# Impact of Liquidity on Profitability of Commercial Banks in Nepal

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*Abstract*

*The purpose of this study was to examine the effect of liquidity on the profitability of Nepalese commercial banks. The study included five commercial banks and spanned the years 2013 to 2021. Secondary data was analyzed, which was obtained from bank supervision reports published by Nepal Rastra Bank and annual reports of the selected commercial banks. The liquidity variable was measured by the credit to deposit ratio, asset quality, and liquidity ratio, while the profitability variable was measured by return on assets and net interest margin. A regression model was used to analyze the effect of liquidity on profitability, and the data was analyzed using Software EViews 12. The findings revealed that asset quality (AQ) has a significant negative impact on the return on assets (ROA). Credit to deposit ratio (CD) has a positive and significant impact on commercial banks' net interest margin (NIM), whereas asset quality (AQ) has a negative and significant impact on commercial banks' net interest margin (NIM).*

*Keywords: Liquidity, Profitability, Return on assets, Net interest margin*

## I. INTRODUCTION

In the past few years, financial institutions have undergone a significant global shift. As a financial institution, the banking industry faces several difficulties, including advances in technology, heightened competition, and market movement due to these significant changes. Bank efficiency has been a crucial concern to maintain competition in the financial industry. The effectiveness of the overall financial system is substantially influenced by the banking sector. The banking sector provides an effective institutional framework for mobilizing resources and shifting them from less important applications to more profitable investments (Wilner, 2000). The requirement to increase profit, maintain a high degree of liquidity, and maximize shareholder net worth is a few of the key corporate objectives.

The most crucial components of the banking industry are profitability and liquidity. The significance of liquidity management is growing because it has an impact on business profitability

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, a study of liquidity is extremely important to both internal and external experts (Bhunia, 2012). A banking system's lifeblood is liquidity (Cucinelli, 2013). The aim of liquidity management, according to Biety (2003), is to steer banks toward a financial position that enables them to meet their financial obligations. When it comes to managing liquidity, having liquidity that is well-balanced with profitability is crucial.

The two aspects of a company that provide us with the most full information about how well a business is doing are liquidity and profitability. Although maximization of shareholder value is still the primary goal of every company, maintaining a firm's liquidity is still a crucial goal, and there should be a balance between the various interests. According to Raheman and Nasr (2007), the character of a firm is typically driven by its need for liquidity, and there is no set rule for determining the ideal level of liquidity that a company should have to have a positive impact on its earnings. Short-term liquidity is crucial since it reduces the likelihood that a company won't be able to fulfil its short-term obligations. A company's ability to maintain liquidity is crucial for survival. Therefore, to secure a company's survival and to provide the best return for its shareholders, a financial manager must strike the correct balance between liquidity and (Shin & Soenen, 2000).

Bank liquidity is defined as cash on hand, securities, the capacity of the bank to convert an asset into cash, and unused bank lines of credit. All maturing unsecured debt obligations with a one-year time horizon must be paid with sufficient liquidity. It is the extent to which any asset can be converted into cash or how simple a process it is to convert any asset into cash (Nwaezeaku, 2008; Anyanwu, 1993). The liquidity position of commercial banks is normally monitored and measured by the liquidity ratio (Rychtarik, 2009). The commercial bank's liquidity, which comprises promises for lending and investing as well as withdrawals, deposits, and accrued liabilities, shows its capacity to pay its obligations when they are due from the contractor (Amengor, 2010). For a company to operate effectively and profitably, the liquidity stage must be balanced. As a result, the banking industry wants to choose the highest level of liquidity to ensure high profitability. Liquidity shouldn't be excessively high or low. Instead, it must keep its stage at a respectable level. To keep the public's trust in banks, financial institutions' involvement in liquidity is crucial. To improve the banks' profitability and reap the rewards of the money's time value, it is necessary to invest the excess liquidity that is now accessible at the banks in a variety of investment opportunities (Alshatti, 2015).

A business's ability to generate income from its assets is a sign of profitability. Being able to turn a profit from all of an enterprise's business activities is what is meant by profitability (Owolabi &

Obida, 2012). When sales outpace expenses, a corporation (in this case, a bank) is said to be profitable. Banks produce income through their operations, and expenses are the cost of the resources utilized to do so. The fundamental goal of businesses is to be profitable. Without profitability, businesses cannot endure in the market over the long term. Therefore, the organization must assess historical profitability, determine current profitability, and project future profitability. According to Athanasoglou et al. (2008), factors such as firm management choices and other policy measures taken by the bank, such as the level of liquidity, quantity of capital, and level of expenditure, impact a bank's profitability. Stock market growth, ownership, market concentration, and other macroeconomic factors are examples of external and industry-related factors.

According to many studies on bank profitability and efficiency performance, return on assets and return on equity are two of the most highly suggested markers of bank efficiency and performance (Erins, 2013). Bourke (1989) underlined that both internal and external factors affected the profitability of commercial banks. Net income relative to all assets, capital, and reserves makes up the internal variables. According to Rasiah et al. (2010) studies, internal elements that affect profitability include capital structure, deposit mobilized, personnel spending, operating expenditure, investments, asset portfolio mix, liquidity ratios, and loans As external factors, he mentioned firm size, interest rate, rules, market expansion, and market share. Inflation and GDP were highlighted as external factors, whereas capital, loans, deposits, and bank size were mentioned as internal factors affecting bank profitability.

Due to the importance of banking to Nepal's economic system, research on the sector's performance and an analysis of its profitability drivers is still an important field of study for the financial system. To provide insight for increasing better asset and legal responsibility control of banks in Nepal, the study seeks to examine how liquidity influences the profitability of Commercial Banks in Nepal.

## II. STATEMENT OF THE PROBLEM

A commercial bank's profit is reduced by holding more liquid assets, and the bank's investment prospects are hampered, which could result in growth and expansion. The commercial bank will need to maintain fewer liquid assets on its balance sheet, though, to increase profit. A commercial bank will be exposed to liquidity risk and excessive interest costs if it holds an excessive amount of illiquid assets (Casu et al., 2006).

Banks should be effective in accepting deposits and disbursing credit. A lack of sufficient liquidity can cause a bank to experience major financial problems. Therefore, managing the bank's liquidity position will aid in generating a sizable profit. The commercial banks of Nepal are determined to have minimally mobilized capital in the productive sectors. The bank is unable to collect the funds and assign them to profitable ventures. The effectiveness and flaws in the financial statement

analysis have an impact on the bank's financial performance. It illustrates how poorly liquidity management is done. As a result of their inability to pay off short-term debts and other financial obligations, banking sectors are having a difficult time sustaining their liquidity positions. This has a negative influence on their financial performance (Shrestha & Jha, 2020).

Making money is commercial banks' primary goal by providing services to customers. Inconsistencies have been identified in Nepal's profitability rate, operational costs, dividend distribution to shareholders, etc. In light of this, the following research questions are included in this study:

- Is there any relationship between liquidity and profitability of Nepalese commercial banks?
- Whether there is an effect of liquidity position on the profitability status of Nepalese commercial banks?

## III. OBJECTIVES OF THE STUDY

- To measure the relationship between liquidity and profitability of Nepalese commercial banks.
- To examine the effect of liquidity position on the profitability status of Nepalese commercial banks.

## IV. SIGNIFICANCE OF THE STUDY

The banking industry has established itself as a significant player in the development of the financial sector, the growth of the economy, and, most significantly, the creation of jobs in the nation in the modern, competitive, and developing globe. The foundation of any economy's financial system is its bank, and banks are crucial to a nation's economic growth. The primary function of banks is to raise cash from the general public in the form of deposits, use those funds, along with their resources, to swiftly meet client needs, pay interest on deposits, and cover operating costs.

Banks keep sufficient liquidity for this reason and generate profits from their operations. Every commercial organization depends on profit to stay in business, and profitability shows how the quantity of profit in its entirety relates to numerous other aspects. In any case, banks often have to pay far more attention to balancing profitability and liquidity than other business concerns. Both liquidity and profitability are necessary to cover the costs incurred by banks and satisfy customers' rapid needs. Moreover, the financial performance of the concerned business can be improved with the help of this study. Academics, students, professors, and practitioners in the subject of accounting and finance will be able to use and benefit from this study. This study provides information that will help shareholders, financial organizations, stock exchanges, stock traders, clients, depositors, and debtors determine which banks are the best to work with on an unbiased basis.

## V. HYPOTHESIS OF THE STUDY

The research hypothesis is a prediction of outcome which is written in the form of a statement and which is yet to be tested. To find out whether the relationships theorized in the conceptual research framework hold, the following hypotheses are drawn:

- $H_1$: There is a significant relationship between liquidity and profitability of Nepalese commercial banks.

- $H_2$: There is a significant effect of liquidity on the profitability of Nepalese commercial banks.

## VI. LITERATURE REVIEW

Shrestha (2012) conducted a study to assess the impact of liquidity on the profitability of commercial banks in Nepal. For the period between 2003/04 and 2010/11, a total sample of eight commercial banks founded in or before 1995 was used for the study. Using a variety of financial techniques, the study looked at their liquidity management and profitability positions. The study's findings demonstrated that banks' "NRB to deposit ratio" and "Cash-vault to deposit ratio" have a favourable, significant impact on Nepal's profitability. Additionally, it has stated that "the liquid fund to deposit ratio," "cash and bank balance to deposit ratio," and "liquid fund to current liabilities ratio" have no significant effects on profitability.

Abdullah and Jahan (2014) focused on two important issues for the main stakeholders of a bank, which are liquidity and profitability. As a result, this study focused on specific ratios over five years to assess the influence of liquidity and profitability on the private commercial banks of Bangladesh. To conduct the study, five private commercial banks were chosen. Loan Deposit Ratio, Deposit Asset Ratio, and Cash Deposit Ratio were chosen as independent variables, while profitability indicators ROA and ROE were used as dependent factors. Basic regression analysis was used in the study to evaluate the hypotheses. However, the null hypothesis was accepted in this analysis, showing that there is no significant association between liquidity and profitability.

Khan and Ali (2016) conducted a study to find the nature of relationships and the strength of relationships that exist between the variables. To determine the nature and extent of the relationship between the dependent and independent variables, correlation and regression were utilized, respectively. For the analysis, secondary data that was taken from Habib Bank Limited's annual accounts for the previous five years (2008–2014) was used. After doing correlation and regression analyses, it was shown that there was a strong positive correlation between bank profitability and liquidity.

Rijal (2019) investigated the impact of liquidity on the profitability of Nepalese commercial banks using a sample of eight commercial banks from 2011 to 2017. A convenience sampling technique was used. This study relied on secondary data gathered from Nepal Rastra Bank's bank supervision

reports and the annual reports of the selected commercial banks. The findings revealed that credit to deposit, asset quality, and liquidity ratios are all significant and positive with regard to net interest margin, but only the credit to deposit ratio is significant and positive with regard to return on assets.

In the context of Nepal in a more recent period, Khati (2020) investigated the relationship between liquidity and the profitability of commercial banks in Nepal. Ten out of twenty-seven listed commercial banks were involved in the study, covering the period from 2013 to 2019. This study was based on secondary data, which was extracted from bank supervision reports published by Nepal Rastra Bank and annual reports of the selected commercial banks. The liquidity indicators were credit-deposit ratio (CDR), cash-deposit ratio (CADR) and asset quality (AQ), while return on equity (ROE) and return on assets (ROA) was the proxies for profitability. According to the Hausman test and following the fixed effects approach, the results revealed that asset quality (AQ) has a negative and significant association with return on assets (ROA), but a positive and significant link with return on equity (ROE). The link between the cash deposit ratio (CADR), return on assets (ROA), and return on equity was both positive and insignificant (ROE). The study does, however, show that the link between credit deposit (CDR) and return on equity was insignificant and that the association between ROA and CDR is positive (ROE).

## VII. RESEARCH FRAMEWORK

A research framework offers a foundational framework or model to support our group's research efforts.
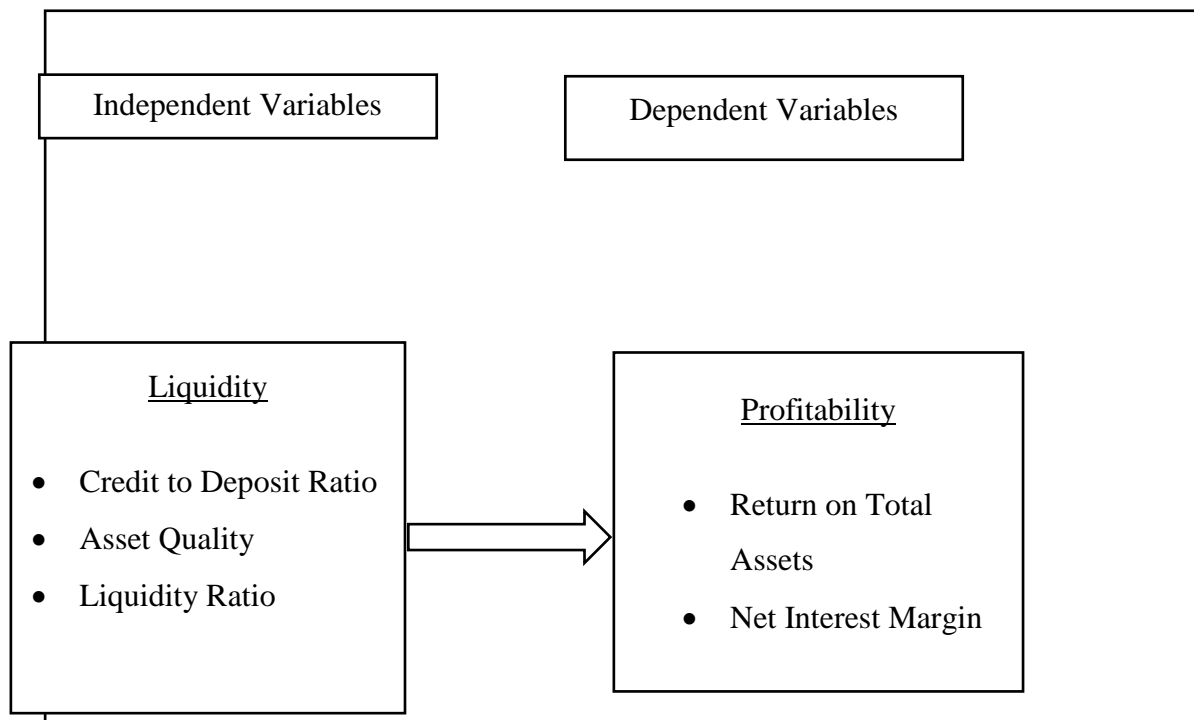


*Fig.1.* Conceptual framework

### Introduction to variables

### 1. Liquidity Ratio

A bank is a business that handles money. Cash is the most liquid asset and is regarded as a bank's line of defense. To meet the monetary needs of depositors, the bank should keep a specific amount of cash on hand. To reflect the relation between bank profitability and liquidity, the variables like credit to deposit ratio, asset quality, liquidity ratio and inflation rate are used as a measure of liquidity.

**Credit to Deposit Ratio (CD):** Also termed as loan to deposit ratio measures the bank's capability to fulfil its financial obligations through deposits, it is calculated as total loan divided by total deposits, and banks with lower loan to deposit ratio tend to have higher liquidity. If the ratio is too high, it means that the bank may not have enough liquidity to cover any unforeseen fund requirements.

Credit to Deposit Ratio = Total loan /Total deposit

**Asset Quality (AQ):** The ratio of non-performing loans (NPL) to total loans measures the quality of outstanding loans i.e. smaller NPL ratio indicates smaller losses for banks and vice-versa. Higher NPL reduces cash flow and creates the danger of not having sufficient cash to meet payment or clear obligations in a timely and cost-effective way, which in turn influences liquidity management and thus affects bank profitability as well.

Asset Quality = Non-performing loan /Total loan

**Liquidity Ratio (LR):** This ratio of liquid assets to total assets measures the bank's liquidity. Calculating the ratio of liquid assets to total assets explains the importance of a bank's liquid assets among its total assets. It indicates the proportion of a banker's total assets that can be converted into cash at a short notice.

 Liquidity Ratio **-** Liquid Assets /Total Assets

### 2. Profitability Ratio

The profitability ratio is one of the important indicators of operating efficiency. The profitability ratio is the best indicator of the overall efficiency of the bank.

**Return on Total Assets (ROA)** - Return on total assets or simply return on assets, measures the productivity of the assets. This ratio judges the effectiveness of using the total fund supplied by the owners and creditors. ROA is calculated as under;

Return on Total Assets = Net Profit after Tax /Total Assets

**Net Interest Margin (NIM) -** Net interest margin (NIM) is a measure of the net return on the bank's earning assets, which include investment securities, loans, and leases. It is the ratio of interest income minus interest expense divided by earning assets. NIM is calculated as under;

Net interest margin = (Net return on investment – Interest paid) / Average Assets

## VIII. METHODOLOGY

### Research Design

This study seeks to measure and examine the relationship between liquidity and profitability position of the selected commercial banks and provide suggestions based on the evaluation. To accomplish this objective descriptive and analytical research approach has been adopted.

### Population and Sample

There are 26 commercial banks as of July 2022 (Wikipedia, 2022). All the listed commercial banks in the country are the target population. Among 26 commercial banks, 5 banks which have not gone through merger, acquisition or up-gradation till now have been taken for analysis purposes. The sample had been selected based on the convenience sampling technique.

**Table 1. List of Banks with Study Period and Number of Observations**

| Name of the bank | Study Period | Observation |
|---|---|---|
| Nepal Bank Limited | 2012/13- 2020/21 | 9 |
| Everest Bank Limited | 2012/13- 2020/21 | 9 |
| Standard Chartered Bank Limited | 2012/13- 2020/21 | 9 |
| Nepal SBI Bank Limited | 2012/13- 2020/21 | 9 |
| Nabil Bank Limited. | 2012/13- 2020/21 | 9 |
| Total | | 45 |

### Sources of Data and Data Collection Procedures

This study is based on secondary data sources. Data for this study was gathered from commercial banks' annual reports and the NRB's annual supervision report. In addition, several books, journals, articles, and magazines, as well as various websites, have been consulted for information.

### Model Specification

The regression models for the analysis of the relation between the variables are listed below:

$Y = \beta_0 + \beta_1 CD + \beta_2 AQ + \beta_3 LR + \varepsilon$

MODEL 1: $ROA = \beta_0 + \beta_1 CD + \beta_2 AQ + \beta_3 LR + \varepsilon$

MODEL 2: $NIM = \beta_0 + \beta_1 CD + \beta_2 AQ + \beta_3 LR + \varepsilon$

Where,

$Y$ = Dependent Variable

β0 = Intercept of dependent variable

βi = coefficient of independent variables

ε = error terms.

## IX. EMPIRICAL RESULTS AND ANALYSIS

### Descriptive Statistics

Descriptive statistics quantitatively describe the characteristics of data among the selected variables. The mean and standard deviation of all selected variables are computed using descriptive statistics. The mean represents the average value of all observations, whereas the standard deviation represents the degree of variation in the values of the observations.

### Table 2. Descriptive Statistics

|     | N | Minimum | Maximum | Mean | Std. Deviation |
|-----|---|---------|---------|------|----------------|
| ROA | 45 | .002508 | .030293 | .018928 | .006819 |
| NIM | 45 | .017201 | .441480 | .054583 | .079154 |
| CD  | 45 | .489187 | 7.865723 | .855855 | 1.075108 |
| AQ  | 45 | .001387 | 5.345685 | .230987 | .957763 |
| LR  | 45 | .009302 | .452072 | .238178 | .101717 |

Table 2 depicts that ROA ranges from .002508 to .030293 with a mean of .018928 and a standard deviation of .006819. NIM ranges from .017201 to .441480 with a mean of .054583 and a standard deviation of .079154. Similarly, CD ranges from .489187 to 7.865723 with a mean of .855855 and a standard deviation of 1.075108. Likewise, AQ ranges from .001387 to 5.345685 with a mean of .230987 and a standard deviation of .957763. Moreover, LR ranges from .009302 to .452072 with a mean of .238178 and a standard deviation of .101717.

### Correlation Analysis

The correlation matrix table describes the correlation coefficients between dependent and independent variables. The correlation coefficient was used to explain the relationship between the dependent and independent variables. The correlation coefficient's value ranges from -1 to +1. The variables are said to have a complete negative correlation if the correlation coefficient is exactly -1. The variables are said to have a perfect positive correlation if the correlation coefficient is exactly +1.

The correlation between different measures of liquidity management and the profitability of Nepalese commercial banks is presented below.

### Table 3. Correlations coefficients for ROA

|     | ROA   | CD    | AQ    | LR  |
|-----|-------|-------|-------|-----|
| ROA | 1     |       |       |     |
| CD  | .150  | 1     |       |     |
| AQ  | -.295 | -.065 | 1     |     |
| LR  | .069  | .286  | -.154 | 1   |

The aforementioned table shows that there is a positive correlation, or a positive significant association, between the dependent variable ROA and independent variables CD and LR. On the contrary, there is a negative relationship between ROA and AQ.

### Table 4. Correlations Coefficients for NIM

|     | NIM   | CD    | AQ    | LR  |
|-----|-------|-------|-------|-----|
| NIM | 1     |       |       |     |
| CD  | .009  | 1     |       |     |
| AQ  | -.088 | -.065 | 1     |     |
| LR  | .007  | .286  | -.154 | 1   |

The aforementioned table shows that there is a positive correlation, or a positive significant association, between the dependent variable NIM and independent variables CD and LR. On the contrary, there is a negative relationship between NIM and AQ.

**Regression Analysis**

To test the statistical significance and strength of the result, regression models have been used. The following two tables represent the analysis of the secondary data. Tables 5 and 6 present the regression result for the dependent variable and independent variables.

### Table 5. Regression Analysis of Return on Assets (ROA)

Dependent Variable: ROA
Method: Least Squares
Sample: 1 45
Included observations: 45

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|-------|
| CD | 0.000859 | 0.000978 | 0.878337 | 0.3849 |
| AQ | -0.002055 | 0.001065 | -1.929851 | 0.0406 |
| LR | -0.000915 | 0.010443 | -0.087612 | 0.9306 |
| C | 0.018886 | 0.002638 | 7.159592 | 0.0000 |

| | |
|---|---|
| R-squared | 0.5004717 |
| Adjusted R-squared | 0.459208 |
| F-statistic | 1.598521 |
| Prob (F-statistic) | 0.004448 |

Table 5 shows regression analysis results for variables based on panel data from 5 commercial banks. This table shows the regression result of model one as ROA = β0 + β1CD + β2AQ + β3LR + ε, in the form of simple and multiple regressions.

According to Table 1, the R-squared value is 45.92 percent, meaning that 45.92 percent of the dependent variable can be predicted by the independent variables (CD, AQ, and LR) and the remaining percent can be explained by additional factors not included in this study. The results show that the credit-to-deposit ratio has a positive but insignificant impact on commercial banks' return on assets. The liquidity ratio has a positive and no significant impact on the return on assets of commercial banks. However, asset quality has shown a negative significant impact on return on assets only when overall regression analysis is done rather than individually.

**Table 6. Regression analysis of Net Interest Margin (NIM)**

Dependent Variable: NIM
Method: Least Squares
Sample: 1 45
Included observations: 45

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| CD | 0.000431 | 0.011955 | 0.036040 | 0.0371 |
| AQ | -0.007326 | 0.013015 | -0.562870 | 0.0476 |
| LR | -0.006408 | 0.127602 | -0.050217 | 0.9602 |
| C | 0.057433 | 0.032233 | 1.781805 | 0.0822 |

| | |
|---|---|
| R-squared | 0.450471 |
| Adjusted R-squared | 0.409208 |
| F-statistic | 0.107088 |
| Prob (F-statistic) | 0.009554 |

Table 6 shows regression analysis results for variables based on panel data from 5 commercial banks. This table shows the regression result of model one as NIM = β0 + β1CD + β2AQ + β3LR + ε, in the form of simple and multiple regressions.

According to Table 1, the R-squared value is 40.92 percent, meaning that 40.92 percent of the dependent variable can be predicted by the independent variables (CD, AQ, and LR) and the remaining percent can be explained by additional factors not included in this study. The results show that the credit-to-deposit ratio has a positive and significant impact on commercial banks' net interest margins. Likewise, asset quality has shown a negative and significant impact on the net interest margin of commercial banks. However, the liquidity ratio has shown a negative and no

significant impact on return on assets only when overall regression analysis is done rather than individually.

## X. CONCLUSIONS AND RECOMMENDATIONS

The primary goal of this study was to determine whether the amount of liquidity maintained by banks affects their profitability, as these two issues are extremely important to bank stakeholders. The shareholders want the highest possible return on their investment, while the depositors want the highest possible liquidity as a guarantee of safety and the ability to pay their money on demand. Potential investors should consider the statistical significance of liquidity on profitability. When considering the profit motive, the impact of bank liquidity cannot be underestimated. The information was gathered from Nepal Rastra Bank's bank supervision reports and the annual reports of five banks from 2013 to 2021. E-views 12 was used to analyze the data.

According to the findings of the overall correlation analysis, ROA has a positive and significant relationship with the credit to deposit ratio and the liquidity ratio, implying that an increase in the credit to deposit ratio and the liquidity ratio will increase the ROA of Nepalese commercial banks. Similarly, it is discovered that NIM has a significant and positive relationship with the credit to deposit ratio and the liquidity ratio, indicating that an increase in any of these three leads to an increase in NIM. The regression model results revealed that asset quality has a significant negative impact on the return on assets. The credit-to-deposit ratio has a significant positive and significant impact on commercial banks' net interest margin. Similarly, asset quality has had a significant negative impact on the net interest margin.

From all of the above observations, the study recommends that banks should not only prioritize profitability but also ensure effective and efficient liquidity management. This will help the Nepalese commercial banks grow. Banks should not have excessive liquidity but should have other methods of maintaining liquidity, such as overnight borrowing or bill discounting. To increase the return on investment, excess liquidity should be invested in short-term instruments.

The regulatory body, the NRB, should establish forums for dialogue between policymakers and senior management of commercial banks to ensure that monetary policies are practical and conducive to the growth of the banking industry. The central bank should allow commercial banks to find alternative ways to meet excess withdrawals and reduce liquidity risks. The regulatory authorities should encourage the use of credit cards and checks for large transactions. This reduces the movement of cash from the vault and allows banks to easily meet unexpected withdrawals.

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