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Operating Efficiency, Macroeconomic Variables, and Profitability: Evidence from Nepalese Commercial Banks

Ramesh Poudel*

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ABSTRACT

This research examines the impact of operating leverage and macroeconomic variables on profitability of Nepalese commercial bank. To measure operating efficiency, and profitability of bank, the researcher uses descriptive cum causal research design with quantitative data from secondary sources. This study employs ordinary least square model using 120 observations of 20 commercial banks as entire population from the period of 2016/17 to 2021/22. This study reveals that the positive influence of operating income ratio, assets utilization ratio, overhead efficiency ratio and interest revenue ratio to the return on assets, return on equity and earning per share of banks. However, the provision for loan losses ratio has negative significant influence to the return on assets, return on equity and earning per share of Nepalese commercial banks. The growth rate of gross domestic product has positive influence to the earning per share of banks but there is insignificant relationship with return on assets and return on equity. Careful selection of lending areas, expanding the size and scope of the operation activities stand out as key avenues for increasing operating efficiency and profitability. The banks might adopt the strategy of diversifying lending portfolio, introduce non-interest income generation program along with increases the size and operation of the activities. The study lacks consideration of debt capital ratio, dividend ratio, interest spread rate, national consumption, government rules and regulation, managerial structure which also influence the profitability and operating efficiency of banks. Future research aims to use structural equation modeling with addressing uncover variables.

Keywords: Return on assets, return on equity, earning per share, operating efficiency, gross domestic product

1. INTRODUCTION

Bank and financial institutions are taken as a major element of financial system and their primary role is to collect saving amount from surplus units and invest that amounts to the deficit units. Surplus units are those who have funds or money but they don't see the investment

* Mr. Poudel is a Part Time Lecturer in the Faculty of Management at Prithvi Narayan Campus, Tribhuvan University. Email: ramaish65@gmail.com

opportunity whereas deficit units are those who have no funds but they see investment opportunity in economy. Bank and financial institutions perform the function like risk management, capital formation, credit provision, payment system facilitation etc. along with transferring the fund for economic development and stability. Gaur and Mohapatra (2021) states that the banking institutions are liable for competently channeling local and foreign savings, allowing funding for investments, dealing with a payment system and expediting management of working capital. Bank and financial institutions uses high amount of public fund and responsible to return their amount with their demand, but there is no guarantee to return fund to the depositors because higher chances of default from the loan takers. So, the bank faces higher level of risk to compare with other industry and analyze the impact of operating efficiency, macroeconomic variables on profitability helps to minimize the risk along with maximize the shareholder return of bank.

Operational efficiency is a perquisite for increasing profitability and shareholders return of a bank. It measures the input and output relationship of resources. It is the ratio of the minimum cost at which it is possible to produce a given vector of outputs along with input prices, as determined by the frontier to actual cost incurred to obtain the same quantity of outputs (Rao & Lakew, 2012). It is ability of delivering quality product and services with minimum input of resources (Pradhan & Sah 2023). It is a right combination of input resources to enhance the productivity and value of any business operation, while driving down the cost of routine operations to a desired level (Gurung & Gurung, 2022). If the bank provides quality bank services at lower possible cost which is called operating efficiency. If the Banks perform the activities inefficiently and waste the resources which slow down economic growth and reduce society's welfare (Athanasoglou et al., 2005).

Profitability is taken as one of the increasing components of concern for the shareholders, creditors, policy makers as well as bank authorities. There are various types of studies intended to identify aspects that characterized the bank profitability. Operating efficiency plays major role to the profitability of bank and it influences the long term viability, productivity and service delivery to the consumers (Aayani & Sen 2010; Gosh & Sanyal 2019). It helps to identify overhead expenses like salaries, interest, benefit, cost and occupancy expenses are efficiently utilize for generating revenue or not (Barr et al., 1994). Economic theories says that manager will seek to reduce the overhead expenses for increasing profitability. Edward (1977) recommended that the bank manager should focus on maximizing utility function of overhead rather than profitability in bank.

Macroeconomic variables studies Inflation rate, Gross domestic product, Money supply, Unemployment rate, Government debt, Government deficit., Stock market volatility of a country which influence the overall economic activities of a country. Interest rate is determined on the basis of inflation rate along with various types of risk in economy. Inflation is continuous persistent and sustain rising price of overall goods and services of economy. GDP is the sum of market value of all final goods and services that are produced within the territory of particular country. Bank interest rate, deposit collection, lending, profitability and operating efficiency are largely influenced by the macroeconomic variables like GDP and inflation.

Previous studies focus on analyzing profitability and performance of a bank from very beginning but the relationship between operating efficiency and profitability is started to study from late 1980s. In context of Nepal, there are some studies in analyzing bank performance on the basis of macro-economic variables, bank specific variable, country specific variable etc. But, this study

is different from other studies because it takes the major determinant of profitability as operating efficiency. The specific objectives of the study is to measure the operating efficiency, macroeconomic variables, and profitability. It examines the relationship and influence of operating efficiency and macroeconomic variables on the profitability of Nepalese commercial banks.

2. REVIEW OF LITERATURE

Bank and financial institutions are taken as a house of mirror because they collect fund from the public and invest that amount to the deficit units like firm, individual and government. But, there is no guarantee to return the fund from deficit units as per the agreement of bank and loan taker. So, efficient management of fund, cost control and allocation of resources are taken as critical activities of a bank for long term survival and increase profitability. If the bank inefficiently and ineffectively uses large amount receive from public to the operating activities, it reduces the profitability and sustainability of bank. Athanasoglou et al. (2011) asserted that banks enhance their operating efficiency by accurately selecting customers and organizations with the highest creditworthiness, solid character, capacity, and skill. This careful customer selection minimizes default risk and the provision amount required for potential loan losses. They also emphasized that technical efficiency encompasses various activities, including a bank's ability to provide loans to small and medium-sized enterprises (SMEs) through the use of modern technology while minimizing overall processing costs for borrowers. Kofi et al. (2016) examined the cost efficiency and financial performance of a bank in Ghana by using the variables of bank size, capitalization, loan loss provision, inflation rate and GDP growth rate. The study revealed that there is low efficiency of bank and negative relationship between cost efficiency and capitalization on performance of a bank.

Various studies show that the bank and financial institutions improve their performance and profitability by careful selection of client and efficient amount of expenditure to the salary of employees, rent, depreciation and other operating expenses. Okudav and Aiba (2014) discovered that larger institutions exhibited higher and more consistent levels of operating efficiency compared to smaller ones and institutions with foreign capital comprising more than half of their total capital performed notably worse in overall operations when contrasted with their local counterparts in Cambodian financial institutions. They suggest that Cambodian financial institutions need to focus on improving operational capacity, carefully considering foreign ownership, strengthening management soundness, a pursuing greater diversification. Berger and Humphrey (1997); Mitchell and Onvural (1996) have collectively identified that the average cost curve of U.S. banks is relatively flat with compared to European banks which indicate that the U.S. banks has lower operating efficiency to compare with European banks. Most of the empirical studies conducted in Europe have consistently identified a U-shaped average cost curve and, to some extent, the existence of scope economies (Parisio, 1992; Berger et al., 1993; Drake & Hall, 2003). These studies revealed that if the bank operate in the large areas with higher number of clients and branches reduces the operating cost and increase the profitability of bank. Rose and Hudgins (2012) also argued that there are two possible ways of cost savings; economies of scale, where doubling of the service output will result in less than doubling of the production costs, and economies of scope,

which is related to use of resources efficiently and providing multiple services with constraints resources.

Alper and Anbar (2011) found that there is positive relationship between return on assets and return on equity on the assets size and non-interest income to total assets ratio which indicates that the positive relationship between operating efficiency and bank performance. Fuentes and Vergara (2003) carried out a study to estimate operating efficiency at the bank level for the 90s in Chile by using cost and profit function with Stochastic Frontier Approach and concluded that those banks establish under open corporation have higher operating efficiency to compare with branches of international banks. Tahir et al. (2010) found that domestic bank has higher net interest margin and operating efficiency to compare the foreign banks in Malaysia.

Adhullahi et al. (2017) conducted the research on impact of bank specific variables on the financial performance of Nigerian deposit money bank and found that there is insignificant relationship between operating expenses and financial performance but there is strong relationship between capital adequacy ratio and financial performance. Werner and Moormann (2009) operated the study on role of cost leadership strategy and technical efficiency to the profitability of European banks and found that there is positive and significant role of cost leadership strategy and technical efficiency on profitability. Sherman and Gold (1985) found that 1 percent decrease in operating expenses leads to 2 percent increase in net income and earnings per share in US banks by using the DEA model. Lotto (2019) identified that positive and significant impact of liquidity and capital adequacy to the operating efficiency of Tanzanian banks. He also found that operating efficiency has positive significant impact on profitability. Almazari and Almumani (2012) identified that there is positive significant impact of operating efficiency, total assets and bank size on profitability. But, there is no any effect of operating income to the profitability of Saudi national banks.

Charavarka (1993) revealed that the Indian foreign banks earn higher level of profit to compare with local banks because their superior practical performance with higher level of operating efficiency which indicate that the financial results of a bank depend upon the operating efficiency. Ariff and Can (2009) found that the profit efficiency levels of Chinese banks are well below to compare with cost efficiency which revealed that there are inefficiencies in revenue side. Tahir et al. (2010) found that domestic bank has higher net interest margin and operating cost compare to the foreign banks in Malaysia. Muriuki (2017) studied the impact of capital adequacy, asset quality, management efficiency, earning ability and liquidity on bank performance in Kenya and found that there is positive relationship between all variables and financial performance. Among them assets quality play major role towards the profitability. Ali et al. (2011) found that there is negative relationship between capital and credit risk on Return on assets (ROA) in commercial bank of Pakistan but bank size, operating efficiency and assets management have positive relationship towards profitability.

Boateng (2019) found that net interest margin, non-interest income margin, operating expenses to income ratio, profit per employee and business per employee have significant affect to the profitability. But, equity to assets ratio and personal expenses to operating expenses ratio have insignificant affect to the profitability of Ghana banks. Buchory (2019) found that loan to deposit ratio has negative but not significant affect to the return on assets, operating expenses to operating income has negative and significant impact to the return on assets and non-performing loan has

positive but not significant effect to the return on assets. Athanasoglou et al. (2011) investigated the effect of bank specific, industry specific and macroeconomic determinants and found that higher credit risk reduce the profitability but labor productivity growth has positive impact. However, there is negative relationship between operating expenses and profitability in Greek Banking Sectors.

Khan et al. (2015) examined the bank specific and macroeconomic variables on profitability and found that earning per share, capital ratio, size and GDP show negative effect on bank's profitability but cash equivalents, spread ratio, interest rate and inflation rate shows positive effect towards profitability in Pakistani banks. Brahmaiah (2018) revealed that strength of equity capital, operating efficiency, ratio of banking sector deposit to gross domestic product have significantly positive influence to the return on assets and return on equity by using the sample of 89 Indian banks from the period of 2005 to 2015. But, credit risk, cost of fund, nonperforming assets and consumer price index have significantly negative influence to the profitability while bank size and ratio of priority loan to total loans do not have any impact towards profitability. Dsouza et al. (2022) found that cost to income ratio has a significant negative impact to the return on assets and net interest margin in Indian banks from the analysis of data 2001 to 2020. The staff expenses to total expenses ratio has a significant positive impact on return on assets but it has positive insignificant impact to the net interest margin.

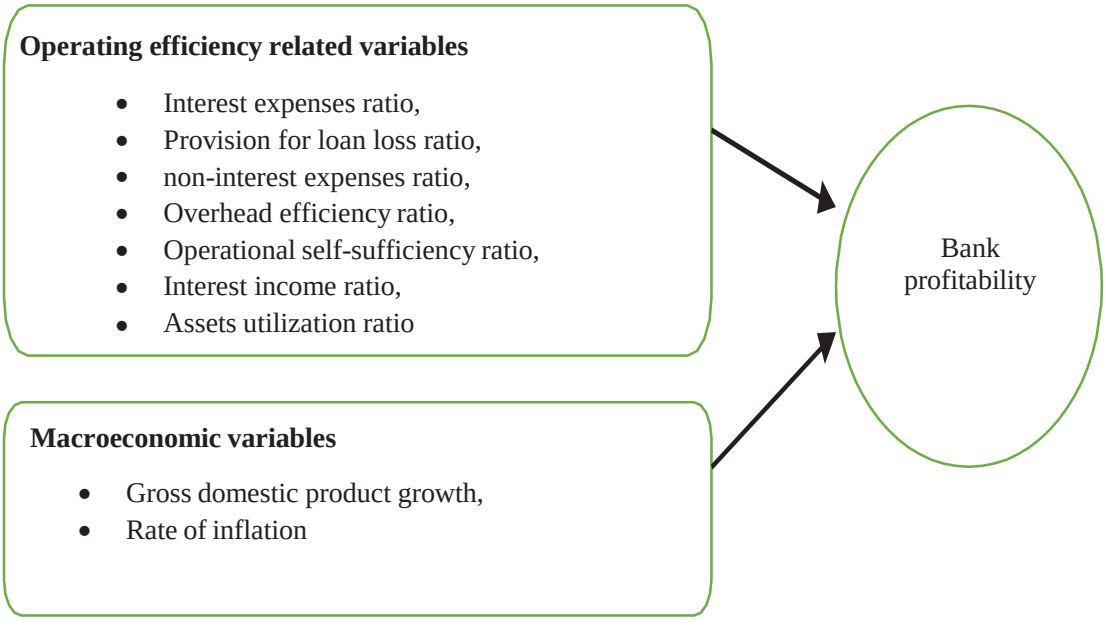
Pradhan and Sah (2023) studied the impact of capital ratios and bank operating efficiency on financial performance of Nepalese commercial banks and found that bank operating efficiency, loan ratio, total deposit to total assets, loan loss provision to total equity have positive significant impact to the performance of Nepalese commercial banks. But, there is negative significant impact of loan loss provision to total loan, core capital ratio, risk weighted ratio and total capital ratio to the financial performance. Ch (2014) found that there is an insignificant impact of asset size, non-performing asset on marketability ratio but positive relationship to the bank specific ratios.

Maharjan (2022) found the positive significant influence of operating expenses and market capitalization to the net interest margin but liquidity management has negative significant influence to the return on assets. Operating expenses, leverage, liquidity and market capitalization have positive significant influence to return on equity in Nepalese commercial banks. Gurung and Gurung (2022) conducted research to identify the impact of bank related and external macroeconomic variables on profitability of Nepalese commercial banks and found that loan to deposit ratio and growth of gross domestic product have positive significant influence to the return on assets and net interest margin. However, non-performing assets has significant negative influence to the return on equity, but it has weakly negative impact to the return on assets.

The previous studies found that there is positive relationship between bank sizes, branches and scope of activities to the profitability of banks. There is positive relationship between growth rates of gross domestic product to the return on equity. Empirical works identify that there is inverse relationship and influence of interest expenses ratio, provision for loan loss ratio, non-interest expenses ratio on the profitability of banks. However, studies found that overhead efficiency ratio, operational self-sufficiency ratio, interest income ratio and assets utilization ratio have positive relationship and influence on profitability of banks. On the basis of above literature, the following model is developed for analysis:

Figure 1

Model of the Bank Profitability



3. RESEARCH METHODOLOGY

This study is based on descriptive cum causal research design. It uses quantitative data from secondary sources to analyze the effect of operating efficiency, macroeconomics variables on the profitability of banks. The data are collected through annual reports of commercial banks, quarterly bulleting of Nepal Rastra Bank and economic survey of ministry of finance for the periods of 20016/17 to 2021/22 with the observation of 120. The researcher uses whole population for the study as samples to increase the reliability of findings.

This study assumes that the bank profitability (ROA, ROE, and EPS) depends on the interest expenses ratio, provision for loan loss ratio, non-interest expenses ratio, Overhead efficiency ratio, Operational self-sufficiency ratio, Interest income ratio, Assets Utilization ratio, gross domestic product growth and the rate of inflation as independent variables. Ercegovac et al. (2020), Flamini et al. (2009) and Obamuyi (2013) consider ROA for measuring the profitability while Abor (2005), Rachdi (2013), Soana (2011) and Yao et al. (2018) uses ROA, ROE and EPS to estimate the profitability. So, this study uses ROA, ROE and EPS to measure the profitability of Nepalese commercial banks. This study adopts both descriptive and inferential statistics to identify the relationship and influence of operating efficiency, macro-economic variables on profitability of banks. To identify the performance of banks, the researcher calculates the mean, median, mode, maxima and minima. Ordinary least square data with following model is used to measure the impact of operating efficiency and macro-economic variables on profitability of banks.

$$ROA_i = \alpha + \beta_1 IER_i + \beta_2 PLR_i + \beta_3 NER_i + \beta_4 OER_i + \beta_5 OSR_i + \beta_6 IR_i + \beta_7 AUR_i + \beta_8 GDP_i + \beta_9 IF_i + \varepsilon_i$$

$$ROE_i = \alpha + \beta_1 IER_i + \beta_2 PLR_i + \beta_3 NER_i + \beta_4 OER_i + \beta_5 OSR_i + \beta_6 IR_i + \beta_7 AUR_i + \beta_8 GDP_i + \beta_9 IF_i + \varepsilon_i$$

$$EPS_i = \alpha + \beta_1 IER_i + \beta_2 PLR_i + \beta_3 NER_i + \beta_4 OER_i + \beta_5 OSR_i + \beta_6 IR_i + \beta_7 AUR_i + \beta_8 GDP_i + \beta_9 IF_i + \varepsilon_i$$

The operational definitions of these variables are given in Table 1.

Table 1

List of the Variables with their Definitions

Variables	Symbol	Description
Dependent variables		
Return on assets	ROA	Percentage ratio of net income to total assets
Return on equity	ROE	Percentage ratio of net profit to shareholders equity
Earnings per share	EPS	(Net income - dividends on preferred stock) /outstanding shares
Independent variables		
Interest expenses ratio	IER	Interest expenses to total operating income
Provision for loan loss ratio	PLR	Provision for loan losses to total operating income
Non-Interest expenses ratio	NER	Non-interest expenses to total operating income
Overhead efficiency ratio	OER	Noninterest income to noninterest expenses
Operational self-sufficiency ratio	OSR	Operating revenue to total of operating Expenses, financial costs and impairment losses on loans
Interest income ratio	IR	Net interest income to total assets
Assets utilization ratio	AUR	Total operating revenue to total assets
Gross domestic product	GDP	It measures the size of an economy,
Inflation	IF	It reflects the buying power of the currency is deteriorating

4. RESULTS AND DISCUSSION

Result section shows the descriptive and inferential statistical output from the input of quantitative data obtain from Nepalese commercial banks. It shows the major finding of the study. The researcher discusses and analyze the major finding with previous studies and identify the similarities and contradiction in discussion section.

4.1 Results

4.1.1 Descriptive Summary

Table 2 shows the descriptive statistics of selected dependent and independent variables during the period 2016/17 to 2021/22 of Nepalese commercial banks.

Table 2

Descriptive Statistics of the Variables

Variable	Mean	Std. deviation	Minimum	Maximum
ROA	0.015	0.005	0.006	0.028
ROE	0.131	0.039	0.055	0.261
EPS	23.763	9.363	9.810	56.040
IER	1.165	0.364	0.229	1.800
PLR	0.054	0.076	-0.496	0.247
NER	0.019	0.011	0.000	0.057
OSR	1.224	0.698	0.448	6.909
OER	14.942	26.794	2.919	240.901
IR	0.031	0.007	0.018	0.054
AUR	0.021	0.006	0.009	0.037
GDP	15.166	0.146	14.940	15.395
IF	4.750	0.844	3.600	6.200

Table 2 shows that average return on assets for the study period is 1.5 percent with the standard deviation of 0.005 and the mean return of equity is 13.1 percent with standard deviation of 0.039. The maximum return on equity is recorded as 26.1 percent during the period of study. The standard deviation of return on equity is higher to compare with standard deviation of return on assets. The average earning per share is Rs 23.76 with high standard deviation of 9.363 and the value of earning per share lies between Rs 9.81 to Rs 56.04.

The average interest earning ratio is 11.65 percent with moderate variability of 0.36 and the minimum IER is 2.29 percent and maximum IER is 18 percent. The operating self-sufficiency ratio has the average value of 12.24 percent with standard deviation of 0.698 whereas the net interest income ratio is 3.11 percent with standard deviation of 0.007. The average value of assets utilization ratio is 2.1 percent with standard deviation of 0.006 and the maximum AUR is recorded as 3.7 percent. The average inflation rate is 4.75 percent with standard deviation of 0.844 and it lies 3.6 percent to 6.2 percent during the period of study.

4.1.2 Relationship between Variables

Bivariate correlation coefficients is used to identify the degree of the relationship between the dependent and independent variables which are presented in Table 3.

Table 3 shows the relationship between difference dependent and independent variable during the period of the study. The interest expenses ratio has negative relationship with return on assets, return on equity and earning per share at 1 percent level of significance which indicate that

if the interest expenses to total operating income is increase, the ROA, ROE and EPS decrease and vice versa. The provision for loan loss ratio also has negative relationship with ROA, ROE and EPS with significant level of 1 percent which indicate that if the loan loss provision is increased which decrease the profitability of banks. However, operational self-efficiency ratio has positive relationship with return on assets which indicate that if operating revenue to total cost ratio increase which tend to increase on return of assets.

Table 3

Correlation Coefficients between the Dependent and Independent Variables

Variable	ROA	ROE	EPS	IER	PLR	NER	OSR	OER	IR	AUR	GDP	IF
ROA	1											
ROE	.714**	1										
EPS	.643**	.672**	1									
IER	-.533**	-.414**	-.628**	1								
PLR	-.322**	-.231**	-0.146	0.112	1							
NER	-.258**	-0.087	-.184*	.280**	0.046	1						
OSR	.489**	.369**	.253**	-.246**	-.790**	-0.024	1					
OER	.355**	0.033	.263**	-.257**	-0.116	-.432**	0.019	1				
IR	.729**	.552**	.552**	-.534**	-0.066	-.311**	0.088	.489**	1			
AUR	.960**	.688**	.613**	-.555**	-.410**	-.250**	.581**	.326**	.736**	1		
GDP	-.543**	-.411**	-.246**	.372**	.294**	0.17	-.342**	-0.17	-.444**	-.534**	1	
IF	-.229**	-0.168	-0.093	.-255**	.278**	-0.002	-0.174	-0.028	-0.046	-.246**	.217*	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Overhead efficiency ratio is positively correlated with return on assets and earning per share at 1 percent level of significance but it has not significant relationship with return on equity which indicates that increase in non-interest income to non-interest expenses leads to increase in return on assets and earning per share. Assets utilization ratio is positively correlated with return on assets, return on equity and earning per share at 1 percent level of significance which says that if total operating income to total assets is increased also increased the earning per share and return on assets.

4.1.3 Influence of Operating Efficiency, Macroeconomic Variables on Bank Profitability

The regression analysis has been conducted to identify whether or not the return on asset, return on equity and earning per share are affected by interest expenses ratio, provision for loan loss ratio, non-interest expenses ratio, overhead efficiency ratio, operational self-sufficiency ratio, interest income ratio, assets utilization ratio.

Table 4 shows the regression result of interest expenses ratio, provision for loan loss ratio, non-interest expenses ratio, overhead efficiency ratio, operational self-sufficiency ratio, net interest

income ratio, net interest income ratio, assets utilization ratio, gross domestic product and inflation rate on return on assets.

Table 4

Regression Result of Return on Assets

	Unstandardized coefficients		Standardized coefficients	t	Sig.	Co-linearity statistics	
	β	std. error	beta			Tolerance	VIF
(Constant)	0.031	0.015		2.094	0.038		
IER	0.000	0.000	0.014	0.449	0.654	0.580	1.723
PLR	-0.003	0.003	0.054	1.245	0.046	0.303	3.300
NER	0.003	0.012	0.006	0.233	0.816	0.770	1.299
OSR	0.001	0.000	-0.089	-1.566	0.120	0.180	5.559
OER	0.000	0.000	0.054	1.814	0.072	0.644	1.553
IR	0.054	0.037	-0.076	-1.466	0.045	0.212	4.717
AUR	0.784	0.045	1.050	17.423	0.000	0.159	6.297
LnGDP	0.002	0.001	-0.062	-2.120	0.036	0.675	1.481
IF	0.000	0.000	0.007	0.243	0.808	0.735	1.360
R^2 =0.933, Adj R^2=0.928							
F = 179.792; p value=0.000							

The beta coefficient of provision for loan losses is negative at significant level of 5 percent which says that the provision for loan losses negatively affects the return on assets. Ahmed and Ariff (2014) found the same result as negative and significant influence of loan losses provision to return on assets in Pakistani banks. However, operating self-sufficiency ratio has positive beta which indicates that the OSR positively influence the return on assets. If the operating self-sufficiency ratio is increased the return on assets also increases. Likewise, there is positive impact of growth rate of gross domestic product on return on assets of Nepalese commercial banks. It implies that during the period of increasing GDP the demand of loan also increased which leads to increase the return on assets. This result is similar with findings of Osamwonyi and Micheal (2014) in banking sectors of Nigeria as well as Davydenko (2011) for Ukrainian banks.

The assets utilization ratio has a significant positive influence on the return on assets which result is same as Ali et al. (2010) in Pakistani banks. Higher the assets utilization ratio indicates effectively uses of assets in terms of operating income of banks. It affects the return on assets at 1 percent level of significance which indicate that increase in assets utilization ratio leads to increase in return on assets also.

Overall, the model has a very high R-squared (R^2) value of 0.933, indicating that it explains a large portion of the variance in the dependent variable. The adjusted R-squared ($AdjR^2$) is also high at 0.928, suggesting that the model is a good fit. The F-test is highly significant with a p-value of 0.000, indicating that the overall model is statistically significant. Additionally, multi-collanearity is a concern for some variables, as indicated by low tolerance and high VIF values.

Table 5 shows that the overhead efficiency ratio is positively influence to the return on equity at 1 percent level of significance which indicates that increase in interest income to interest

expenses leads to the increase in return on equity of banks which result as same as AL-Omar and AL-Mutairi (2008) in Kuwait. Interest revenue ratio positively affect the return on equity at 10 percent level of significance which indicates that increase in interest revenue to interest expenses ratio leads to increase in return on equity. This finding is similar with the research work of Boteng (2019).

Table 5

Regression Result of Return on Equity

	Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	0.177	0.312		0.568	0.571		
IER	-0.003	0.009	-0.029	-0.348	0.728	0.580	1.723
PLR	0.006	0.058	0.012	0.102	0.919	0.303	3.300
NER	0.091	0.257	0.025	0.355	0.724	0.770	1.299
OSR	0.001	0.008	0.021	0.141	0.888	0.180	5.559
OER	0.000	0.000	-0.274	-3.503	0.001	0.644	1.553
IR	1.474	0.782	0.257	1.885	0.062	0.212	4.717
AUR	3.338	0.961	0.548	3.474	0.001	0.159	6.297
LnGDP	-0.010	0.020	-0.038	-0.498	0.620	0.675	1.481
IF	-0.001	0.003	-0.013	-0.175	0.086	0.735	1.360
R^2 =0.542 AdjR^2=0.507							
F=15.272 p-value=0.000							

The assets utilization ratio has a significant positive influence on the return on equity which result is same as Brahmaih (2018). Higher the assets utilization ratio indicates effectively uses of assets in terms of operating income of banks. It affects the return on equity at 1 percent level of significance which indicates that increase in assets utilization ratio leads to increase in return on equity too. However, the inflation rate variable beta coefficient is negative which indicate that inflation affect the return on equity negatively. If the inflation rate is increased the return on equity is decreased and vice versa.

The F-test is highly significant with a p-value of 0.000, indicating that the overall model is statistically significant. Additionally, multi-collanearity is a concern for some variables, as indicated by low tolerance and high VIF values.

Table 6 shows that the interest expenses ratio has negative beta coefficient with significance level of 1 percent which indicates the interest expenses ratio negatively affect the earning per share. This result is similar with the study of Alper and Anbar (2011). If the interest expenses to interest income proportion is reduced which also reduces the profitability along with earning per share. However, the assets utilization ratio has a significant positive influence on the earning per share which result is same as Brahmaish (2018). Higher the assets utilization ratio indicates effectively uses of assets in terms of operating income of banks. It affects the earning per share at 1 percent level of significance which indicates that increase in assets utilization ratio leads to increase in earnings per share too.

Table 6

Regression Result of Earning per Share

	Unstandardized coefficients		Standardized coefficients			Collinearity statistics	
	Beta	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	-125.593	76.238		-1.647	0.102		
IER	-11.743	2.140	-0.457	-5.488	0.000	0.580	1.723
PLR	-10.050	14.171	-0.082	-0.709	0.480	0.303	3.300
NER	53.280	62.860	0.061	0.848	0.398	0.770	1.299
OSR	-2.202	2.005	-0.164	-1.098	0.274	0.180	5.559
OER	0.006	0.028	0.017	0.216	0.830	0.644	1.553
IR	5.191	191.232	0.004	0.027	0.978	0.212	4.717
AUR	790.552	234.916	0.535	3.365	0.001	0.159	6.297
LnGDP	9.363	4.957	0.146	1.889	0.061	0.675	1.481
IF	1.311	0.821	0.118	1.597	0.113	0.735	1.360
R^2= 0.534; Adj R^2=0.498							
F=14.755; p-value=0.000							

There is positive influence of growth rate of gross domestic product to the earning per share at significance level of 10 percent. Gurung and Gurung (2022) also found the positive relationship between growth rate of GDP and earning per share. It implies that the demand of loans and advances are increased during the period of gross domestic product increase which leads to increase interest income, profitability as well as earning per share. The inflation rate beta coefficient is positive which indicates that the inflation rate positively influences to the earning per share. This result is same with the finding of Qamri et al. (2015).

The F-test is highly significant with a p-value of 0.000, indicating that the overall model is statistically significant. Additionally, multi-collanearity is a concern for some variables, as indicated by low tolerance and high VIF values.

4.2 Discussion

This study identifies the relationship and influence of operating efficiency and macro-economic variable of Nepalese commercial banks from the period of 2016/17 to 2021/22. The average ROA, ROE and EPS of Nepalese commercial bank is higher than Croatian banks (Pavkovic et al. 2018) which indicates that the Nepalese commercial banks are more cost efficient. There is negative relationship between interest expenses ratio, provision for loan loss ratio and non-interest expenses ratio to the return on assets, return on equity and earning per shares of Nepalese commercial banks which result is similar to the Alper and Anbar (2011) of American banks. Reducing the interest expenses, provision for loan losses and non-interest expenses help to increase the profitability of Nepalese commercial banks. The researcher finds that the positive relationship between overhead efficiency ratios, operational self-sufficiency ratios, interest income ratio and assets utilization ratio to the return on assets, return on equity and earning per share which finding

is similar to Werner and Moormann (2009). It implies that increase in interest, non-interest and operating income leads to increase profitability. However, there is inverse relationship between growth rate of GDP and Inflation rate to the profitability of banks which is contradiction with finding of Osamwonyi and Micheal (2014) in Nigerian banks.

The provision for loan losses has negative influence to the return on assets. But, operational self-sufficiency ratio, overhead efficiency ratio, interest income ratio, assets utilization ration and growth rate of gross domestic product to the return on assets. These results are similar to the finding of Boateng (2019) in Ghana banks. However, interest expenses ratio has positive influence to the return on assets which is against the finding of Brahmaiah (2018) Indian commercial banks. Overhead efficiency ratio, assets utilization ratio and inflation have positive influence to the return on equity which results are similar to the finding of Qamari et al (2015) in Pakistani banks. However, Athanasoglu et al (2011) found that there is negative influence of inflation rate to the return on equity. The interest expenses ratio and provision for loan ratio has negative influence on earning per share which results are similar to the study of Drake and Hall (2003) in Japanese banks. But, assets utilization ratio and growth rate of gross domestic product have positive influence on earning per share which results are similar to the finding of Lotto (2019) in Tanzanian banks. However, there is positive impact of inflation rate to the earning per share which is against the finding of Muriuki (2019) in Kenyan banks.

5. CONCLUSION

The objective of the study is to explore the relationship and influence of operating efficiency, macro- economic variables on profitability of Nepalese commercial bank. The earning per share is highly fluctuated during the period of study which shows that the banks are unable to mobilize its equity capital effectively. Other things remaining the same, the fluctuation of earning per share influence the investor behavior towards the bank. The provision for loan losses ratio has negative influence to the profitability of banks which indicates that if the bank kept higher amount of provision reduces the profitability. On the other hand, if the bank invests the deposit amount in higher risky areas required higher amount of provisions which influence adversely to the profitability of banks. It says that if the bank manages non-performing loans which reduces costs associated with loan portfolio and enhance the optimal use of their assets along with earning capacity.

The overhead efficiency and interest revenue ratio have positive affect on return on equity which indicates that earning of shareholders depend upon the interest earning capacity and amount paid for obtaining fund for banks. Finally, the macroeconomic variable like the growth of gross domestic product has a positive impact on earnings per share of commercial banks which indicates that there is high total demand of credit. Thus, the higher demand of loan helps to increase the interest income, operating efficiency along with profitability of banks during the period of study.

The managerial insights of the study may be that the bank could achieve superior financial performance through mix of operating efficiency and service quality. The strategy might be the bank to increase operating efficiency through careful selection of lending, increase net interest income and operate the activities which increase the non-interest income of banks.

This study uses operating and macro-economic variables but there are also others measurable and non-measurable variables like investment, debt capital, interest rate, per capital

income, consumption of country, government rules and regulation, managerial structure which also influence the profitability of bank. So, there is a lot of room for future studies to include more variable for improving the study's limitations. Future studies attempt to identify the causal linkages between operating efficiency, service quality and profitability of the banks using a structural equation modelling (SEM) framework.

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