

Examining the Factors Affecting the Profitability of Commercial Banks

Purna Man Shrestha 
Mid-West University, Surkhet, Nepal

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ABSTRACT

This paper has assessed the determinants of the profitability of commercial banks operating in Nepal. The effect of macroeconomic as well as internal factors on profitability is estimated. For this purpose, ROA is used to measure a bank's profitability. Similarly, liquidity (LIQ), management efficiency (ME), assets quality (AQ), and operational efficiency (OE) are used as internal factors, and consumer price index (CPI), interest rate (IR), and growth rate of broad money supply (M2) are used as macro-economic factors. Based on the result of panel data analysis, this paper revealed that bank-specific and macroeconomic factors play an essential role in determining profitability.

Further, this paper found that LIQ, ME, AQ, CPI, and IR substantially influence the profitability of banks operating in Nepal. Thus, this paper concluded that the bank management should improve its liquidity, efficiency of management, and quality of assets to improve profitability. Likewise, the bank management can benefit from increasing CPI and IR to improve profitability.

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Corresponding Author:

Purna Man Shrestha

Central Department, Graduate School of Management, Mid-West University, Surkhet, Nepal

Email: purnaman.skt@gmail.com

1. INTRODUCTION

Various external and internal variables impact the profitability of a bank [1]–[6]. The macroeconomic factors are external variables, while the bank-specific factors are internal ones. Bank-specific factors show the strength and weaknesses of the bank, whereas macroeconomic factors create opportunities and threats for the bank. If the banking institution identifies its weakness created by internal factors and threats due to external factors, it can improve its profitability and maximize its value.

The majority of the literature on these factors indicates that they have an impact on bank profitability. Quality of assets, capitalization, non-traditional activities of the bank, management efficiency, liquidity, etc., are the internal variables [7]–[10]. The external

issues contain financial crises, remittance, oil prices, gold prices, import, export, and economic growth [7], [11]–[13]. Similar findings indicate that the main determinants of Turkish commercial banks' financial performance are their interest rate and size [4]. Likewise, Abebe [14] found a significant influence of asset quality, management efficiency, and capital adequacy and no influence of liquidity and earning ability on bank profitability. Similarly, Njoki [15] found a favorable impact of asset quality and size and an adverse effect of CAR, liquidity, and management efficiency on the profitability of banks in Kenya. Additionally, several empirical studies documented a strong relationship between external factors like the M2, trade openness, interest rate, inflation, GDP, etc., and internal variables like ME, liquidity, operational efficiency, size of the bank, and quality of assets with the profitability [16]–[21].

Anbar and Alper [4] found no relationship between liquidity, deposit size, NIM, CAR, and external factors like GDP growth rate, interest rate, CPI, and bank profitability. However, they documented a positive connection between asset size and non-interest income and an inverse connection between asset qualities. In contrast to the considerable adverse effects of asset quality, GDP, and liquidity, management efficiency positively influences financial performance [22]. Hence, this paper aims to identify the elements that impact Nepalese commercial banks' financial performance.

Additionally, Mamatzakis and Remoundos [23] analyzed how financial measures like bank size, ownership, stock market performance, market concentration, M2, and CPI affected the performance of the Greek commercial bank. The authors discovered that these financial parameters and macroeconomic factors considerably influence profitability. Guru, Staunton, and Balashanmugam [24] have published a similar discovery in a Malaysian commercial bank setting. The study identified management efficiency as the most substantial internal factor for predicting high bank profitability. The study concluded that inflation favors profitability and that high-interest rates cause low profitability.

Sufian and Kamarudin [25] analyzed the determinants of profitability of Bangladesh's banking system. 31 Bangladeshi commercial banks were included in the study's sample, which covered the years 2000 to 2010. Liquidity, capitalization, size, and quality of management were identified by Sufian and Kamarudin [25] as the most influencing bank-specific variables, and GDP, CPI, and concentration as the most influencing macroeconomic variables for determining profitability. The authors also documented capitalization, management caliber, and bank size as the most potent variables for determining performance. Similarly, it has been noted that profitability is negatively impacted by market concentration, inflation, GDP, and the financial crisis [25].

Furthermore, Al Karim and Alam [26] also revealed that the profitability of Bangladesh's banks is widely affected by financial risk, bank size, operational effectiveness, and asset management. Similarly, management efficiency, quality of assets, and economic growth were found as the most influencing factors for the profitability of Nigerian banks [27]. Moreover, asset quality, management efficiency, CAR, interest income, and CPI were the most influencing factors in determining the profitability of banks operating in Uganda [28]. Capraru and Ihnatov [29], on the other hand, discovered that managerial efficiency and capital sufficiency had the most significant important impression

on the profitability of the banks operating in Europe. Al-Homaidi et al. [5] found the branch number, bank size, ratio of assets utilization, and debt utilization to be the most significant influencing factors for profitability. Also, in the context of Ethiopia, a significant inverse relationship between the broad money supply, financial risk, and the GDP with profitability has been identified.

On the other hand, it has not been shown that the bank's cash reserve ratio and size affected the success of banks operating in Ethiopia between 2000 and 2017 [30]. Similarly, Haidary and Abbey [1] discovered a modest effect of liquidity and GDP growth and a substantial positive impression of capital sufficiency, quality of assets, and managerial efficiency on profitability. Isayas [3] also revealed that the liquidity ratio, business size, capital adequacy, asset tangibility, leverage, and economic growth rate are the main variables determining the financial effectiveness of banks. Anshu and Gakhar [2] discovered a negative influence of the exchange rate and a positive influence of inflation and interest rate on the profitability of India's banking industry.

The influence of various components on the profitability of banks operating in Pakistan banks assessed by Farooq [31]. The authors revealed that the CAR, deposit, liquidity, leverage, and size substantially affect asset return. Additionally, the authors demonstrated that efficiency, deposit, leverage, and inflation heavily influence return on equity. The paper concluded that the NIM is influenced by the CAR, interest rate, deposit ratio, bank size, branch count, inflation rate, and currency rate.

In the Nepalese context, Gautam [32] verified the positive role of management efficiency, capital adequacy, and GDP and the negative role of liquidity management and asset quality in determining financial performance. Furthermore, Shrestha [33] observed that financial risk had the opposite influence on the success of banks in the Nepalese environment, while asset quality, management effectiveness, and operational effectiveness had a positive influence. Similarly, Gwachha [34] discovered a robust positive effect of the size of assets, deposit ratio, market size, and interest rate on the performance of banks and a significant adverse effect on loans portfolio. Likewise, Gurung and Gurung [35] found the positive influence of the loan ratio on the profitability and net interest margin of banks operating in Nepal.

All of these studies reach the same conclusion: the efficiency of banks is mainly explained by numerous factors. This article explores the effects of these external and internal issues on the profitability of commercial banks in Nepal. Although research indicates that several factors have an impact on profitability, this study is limited to a few of these factors, including liquidity (LIQ), management efficiency (ME), and operational efficiency (OE), as well as macro-economic factors like the CPI, IR and growth rate of money supply (M2).

2. METHOD

A causal-comparative research approach is applied to examine how various factors affect the profitability of banks operating in the Nepalese economy. With the help of the causal-comparative research approach, the explanatory power of independent variables for explaining the dependent variable, i.e., the profitability, is accessed. For this purpose, a

multivariate regression model is estimated. Up to mid-July 2019, 28 commercial banks have been functioning in Nepal. Of these, 27 commercial banks are listed in NEPSE, and 18 are chosen as a sample based on the data's availability. For the analysis, annual panel data from 2001 to 2019 were used. The data relating to IR, CPI, and the growth rate of M2, are obtained using the quarterly bulletin of NRB. Likewise, bank-specific variables, such as ROA, liquidity (LIQ), operational efficiency (OE), and management efficiency (ME), are collected using the annual reports.

Model Specification

This study's profitability (dependent variable) is measured by ROA, obtained by dividing NI by TA, and selected internal and external factors are used as the explanatory variables. To accomplish the goal of this paper, certain bank-specific factors were chosen, including liquidity (LIQ), i.e., cash reserve ratio (CRR), management efficiency (ME) obtained by dividing net income by total revenue, operational efficiency (OE) obtained by dividing total interest income by operating expenses and chosen macro-economic variables, such as the CPI, interest rate (IR), measured by the rate of 91-day Treasury bills, and growth rate of money supply (M2). Therefore, the multiple regression model below examines these variables' impression on profitability.

$$ROA_{it} = \beta_0 + \beta_1 LIQ_{it} + \beta_2 ME_{it} + \beta_3 AQ_{it} + \beta_4 OE_{it} + \beta_5 CPI_t + \beta_6 IR_t + \beta_7 M2_t + \varepsilon_{it} \quad (1)$$

Where:

ROA_{it} = return on assets of the bank i for year t ,

β_i = coefficient of the variable to be estimated,

LIQ_{it} = liquidity of the bank i for year t ,

ME_{it} = management efficiency of the bank i for year t ,

AQ_{it} = assets quality of the bank i for year t ,

OE_{it} = operational efficiency of the bank i for year t ,

CPI_t = consumer price index for year t ,

IR_t = interest rate for year t

$M2_t$ = growth rate of money supply for year t , and

ε_{it} = residual error term.

3. RESULTS AND DISCUSSION

Descriptive Statistics

The result of descriptive statistics of the dependent and independent variables is presented in Table 1. The result in Table 1 clearly shows widespread in Nepalese commercial banks' profitability (ROA). It ranges from 0.05 percent to 8.15 percent. Likewise, the result confirms the wide variability of bank-specific factors measured by liquidity, managerial efficiency, asset quality, and operational efficiency.

Similarly, the result presented in Table 1 also shows a wide variation in independent macroeconomic variables included in the study. The result shows that the

average value of inflation measured by CPI was 84.29 percent, with a minimum value of 27.20 percent and a maximum value of 125.14 percent. Furthermore, the average value of IR is 2.99 percent with a minimum value of 0.13 percent and a maximum value of 7.14 percent, and M2 with an average value of 18.77 percent is also observed.

Table 1. Descriptive Statistics

	<i>Mean</i>	<i>Std. Deviation</i>	<i>Minimum</i>	<i>Maximum</i>
<i>ROA</i>	1.75	0.01	0.05	8.15
<i>LIQ</i>	13.07	7.65	1.9	37.52
<i>ME</i>	24.61	12.08	0.32	109.40
<i>AQ</i>	1.94	2.44	0	17.99
<i>OE</i>	4.70	1.46	0.11	10.63
<i>CPI</i>	84.29	27.08	37.20	125.14
<i>IR</i>	2.99	2.23	0.13	7.41
<i>M2</i>	18.77	5.40	4.45	30.21

Correlation analysis

Table 2 displays the findings of an analysis that correlated bank profitability with explanatory variables. The findings demonstrate a clear correlation between profitability and the following variables: liquidity (LIQ), managerial effectiveness (ME), assets quality (AQ), interest rate (IR), CPI, and M2. Similarly, operational effectiveness (OE) exhibits the inverse link between profitability (ROA).

Table 2. Correlation results

	<i>ROA</i>	<i>LIQ</i>	<i>ME</i>	<i>AQ</i>	<i>OE</i>	<i>CPI</i>	<i>IR</i>	<i>M2</i>
<i>ROA</i>	1.0000							
<i>LIQ</i>	0.1970	1.0000						
<i>ME</i>	0.6022	0.0047	1.0000					
<i>AQ</i>	0.3628	0.1003	0.2690	1.0000				
<i>OE</i>	-0.1513	-0.0841	-0.2320	-0.2640	1.0000			
<i>CPI</i>	0.0946	0.3397	0.0421	-0.2383	0.1246	1.0000		
<i>IR</i>	0.0913	-0.3178	-0.0342	0.0701	0.2077	-0.3609	1.0000	
<i>M2</i>	0.0396	0.0342	0.0496	-0.1882	0.1644	-0.0423	0.1860	1.0000

LIQ also demonstrates a positive association with ME, AQ, CPI, and M2 and a negative link with OE and IR. While OE and IR indicate a negative link with ME, AQ, CPI, and M2 are good correlations with ME. Similarly, AQ demonstrates a positive connection with IR and a negative connection with OE, CPI, and M2. It has been noted that OE has a positive link with CPI, IR, and M2, while CPI has a negative link with IR and M2. Last but not least, IR demonstrates a good correlation with M2.

Model selection

In order to select the preeminent model between the Pooled and Panel models, this study employed the Breusch and Pagan Lagrangian multiplier test (LM). It used the Hausman test [36]–[40] to select the best model between the FE and RE models.

The outcome of the LM test is displayed in Table 3. The outcome indicates that the Pooled OLS model is unsuitable, as indicated by the χ^2 value of 243.22 ($p=0.0000.01$), which rejects the null hypothesis. It implies that either a FE or RE model would be appropriate. As a result, the Hausman test is applied to selecting the model between the FE and RE. The Hausman test outcome is displayed in Table 4.

Table 3's outcome shows that the χ^2 value is 2.29 ($p=0.9423>0.05$). The null hypothesis that the RE model is acceptable is not rejected. Thus, the RE model is used in this study to scrutinize how macroeconomic and bank-specific factors affect profitability. Table 4 displays the findings of regression analysis using the RE model.

Table 3. The result from the LM test

	Var	sd = sqrt(Var)
ROA	.827907	.9098939
<i>E</i>	.2465578	.4965458
<i>U</i>	.2499969	.4999969
Test: $Var(u) = 0$ $\chi^2(01) = 243.22$ $Prob > \chi^2 = 0.0000$		

Table 4. Result of the Hausman Test

	(b)Fixed Effect	(B)Random Effect	(b-B) Difference	sqrt(diag(V_b-V_B))
<i>LIQ</i>	.0127305	.0152674	-.0025368	.0021767
<i>ME</i>	.0408254	.0406082	.0002172	.0007781
<i>AQ</i>	.0833107	.0854002	-.0020895	.003861
<i>OE</i>	.0231785	.0145899	.0085886	.0136989
<i>CPI</i>	.003144	.0032308	-.0000868	.0002224
<i>IR</i>	.0667385	.0705308	-.0037923	.0034144
<i>M2</i>	.0004043	.0005861	-.0001818	.0005509
$\chi^2(7) = 2.29$			$Prob > \chi^2 = 0.9423$	

Regression analysis

The outcome of regression analysis utilizing the RE model is displayed in Table 5.

Table 5. Regression Result

Variable	Coefficient	Std. Error	t-statistics	p-value
<i>LIQ</i>	0.0153	0.0066	2.32	0.020
<i>ME</i>	0.0406	0.0036	11.42	0.000
<i>AQ</i>	0.0854	0.0182	4.68	0.000
<i>OE</i>	0.0146	0.0360	0.40	0.686
<i>CPI</i>	0.0032	0.0015	2.13	0.034
<i>IR</i>	0.0705	0.0178	3.96	0.000
<i>M2</i>	0.0006	0.0065	0.09	0.928
Cons.	-0.1578	0.2692	-0.59	0.558
R^2 : overall = 0.4687		Wald $\chi^2(7) = 231.73$		$Prob > \chi^2 = 0.0000$

The findings show that the profitability of banks operating in Nepal is significantly positively impacted by bank-specific variables like liquidity (LIQ), managerial

effectiveness (ME), asset quality (AQ), and macro-economic variables like interest rate (IR) and consumer price index (CPI). Similarly, the outcome demonstrates the negligible positive effects on profitability of one bank-specific variable—operational efficiency (OE)—and one macroeconomic variable—money supply (M2).

The beta coefficient of liquidity (LIQ) 0.0153 (t-value 2.32) indicates a considerable positive impact of LIQ, i.e., the cash reserve ratio, on the performance. This result is compatible with the conclusion of Isayas [3]. It proves that the bank's profitability would increase with greater liquidity. Similarly, the beta coefficient of managerial efficiency (ME) 0.0406 (t-value 11.42 and p-value $0.000 < 0.01$) demonstrates that ME has a very favorable impact on profitability, which is aligned with the result and supports the results of Haidary [1], Ongore [22]. The bank's profitability improves with an increase in the ME. In order to boost profitability, banks need to improve their managerial effectiveness. Likewise, the beta coefficient of assets quality (AQ) 0.0854 (significant at 1 percent level) implies that banks' profitability is significantly impacted favorably by AQ. It suggests that AQ has a favorable effect on banks' profitability.

However, the macroeconomic variable CPI exhibits a beta coefficient of 0.0032 (significant at a 5 percent level), suggesting Nepali commercial banks can boost their profitability when inflation rises. This result contrasts with those of Ongore [22] and Tegar [41] and is comparable to those of Anshu [2]. Similarly, another essential macroeconomic variable, IR, has a coefficient of 0.0705 (significant at 1 percent). It shows that interest rates positively impact the profitability of banks. It shows that Nepali commercial banks can gain from an increase in the economy's interest rate and boost their profitability.

Lastly, operational efficiency (OE), a bank-specific variable, and M2, a macroeconomic variable, demonstrate a negligible beneficial impact on profitability. However, the influence of OE, i.e., the ratio of total interest income to operating expenses on profitability, is insignificant. Nepalese commercial banks can achieve higher profitability by increasing OE. Likewise, the insignificant positive influence of M2, i.e., broad money supply, also indicates that as the nation's money supply increases profitability of Nepalese commercial banks also increases.

4. CONCLUSION

To explore the effects of various factors on commercial banks' profitability in Nepal, this paper utilized the CPI, IR, and the growth rate M2 as macroeconomic factors. At the same time, LIQ, ME, and OE are employed as bank-specific elements. This study's main finding is that macroeconomic conditions and internal aspects notably influence profitability.

This study also concludes that commercial banks' profitability in Nepal is significantly positively impacted by bank-specific variables, specifically LIQ, ME, AQ, and macroeconomic variables, specifically CPI and IR. Hence, this analysis shows that raising LIQ, ME, and AQ will boost profitability. They can also boost profitability as the CPI and IR of the economy rise.

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