

Model 5

$$ROE = \beta_0 + \beta_1 CAR + \beta_2 AQ + \beta_3 ME + \beta_4 LM + \beta_5 SIZE + \beta_6 CR + \beta_7 GDP + \beta_8 INF + e \dots \dots \dots (5)$$

Model 6

$$NIM = \beta_0 + \beta_1 CAR + \beta_2 AQ + \beta_3 ME + \beta_4 LM + \beta_5 SIZE + \beta_6 CR + \beta_7 GDP + \beta_8 INF + e \dots \dots \dots (6)$$

Where,

ROA = return on assets

ROE = return on equity

NIM = net interest margin

CAR = the capital adequacy ratio

AQ = asset quality

ME = management efficiency

LM = liquidity management

SIZ = bank size

CR = credit risk measured.

GDP = Gross Domestic Product

INF = Inflation rate

β_0 = Constant

e= Error

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$ and β_8 are parameters of the independent variables

Variables in the Study

Dependent Variables

Performance of banks can be evaluated through profitability of the banks. The major indicator of profitability are ROA and ROE. However, under this study, the ROA, ROE and NIM will be taken as dependent variables to measure the performance of commercial banks in Nepal. ROA is measured as the percentage of a year's net profit to the total assets of the same year. Similarly, ROE is calculated as the percentage of a year's net profit to the total equity of the same year. Further, NIM is measured by net interest income divided by total interest-earning assets (Rani & Zergaw, 2017).

Independent Variables

Under this study, the independent variables are bank-specific variables (capital adequacy, assets quality, management efficiency, liquidity management, bank size and credit risk) and macro-economic variables (GDP growth rate and inflation rate).

Operational Definition of Variables:

Capital Adequacy Ratio (CAR)

The capital adequacy ratio (CAR) is a measure of a bank's capital. It is expressed as a percentage of a bank's risk-weighted credit exposures. Capital is one of the bank-specific factors that influence the level of bank profitability. Capital is the amount of funds available to support the bank's business and act as a buffer in case of adverse situations. The capital adequacy ratio is calculated by dividing the capital fund by risk-weighted assets. As per the NRB guideline, commercial banks in Nepal must maintain a capital adequacy ratio above 10 percent.

Assets Quality (AQ)

Assets Quality represents the degree of financial strength and risks in a bank's assets, mainly loans and investments. The non-performing asset to loan and advances ratio has been used in this study as a proxy of asset quality.

Management Efficiency (ME)

Management efficiency means compliance with set norms, the ability to plan and respond to changing environments, and the leadership and administrative capability of the bank. Such efficiency is reflected in the income-generating capacity of bank management. Therefore, the efficiency of the management has been measured with the help of the operating income to total assets ratio.

Liquidity Management (LM)

It is of utmost importance for a bank to maintain the correct level of liquidity, which will otherwise lead to declined earnings. Liquid assets include cash in hand, balance with the NRB, balance with other FIs (both in Nepal and abroad), money at call on short notice, and investment in government securities. This ratio is arrived at by dividing liquid assets by total assets. The proportion of liquid assets to total assets indicates the overall liquidity position of the bank.

Size

There are different aspects to measuring the size of banks. In this study, size has been measured by taking the natural logarithm of the total assets of banks. The authors point out that, the bigger the bank size, the more difficult it is to manage it. In contrast, Masood and Ashraf (2012) found a positive impact of bank size on performance

Credit Risk

Credit risk is the probability that credit capital becomes bad debt. It is the potential that a bank borrower will fail to meet its obligations under the agreed terms. The credit risk situation of a bank can be exacerbated by inadequate institutional capacity, inefficient credit guidelines, inefficient board of directors, low capital adequacy ratios and liquidity, compulsory quota lending because of government interference and lack of proper supervision by the central bank. Loan loss provisions to total loans ratio is used as a proxy of credit risk in this study.

GDP

This study has used real gross domestic product (GDP) change (%) at producers' price as a proxy for macroeconomic variables. The GDP annual data has been obtained from the Macroeconomic Indicator of Nepal published by NRB.

Inflation Rate

A low level of inflation is favorable for economic growth, whereas a high inflation rate weakens the borrower's ability to service debt by reducing their real income and hence, increases NPLs (Rinaldi & Sanchis-Arellano, 2006). However, if the banks predict inflation in the best manner, then they can adjust interest rates that can provide a good return on loans. The inflation rate has been obtained from the Macroeconomic Indicator of Nepal published by NRB.

Results and Discussion:

Table 2 reveals the descriptive statistics for the variables used in this study. It provides details in the form of maximum, minimum, mean, median, and standard deviation for the dependent variable and its explanatory variables. The results demonstrate the trend of performance measurements: ROA, ROE, and NIM, over the period 2012–2021. Similarly, the results show the descriptive statistics for bank-specific and macroeconomic variables for the same period. The results reveal that ROA, ROE, and NIM each range between minimum values of 0.30, 5.72, and 2.10, and maximum values of 3.46, 42.94, and 8.06 respectively. It also shows that the mean values of ROA, ROE, and NIM are 1.78, 17.81, and 4.24 respectively. The mean value tells the central location of observations and the standard deviation describes the variability. The mean value of ROA is 1.78% with a range from 0.30% to 3.46%, indicating that the majority of banks have higher performance. The mean value of ROE is 17.81% with a range from 5.27% to 42.94%, indicating that the majority of banks have higher performance. Likewise, the mean value of NIM is 4.24 % with a range from 2.10 % to 8.06%, indicating that the majority of firms have average performance in terms of NIM.

Table 2

Descriptive Statistics

This table depicts the descriptive statics of dependent variables and independent variables. The dependent variables are ROA, ROE, and NIM. Independent variables are CAR: Capital adequacy ratio; AQ: Asset quality; ME: Management efficiency; LQ: Liquidity ratio; SZ: Size, measured in terms of the natural logarithm of total assets; CR: Credit risk; EG: Economic growth, measured in term of real gross domestic product, GDP; INF: Annual Inflation rate.

Variables	Min	Max	Mean	Median	S.D.
Panel A: Performance measurements (dependent variables)					

Variables	Min	Max	Mean	Median	S.D.
ROA (%)	0.30	3.46	1.78	1.63	0.63
ROE (%)	5.72	42.94	17.81	16.05	6.72
NIM	2.10	8.06	3.60	4.00	1.19
Panel B: Bank specific variables (independent variables)					
CAR (%)	2.94	22.99	13.48	13.00	3.44
AQ (%)	0.01	8.98	1.99	1.12	1.95
ME (%)	1.98	6.96	4.47	4.27	1.01
LQ (%)	4.39	39.02	14.92	12.61	6.75
SZ (log)	23.34	26.57	25.33	25.39	0.63
CR (%)	0.45	14.11	2.91	1.93	2.37
Panel C: Macro-economic variables (independent variables)					
EG (%)	(2.1)	9.0	4.2	4.4	3.4
INF (%)	3.6	9.9	6.7	6.7	2.5

The results also indicate that there is a high variation between the mean values and standard deviation of both bank-specific and macroeconomic variables for the same period. Bank-specific variables have a mean value of 13.48% for CAR, and the ratio of AQ, ME, LQ, SZ, and CR is 1.99%, 4.47%, 14.92%, 25.33%, and 2.91% with a standard deviation of 3.44%, 1.95%, 1.01%, 6.75%, 0.63%, and 2.37% respectively.

The small variation between the mean values and the median values of all variables signifies that there is very less heterogeneity among the sampled banks. From a macroeconomic context, GDP ranges between a minimum value of -2.10% and a maximum value of 9.0% with a mean value of 4.2%. Similarly, inflation fluctuates between a minimum value of 3.6% and a maximum value of 9.9% with a mean value of 6.7%.

Above mentioned models are used to estimate three different scenarios. First, only the bank-specific factors are included as the explanatory variables. Second, to examine the combined effect of macroeconomic and bank-specific factors, both bank-specific and macroeconomic variables are included in the model, and finally, only macroeconomic variables are used in the model. These three scenarios are used for each of three dependent variables - ROA, ROE, and NIM, resulting in nine models. Models 1, 2, 3, 4, 5, 6, 7, 8, and 9 are estimated using the pooled OLS regression model.

Table 3

Impact of Bank-Specific and Macroeconomic Variables on ROA

This table depicts the regression coefficients of bank-specific and macroeconomic variables on ROA. The dependent variables and independent variables. The dependent variable is ROA. Independent variables are CAR: Capital adequacy ratio; AQ: Asset quality; ME: Management efficiency; LQ: Liquidity ratio; SZ: Size, measured in terms of the natural logarithm of total assets; CR: Credit risk; EG: Economic growth, measured in term of real gross domestic product, GDP; INF: Annual Inflation rate.

	Model 1		Model 2		Model 3	
	Coef.	p-value	Coef.	p-value	Coef.	p-value
Constant	-1.525	0.357	-5.43308	0.087	1.245	0.000
CAR	-0.008	0.529	0.00440	0.777		
AQ	0.038	0.511	0.02391	0.681		
ME	0.533	0.000	0.50146	0.000		
LQ	0.009	0.135	0.00746	0.226		
SZ	0.041	0.521	0.17842	0.119		
CR	-0.073	0.142	-0.07136	0.150		
GDP	-	-	0.02558	0.148	0.050	0.021
INF	-	-	0.05124	0.165	0.049	0.101
Adjusted R ²	0.65767		0.65935		0.04782	

	Model 1		Model 2		Model 3	
	Coef.	p-value	Coef.	p-value	Coef.	p-value
F-statistic	28.53686		21.80768		3.23507	
p-value of F-statistic	0.000000		0.000000		0.04400	

Model 1

Table 3 depicts the beta coefficient of AQ, ME, LQ and SZ are positive which indicates a positive influence on ROA but only the beta coefficient of ME is statistically significant at the one percent level. The beta coefficients of CAR and CR are negatives indicating a negative impact on ROA however, they are statistically insignificant. The results show that the increase in the independent variables AQ, ME, LQ, and SZ would increase the ROA of commercial banks, and the decrease in CAR and CR would increase ROA. Except for the beta coefficients of ME, none of the other variables are found to be significant even at a five percent level of significance.

Model 2

In Model 2, macroeconomic variables are also added in the explanatory variables. As shown in Table 3 the beta coefficients of CAR, AQ, ME, LQ SZ, GDP and INF are positive which indicates their positive impact on ROA. But as in Model 1, here in Model 2 also, only the beta coefficient of ME is statistically significant at the one percent level. As in the first model, the beta coefficient is negative and statistically insignificant for CR indicating a negative impact on the dependent variable, ROA. According to the results, with the increase in the independent variables, CAR, AQ, ME, LQ SZ, GDP and INF, the ROA of commercial banks would also increase. Similarly, the ROA would increase if CR of the banks decreased.

Model 3

Table 3 shows that the beta coefficients are positive for GDP and INF. The result indicates that the higher the GDP and inflation, the higher would be the ROA of the banks. However, the beta coefficient of only GDP is significant at the five percent level and that of INF is not significant at this level. Thus, macro-economic variable, GDP has a significant influence on the ROA of Nepalese commercial banks.

Table 4 presents the results of three regression models (Model 4-6). The results reveal that the adjusted R² for models 4, 5, and 6 are 0.61306, 0.66423 and 0.215771 respectively. These indicate that about 61 percent of the variability in ROE is explained by the six bank-specific factors included in the Model 4. Similarly, when macroeconomic variables are also added in the explanatory variables (in Model 5), about 66 percent of the variability of the ROE is explained by independent variables included in the models. Further, only about 22 percent of the variability in ROE is explained by the two macroeconomic factors included in Model 6. All the three models are found to have a p-value of F-statistic less than 1% which indicates that these models are fit and significant.

Table 4

Impact of Bank-Specific and Macroeconomic Variables on ROE

This table depicts the regression coefficients of bank-specific and macroeconomic variables on ROE. The dependent variables and independent variables. The dependent variable is ROE. Independent variables are CAR: Capital adequacy ratio; AQ: Asset quality; ME: Management efficiency; LQ: Liquidity ratio; SZ: Size, measured in terms of the natural logarithm of total assets; CR: Credit risk; EG: Economic growth, measured in term of real gross domestic product, GDP; INF: Annual Inflation rate.

	Model 4		Model 5		Model 6	
	Coef.	P-value	Coef.	P-value	Coef.	P-value
Constant	20.681	0.282	-78.849	0.023	6.447	0.010
CAR	-1.409	0.000	-1.068	0.000		

	Model 4		Model 5		Model 6	
	Coef.	P-value	Coef.	P-value	Coef.	P-value
AQ	0.651	0.359	0.422	0.526		
ME	4.541	0.000	3.895	0.000		
LQ	0.186	0.013	0.154	0.030		
SZ	-0.163	0.826	3.316	0.008		
CR	-1.424	0.019	-1.527	0.007		
GDP	-	-	0.352	0.068	0.445	0.033
INF	-	-	1.412	0.001	1.449	0.000
Adjusted R ²	0.61306		0.66423		0.215771	
F-statistic	22.91748		21.52431		0.215771	
p-value of F-statistic	0.00000		0.000000		0.00000	

Model 4

The beta coefficients of ME and LQ are positive and significant, indicating a strong positive impact on the profitability of banks measured in terms of the ROE. The beta coefficient of AQ is also positive but not significant implying a weak positive influence on the ROE. But, the beta coefficients of CAR and CR are significantly negative, indicating a strong negative impact on the ROE. SZ has a very weak negative impact on ROE as the beta coefficient of SZ is statistically insignificant. Thus, with the increase in the AQ, ME, and LQ of commercial banks, their ROE would also increase. Similarly, the ROE of banks would decrease if their CAR, SZ, and CR increased.

Model 5

Model 5 was run to examine the combined effect of bank-specific factors and macroeconomic factors on the ROE of commercial banks. The beta coefficients of independent variables, ME, LQ, SZ, and INF resulted to be positive and statistically significant, indicating a strong positive influence on the dependent variable, ROE. The beta coefficients of CAR and CR are negative and statistically significant, showing a strong negative influence on ROE. Bank specific variable AQ and macroeconomic variable, GDP have a weak positive influence on the ROE of commercial banks because their beta coefficients are not statistically significant. Thus, it is seen that AQ, ME, LQ, SZ, GDP, and INF have a positive influence on the ROE of banks while CAR and CR have a negative influence on the ROE of the banks.

Model 6

Bank-specific factors were excluded in Model 6 to see the influence of only macroeconomic factors on ROE. The beta coefficients of both the macroeconomic variables are positive and statistically significant, indicating a strong positive impact on ROE. Thus, macroeconomic variables GDP and INF have a strong positive impact on the ROE. Table 5 presents the results of three regression models (Model 7-9). The results reveal that the adjusted R² for Model 7 is 0.88088, and they are 0.88195 and 0.09948 in the cases of Model 8 and 9 respectively. These indicate that about 88 percent of the variability in NIM is explained by the seven bank-specific factors included in Model 7. A similar result is found in the case of Model 8. When macroeconomic variables are also added to the explanatory variables (in Model 8), about 88 percent of the variability of the NIM is explained by bank-specific and macroeconomic variables together. Further, only nearly 10 percent of the variability in NIM is explained by the independent variables when only two macroeconomic factors are included in the model. The results also show that the p-values of the F-statistic are significant for all three models indicating the models are fitted well.

Model 7

As shown in Table 5 the beta coefficients of all the independent variables (CAR, AQ, ME, LQ, SZ, and CR)

are positive which indicates a positive impact on NIM. However, the beta coefficient of only ME is statistically significant, while the beta coefficients of the rest of the independent variables included in the model are not significant. This indicates that only ME has a strong positive impact on NIM while the rest bank-specific variables have a very weak impact on NIM.

Table 6

Impact of Bank-Specific and Macroeconomic Variables on NIM

This table depicts the regression coefficients of bank-specific and macroeconomic variables on NIM. The dependent variables and independent variables. The dependent variable is NIM. Independent variables are CAR: Capital adequacy ratio; AQ: Asset quality; ME: Management efficiency; LQ: Liquidity ratio; SZ: Size, measured in terms of the natural logarithm of total assets; CR: Credit risk; EG: Economic growth, measured in term of real gross domestic product, GDP; INF: Annual Inflation rate.

	Model 7		Model 8		Model 9	
	Coef.	P-value	Coef.	p-value	Coef.	p-value
Constant	-1.426	0.453	-2.082	0.564	2.830	0.000
CAR	0.011	0.469	0.011	0.531		
AQ	0.115	0.086	0.105	0.118		
ME	0.890	0.000	0.875	0.000		
LQ	0.014	0.053	0.013	0.072		
SZ	0.035	0.636	0.059	0.650		
CR	0.080	0.160	0.088	0.121		
GDP			0.024	0.241	0.112	0.005
INF			0.002	0.968	0.141	0.010
Adjusted R2	0.88088		0.88195		0.09948	
F-statistic	106.99170		81.31021		5.91604	
p-value of F-statistic	0.00000		0.00000		0.00400	

Model 8

Two indicators of macroeconomic variables, GDP and INF, are also added as explanatory variables in Model 8. Table 6 reveals that the result of this model is similar to that of Model 7. All the independent variables (bank-specific as well as macroeconomic variables) have a positive effect on the NIM of commercial banks. However, except ME, all the variables have insignificant beta coefficients, indicating a weak influence on NIM. Only ME has a strong positive impact on NIM as it has a statistically significant beta coefficient.

Model 9

Only macroeconomic variables were regressed on NIM in Model 9, excluding the bank-specific variables. The results in Table 6 show that the beta coefficients of both the independent variables are positive and statistically significant, indicating a strong positive impact of macroeconomic variables on NIM of commercial banks. Overall, ME shows a statistically significant positive impact on the three performance measures ROA, ROE, and NIM across the models conducted. LQ makes a statistically positive impact only on ROE. CAR and CR have statistically significant negative impacts only on ROE. When only macroeconomic variables are included in the model, GDP makes a statistically positive impact on all three performance measures, ROA, ROE, and NIM. INF has a significant impact on ROE and NIM only, not on ROA.

Influence of Bank-Specific and Macroeconomic Variables Effect on Bank Performance Influence on ROA

Regression models are run to estimate three different scenarios. First, only the bank-specific factors are included in the explanatory variables. Second, macroeconomic variables are also included in the model and finally only

macroeconomic variables are used excluding bank-specific variables. These three scenarios are used for each of three dependent variables - ROA, ROE, and NIM, resulting in nine models. When only the bank-specific factors are included in the explanatory variables (in Model 1), the capital adequacy ratio (CAR) influences the level of ROA negatively but not at a statistically significant level. From this result, it is clear that bank performance tends to increase when the capital base of a bank is decreased. This finding contrasts with the finding of the study by Naceur (2003) who found profitability tends to be associated with banks that hold relatively high amounts of capital. The level of ROA is positively affected by the AQ (measured in terms of a non-performing asset to loan and advances ratio). This result is not supported by the theory. Also, this result is in contrast with the result of Gull and Akram (2013) who found that the nonperforming loans to total advances have a negative significant impact on ROAs. Management efficiency (ME) has a positive and significant influence on ROA, which indicates that the rise in ME increases the bank's performance. This result contrasts with the result of Jha and Hui (2012). The liquidity (LQ) and size (SZ) have a positive influence on the ROA. However, this influence is statistically not significant. Credit risk (CR) negatively but insignificantly influences ROA of the commercial banks. This outcome is consistent with Riaz, and Mehar (2013) who have reported that credit risk has a negative impact on ROA. The size of the banks has a significant positive influence on ROAs and hence, supports the too-big-to-fail theory. This result is consistent with the findings of the study by Jha and Hui (2012), and Al-Homaidi et al. (2018) but contrasts with the findings of Karim et al. (2010). CAR positively but statistically insignificantly influences ROA when macroeconomic variables are added in explanatory variables (Model 2). This is because highly capitalized banks would have a higher long-term financing capacity and solvency. Similarly, AQ, LQ, and SZ also lead to a rise in ROA, but they are statistically insignificant. An increase in ME leads to a rise in ROA significantly; on the other hand, a decrease in CR leads to an increase in ROA but insignificantly. GDP growth rate (GDP) and inflation rate (INF) both influence ROA positively but not at a statistically significant level. The result is similar to the finding of Naceur (2003), who revealed that there was no impact of macroeconomic indicators on a bank's profitability.

When macroeconomic determinates (i.e. economic growth and inflation) are regressed separately excluding bank-specific variables, GDP shows a statistically significant positive effect on ROA while INF also shows a positive but insignificant effect on ROA. This reveals that there is a strong positive impact of GDP to the performance of banks measured in terms of ROA, and INF has a weak positive impact. This outcome is consistent with Naceur (2003) who reported that macroeconomic indicators such as inflation and growth rates have an impact on a bank's profitability. However, this finding contradicts Bilal, Saeed, Gull, and Akram (2013) who reported that inflation has a negative significant impact on ROAs

Influence on ROE

Concerning the impact of bank-specific factors on their efficiency, measured in terms of ROE, the results reveal that CAR, ME, LQ, and CR have a statistically significant impact on ROE. Among them, CAR and CR have a negative impact and ME and LQ have a positive impact. This suggests that maintaining too high capital adequacy affects negatively the performance of banks in terms of ROE. AQ influence positively but statistically insignificantly on the ROE of banks. Similarly, SZ has a negative but statistically insignificant impact on ROE. When macroeconomic factors are also included in the regression model, the increase in bank-specific variables, ME and LQ, and macroeconomic variable, INF leads to a significant rise in ROE. On the other hand, a decrease in CAR and CR leads to an increase in ROE significantly. AQ, SZ and GDP influence ROE positively but not at a statistically significant level. When only macroeconomic factors are regressed on ROE of commercial banks, both factors have a statistically significant impact on ROE. It is found that GDP and INF have a positive coefficient revealing a positive influence on the ROE.

Influence on NIM

Among bank-specific factors, only ME significantly impacts on NIM, and it makes positive impact. All the remaining independent variables (CAR, AQ, LQ, SZ, CR) also make positive impact on NIM, but statistically not

significant. The finding that SZ does not influence significantly, is consistent with the finding of Athanasoglou et al. (2008) who revealed that bank size does not significantly influence a bank's profitability. The inclusion of macro-economic variables, GDP and inflation in the regression model (in Model 8) makes no improvement in the results. Now also the coefficient of only one independent variable is statistically significant while the coefficients of the rest of the variables are positive and statistically insignificant. Eight independent variables (with one statistically significant) have shown a positive impact on the dependent variable. From this result, it is clear that bank NIM tends to increase when these variables are increased. This result is supported by Pradhan and Shrestha (2016). When the model does not include bank-specific variables and regressed only macroeconomic variables in the regression model (Model 9), in contrast to the Model 8, the beta coefficient of both the independent variables GDP and INF are significantly positive. When regressed macroeconomic variables only (without including bank-specific variables), both the GDP and INF show statistically significant effect on NIM. Both of the macroeconomic variables show a positive impact on NIM, indicating with the increase in GDP and inflation rate, bank performance is also increased significantly. This result is supported by Jha and Hui (2012), Rai et al. (2015) and Rani and Zergaw (2017) who supported that economic growth (GDP) has an influence on bank profitability but contradicts Rashid and Jabeen (2016) and Al-Homaidi et al. (2018) who found that GDP has a negative influence on the performance of banks. The research findings suggest that there is indeed a significant impact of bank specific variables on the financial performance of commercial banks. This hypothesis that there is a significant impact of bank specific variables on financial performance of commercial banks, has been supported by the data collected and analyzed as part of this research study. The research implies that the bank specific variables have a significant effect on the financial performance of commercial banks. For example, larger banks tended to have better financial performance than smaller banks, possibly due to their ability to spread risk and achieve economies of scale. Additionally, banks with strong capital adequacy ratios and good asset quality were found to have better financial performance, indicating the importance of these factors in determining the overall health of a bank. Overall, the research findings support the conclusion that bank specific variables play a significant role in determining the financial performance of commercial banks.

The research findings suggest that there is indeed a significant impact of macroeconomic variables on the financial performance of commercial banks. It is found that these variables have a significant effect on the financial performance of commercial banks. For example, economic growth is found to have a positive impact on the financial performance of commercial banks, as increased economic activity typically leads to higher demand for financial services. Inflation, on the other hand, is found to have a negative impact on financial performance, as high inflation can erode the value of a bank's assets and make it more difficult for borrowers to repay loans. Overall, the research findings support the conclusion that macroeconomic variables play a crucial role in determining the financial performance of commercial banks. These findings have important implications for policymakers, investors, and other stakeholders in the banking industry.

Conclusion

Profitability has been taken as the proxy of the performance of banks in this study. Based on the findings of the study, it is concluded that the Nepalese commercial banks are performing moderately. They are not able to increase their performance level significantly. Their performance measured in terms of profitability is not very satisfactory. However, observing the significant decrease in the level of non-performing assets, it is concluded that the internal management, credit policy, and business management aspects of the Nepalese commercial banks have been improving. As a result, the confidence of investors, depositors, and lenders will increase, consequently, the profitability and credibility of banks will also increase in the future. On the other hand, Nepalese commercial banks are well-capitalized and do not have solvency problems. By maintaining an adequate capital adequacy ratio, they can absorb unexpected losses and safeguard the depositors, investors, and creditors. By reducing the non-performing assets, banks have reduced their credit risk too. The macroeconomic variable, GDP has been favorable to the banks because on average there has been positive annual growth in GDP. However, due to COVID-19 Pandemic, there is an adverse effect on GDP and inflation in the last two years. NABIL, ADBL, and SCBN are the

best banks in terms of financial performance. Based on the regression analysis, it is concluded that management efficiency, capital base, credit risk, economic growth rate (GDP), and inflation are the important determinants of the profitability of Nepalese commercial banks. The improvement in management efficiency would increase the performance of commercial banks measured in terms of ROA and NIM. The growth in capital base, management efficiency, liquidity, and improvement in credit risk would increase the performance of commercial banks measured in terms of ROE. Similarly, GDP and inflation rates also support the profitability of commercial banks. The outcomes of the present study have significant contributions to the existing stock of literature by comprehensively clarifying and critically analyzing the current state of Nepalese commercial banks' performance. More specifically, this study provides evidence of the factors that may affect Nepalese banks' performance during a period ranging from 2012 to 2021. During this period, Nepalese commercial banks have witnessed several challenges such as an earthquake in 2015, an economic blockade imposed by India, liquidity crunches, tremendous increment made in the capital base of banks within a short period, mergers and acquisitions wave, and weak corporate governance cases that might have hit some Nepalese banks.

Implications of the Study

Regulators and policymakers are recommended to consider the internal determinants, especially bank-specific factors in such a way that can enhance the profitability of the Nepalese commercial banks. The management implications drawn from this study are that if banks are to attain performance improvements, bank-level factors such as management efficiency, capital base, credit risk, and liquidity are the most important factors. Therefore, more focus is needed and required by bank managers on the bank-specific determinants for efficient utilization of banks' resources in such a way that they can influence significantly and positively the Nepalese commercial banks' financial performance. Future research can be conducted to see the effect of regulation on bank performance. Similarly, future research could examine this topic by including other bank-specific variables like cost of funding, number of branches and deposits, and macroeconomic determinants like exchange rate, remittance, and broad money supply. This study can be extended further by including development banks in the study sample and using the bank-specific variables over a longer period.

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