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Liquidity Management and Its Effect on Bank Profitability: Bangladesh perspective

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Abstract: Banks are the lifeblood of today's economy. Banks are crucial in mobilizing economic resources. The performance of banks has a significant impact on overall economic performance. Liquidity and profitability are vital in the banking industry. The bank will be unable to serve daily activities if it does not maintain adequate liquid resources. Excess liquidity will also lead to lower profitability. We attempted to determine the effects of liquidity on the banking sector's profitability in this study. The study uses financial information from 2010 to 2019 from the selected banks. The study mainly focuses on the private commercial banks of Bangladesh. Deposits, loans, and advance and net profit are the variables we focused on for performance analysis. As per outcomes of the performance analysis, profitability ratios like ROA and ROE are on the declining trend. The Loan-to-Deposit Ratio (LDR) is almost stable throughout the year in the banking sector, with no significant fluctuations. A linear regression model has been used to discover the association between loans and advances and net profit. It demonstrates a positive favorable correlation between the variables. The result shows that the banking industry in Bangladesh is heavily reliant on loans and advances for its profitability. If the volume of loans and advances rise by 1 BDT, the net profit rises by 0.03 BDT. It concludes that commercial banks in Bangladesh should be more efficient in managing their resources. Banks should mitigate their cost-to-income ratio (CIR); while incentives should be provided for boosting profitability ratios.

Keywords: ROA, ROE, Liquidity, Profitability, Commercial banks, LDR

1. Introduction

In recent years, financial institutions all over the world have undergone significant changes. As a financial center, the banking industry confronts several challenges, including advanced technology and increased market competition as a consequence of this significant shift. For this reason, preserving the balance between liquidity and profitability has become a significant problem for banks to stay competitive in the stock market. Nowadays, excessive competition in the monetary and financial markets put various pressures on banks to control liquidity and improve monetization. Also, technological advances, communication systems, and ultra-fast data processing systems create opportunities for providing a diversity of services through increased productivity and electronic means. Thus, to balance a bank's efficiency and risk, shareholders and depositors need to improve their satisfaction by maximizing profits and ensuring a return on capital. The cash or cash equivalent used in a day-to-day business that responds to a short-term operating activity is called liquidity. Analysts believe that liquidity plays a crucial role in daily investment and expenditure to repay its short-term liabilities and debts (Bhunia, 2010).

By comparison, the low liquidity status undermines its profitability and creates a kind of unpredictable climate. A liquidity crisis may also bring insolvency or bankruptcy to an organization (Niresh, 2012). The amount that a business uses its resources to generate revenue beyond its expenses is called profitability (Niresh, 2012). The prerequisite for a business to be profitable is to encourage entrepreneurs to take the risk of investing in a firm, so the first important aspect of profit is to reward the owners for the risks taken when investing in the business. Thus, profitability demonstrates an excess of revenues over expenses (Owolabi et al., 2011).

According to Anticipated Income theory, concurring to these hypothesis investors once more started to see at their advance portfolio as a source of liquidity. This theory empowered bankers to treat long-term advances as potential source of liquidity. Utilizing the anticipated income theory, these credits are regularly paid off by the borrower in an arrangement of installments. Seen in this way, the bank's credit policy gives the bank with continuous flow of funds that adds to the bank's liquidity. In addition, indeed in spite of the fact that the advances are long term, in a liquidity emergency the bank can offer the credits to get required cash in secondary markets, (Alshatti,2014,P63).

According to Liability Management theory, banks can fulfill liquidity needs by borrowing in the money and capital markets. The basic commitment of this hypothesis was to consider both sides of a bank's balance sheet as sources of liquidity (Emmanuel, 1997). The research reflects liquidity is comparatively greater than profitability, as it ensures business continuity while the two situations' correlative importance is compared, (Don, 2009).

Profitability is more critical due to convertibility, which is the quality that makes it possible to convert money and other financial instruments into liquidity. He also stressed that the value of profitability does not mean that more liquidity is valuable. Therefore a low-profit margin implies poor management that makes investors hesitant to invest capital in businesses because there is a chance of losses (Walt, 2009).

However, profitability is significant for conducting the continuous operations of a banking institution's and paying a fair exchange to the shareholders (Ponce, 2011). While profit rewards a company for successfully taking risks, too much or too little risk can prove detrimental, making the security of bank deposits risky.

Hence, banks will have to pay particular focus on the effectiveness of the criteria' to ensure their stability. In reverse, the synchronization of profitability and liquidity formation must be too restricted, which is seen as very important to ensure improvement (Pancheva, 2014). This research analyzes commercial banks' liquidity and profitability ratios in Bangladeshi banking sectors for over 20 years.

1.1. Problem Statement

The banking industry is currently expanding at a rapid pace. So many customers in those banks will begin to apply for credit as their capital. In contrast, banks need to be ready to lend money at any time. When the bank cannot meet all these demands, a kind of unexpected problem arises. It will cause customers to lose trust in those banks and fierce competition as the borrowers may change the track of other banks. Therefore, every bank should maximize their profits to balance their customers' financial needs and the bank's benefits, despite having sufficient liquidity because liquidity and profit level have different effects. When banks try to maximize their profits, which can create technical and financial difficulties by rejecting liquidity, it can create various problems.

1.2. Objectives of the study

The study's primary goal is to look into how liquidity affects profitability**.** Specific targets to be achieved are as follows:

- To evaluate the viability of commercial banks of Bangladesh;
- To identify the liquidity situation of Bangladeshi commercial banks;
- To investigate the effect of liquidity on Bangladeshi commercial banks' return;
- To look at deposits, loans and advances and net profits of individual commercial banks in Bangladesh; and
- To investigate the numerical data of commercial banks in Bangladesh using ratios and statistical metrics.

1.3. Literature Review

Various authors and researchers have conducted several studies to investigate the impact of liquidity on the banking industry's profitability. Surprisingly, the relationship between liquidity and profitability remains ambiguous in many studies. Some researchers have discovered a positive correlation, while others have discovered a negative correlation. Consequently, some of them have not found any correlation, and others have found both positive and negative outcomes. In their reports, several authors explained that liquidity has a positive profitability effect.

A study conducted by Samuel and Oluwasegun (2015) showed that bank efficiency and liquidity positively correlated. For banks, profitability and liquidity are very delicate and essential issues. As a result, these issues are constantly under scrutiny and always worthy of further investigation.

According to Dabiri et al. (2017), many studies on this subject have been conducted for several years. The ability of a financial institution to meet its creditors' obligations (short term) is defined as adequate liquidity. Profitability is known to be an organization's ability to make a profit. Conversely, in order to preserve liquidity, it must be retained at a balanced stage. The cost-to-profit ratio determines the profitability of a company. Each business aims to extract the most desired profitability; this is why, as a critical solution, every organization should enhance its profitability.

The Malaysian manufacturing sector's liquidity and profitability have a statistically significant moderate positive correlation, according to Akter and Mahmud (2014). A moderate positive relationship has been seen in the correlation coefficient. The outcome indicates that companies with higher liquidity appear to make a better profit. Also, Akinleye and Ogunleye (2019) assessed that financial liquidity helped boost selected Nigerian manufacturing companies' financial efficiency. Furthermore, the cash ratio has a positive influence on some of Nigeria's manufacturing firms' earnings.

In contrast, from 2007 to 2011, Niresh (2012) conducted a study based on five years of data from 31 manufacturing companies listed in Sri Lanka. The research using correlation analysis and descriptive statistics shows that the profitability and liquidity of the listed manufacturing companies in Sri Lanka do not have a meaningful correlation. Mwizarubi et al. (2015) conducted econometric tests and found no vital relationship between bank profitability and liquidity, using all the variables considered in Tanzania's banking industry.

In another context, Ali and Jameel (2019) investigated the role of liquidity management in the profitability of selected Iraqi banks, and their results show the insignificant negative relationship between liquidity and profitability, indicating that an increase in the current ratio led to a decrease in profitability when both ROA and ROE are used to measure profitability. Adebayo et al., (2011) carried out an empirical analysis to determine how commercial banks can improve their liquidity, profitability and the extent to which commercial banks' effective liquidity management affects profitability. Liquidity management has become a crucial aspect of assessing a business organization's success. No firm can thrive without liquidity. A loss-incurring company may be called ill, but a company with no liquidity will face its demise and eventually ruin it shortly (Bardia, 2004). For the trouble-free operation of business activities, it is essential to maintain a reasonable degree of liquidity. Liquidity should neither be insufficient nor excessive. Excessive liquidity indicates accumulated idle funds that create little profit for the business, and inadequate liquidity not only affects the company's creditworthiness in the opposite direction but often disrupts the manufacturing process and hinders its earning potential to a large extent. Liquidity management is often required for the smooth running of the business (Valrshney, 2008).

Furthermore, it can be deduced from the inferable statistical findings that liquidity has a substantial adverse effect on profitability as measured by Return on Assets (ROA) since banks have immoderate liquidity rather than capital to generate professionalism (Satyakama and Bhusan, 2019). No substantial relationship exists between liquidity interventions and the return on equity, irrespective of private commercial banks' form. Without impacting their liquidity, commercial banks should concentrate on increasing their profitability. However, it is not guaranteed because the situation can change, mainly because of changes in the macroeconomic environment beyond commercial banks' control.

According to Ashraf et al. (2017), to satisfy their short-term demand for cash and take advantage of investment opportunities to increase profitability, banks need to maintain a sufficient amount of liquidity. Furthermore, if banks struggle to manage liquidity effectively and efficiently, they will be unable to meet short-term obligations and benefit from the investment capability's luxury. Ibe (2013) stated that each bank must determine its optimal liquidity role to determine the liquidity and profitability trade-off. Furthermore, banks should adhere to a general liquidity management substructure to ensure that they have sufficient liquidity to conduct their operations competently and conduct a scientific study of the evolution of liquidity rates and their ability to balance sources and uses of funds (Alshatti, 2015).

According to Mabnaso et al. (2018), therefore, well-organized and efficient liquidity management for banks' profitable operations and longevity must not be compromised. An acceptable degree of liquidity should consider meeting financial commitments to consumers and optimizing benefits for shareholders. Liquidity management helps build a 'run' in the financial sector by proactive initiatives to increase market awareness and public trust.

2. Method

The methodology relates to an integral part of research and the information collection and arranging activities focused on the study's specific issues. The study is based on secondary data, and this data is taken from a few Bangladeshi commercial banks' annual reports and websites. Also, various articles are considered to select related variables that affect commercial banks' operational effectiveness. From 2010 to 2019, data is collected from observations of selected banks' financial statements. We are attempting to identify all of the liquidity and profitability components, and this article is the result of that effort.

2.1. Data collection

Deposits, advances, net profits, loan-to-deposit ratio (LDR), return on equity (ROE), cost-to-income ratio (CIR), and capital adequacy ratio are all discussed in this paper. In a meaningful study, all deposits, advances, and net profits are accounted for. By examining these sample factors based on this data, we attempted to compare the liquidity and profitability of the three-generation banks. Tabular methods, graphical analyses, relationship analyses, and statistical methods, where applicable, were all used in this study.

2.2. Data Analysis and Interpretation

The collected data is analyzed in order to conclude. Average amounts of 20 banks are used for data analysis, i.e., average deposit, average net profit, and average loans and advances. First, ratio analysis is conducted, and for this, five ratios are used. After that, regression analysis between net profit and loans and advances is conducted. For regression analysis, net profit is taken as a dependent variable, and loans and advances are considered independent variables. The linear regression equation is:

$$\hat{Y} = a + bX$$

$\hat{Y}$ = Net Profit, X= Loans and Advances

3. Findings and Discussions

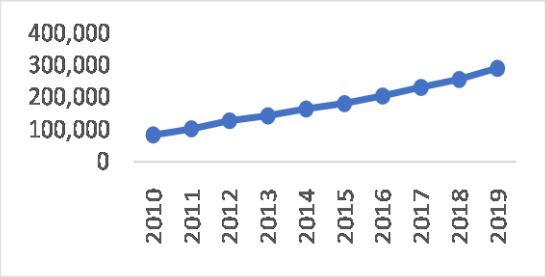
Table 01: Average amount of Deposit, Loans and Advances and Net Profit in different years of 20 Banks. (Amount in Millions)

Year	Deposit	Loans and Advances	Net Profits
2010	83,726	76,429	2,102
2011	103,177	91,418	1,889
2012	128,449	104,008	1,568
2013	143,573	123,430	1,744
2014	164,741	142,701	1,885
2015	181,732	163,769	1,861
2016	205,263	178,877	2,183
2017	231,975	220,412	2,216
2018	256,679	249,958	2,217
2019	291,566	275,261	2,512

Source: Annual report from the year 2010-2019

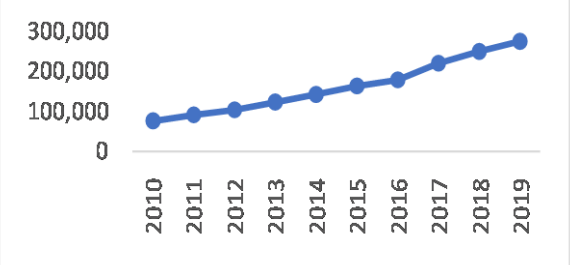
The table 01 shows the average amount of deposit (Loans and Advances and Net profit from the year 2010-2019.) Here in the table average amounts of 20 Commercial Banks are presented. Below three graphs are shown to present the situations graphically.

Figure 01: Average Deposit Collection



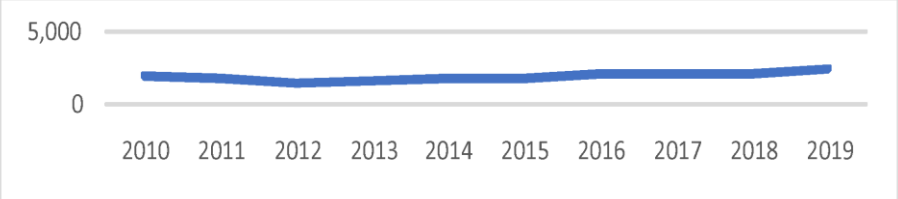
Source: Table 01

Figure 02: Average Loans and Advances



Source: Table 01

Figure 03: Average Net Profit



Source: Table 01

From the graphs drawn above it, we can notice that both the Average deposit and loans and the advance line are increasing sharply, which is a good indicator of the growth and expansion of commercial banks' business. This graph depicting net profit also shows an excellent increasing trend except for the years 2011 and 2012. In 2011 and 2012 there is a fall in net profit, and after that, the graph shows a sustainable increasing trend.

Ratio Analysis

Here for the ratio analysis we used five ratios to assess both the liquidity position and financial performance of the banks in different years. These are:

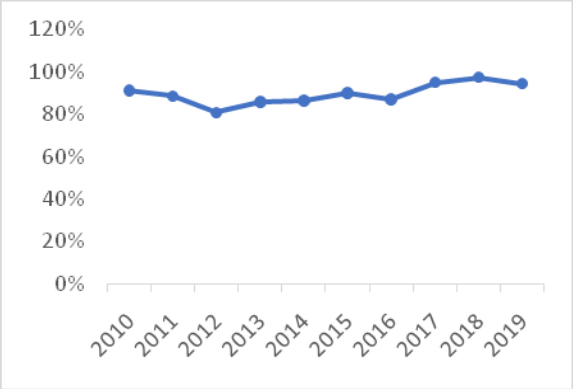
ROA	Return on Assets Ratio
ROE	Return on Equity Ratio
LDR	Loan to Deposit Ratio
CIR	Cost to Income Ratio
CAR	Capital Adequacy Ratio

Table 02: Different Ratios of the Banks of Different Years.

Year	LDR	ROA	ROE	CIR	CAR
2010	0.91	2.42	25.80	38.51	9.88
2011	0.89	1.69	17.78	43.32	11.26
2012	0.81	1.06	12.12	48.52	11.48
2013	0.86	1.05	12.54	47.17	12.07
2014	0.87	1.04	12.53	46.80	12.40
2015	0.90	0.89	11.43	47.21	11.98
2016	0.87	0.96	12.20	46.19	12.55
2017	0.95	0.85	11.47	46.17	12.43
2018	0.97	0.83	11.07	45.98	12.84
2019	0.94	0.77	11.17	45.05	13.83

Here averages of all five ratios are used to make the analysis simple and correspond with other parts of data analysis.

Figure 04: Loan to Deposit Ratio (LDR)

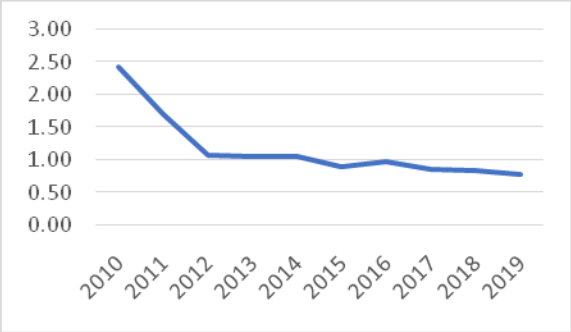


The LDR is used for determining the liquidity of a bank. The bank's total credit and advances are compared to the total deposit and expressed as a percentage here. The high ratio means that the bank does not have sufficient liquidity to fulfill any fund requirements. (Investopedia)

Here in this case, we can see that the banks' LDR is in a sustainable position. The amounts vary from 80%-97% in different years, which is a good

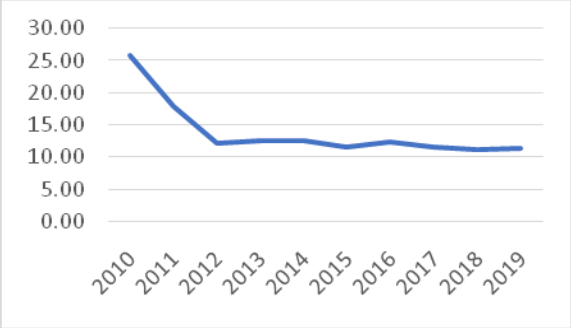
indicator for these banks.

Figure 05: Return on Assets (ROA)



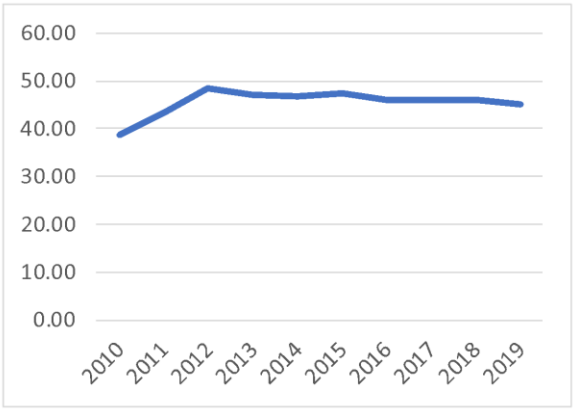
Return on assets (ROA) is a measure of a bank's efficiency of asset use. ROA is best used when comparing businesses or comparing a company with previous results. (Investopedia)
ROA, in this case, is gradually decreasing, and from 2010 to 2011, we can see a sharp fall. The commercial bank should notice that carefully.

Figure 06: Return on Equity (ROE)



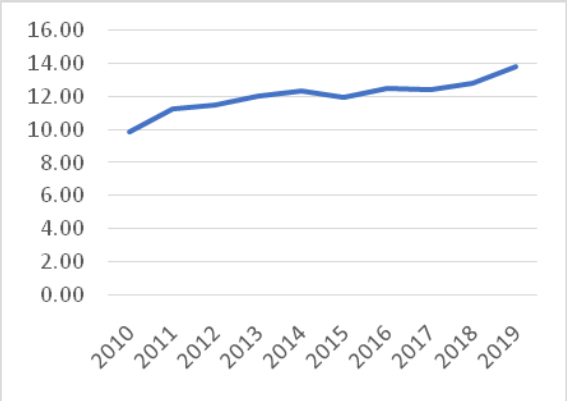
The return on equity (ROE) is a measure of financial performance and calculates any company's profitability concerning shareholders' equity. The return on net assets is called ROE (Investopedia.)
ROE is also showing the same trend as ROA. Commercial Banks should also notice this and find out why to fall in 2011 and the continuous decreasing trend.

Figure 07: Cost to Income Ratio (CIR)



Microfinance institutions or banks mostly use cost to income. It measures its operating cost compared to the income it generates. The lower the ratio of cost to sales, the better it is for the company's efficiency.
Here we can see that the ratio is gradually decreasing. It is a positive indicator of growing productivity of businesses. The companies should analyze and find a way to be more efficient in cost reduction and cost control.

Figure 08: Capital Adequacy Ratio (CAR)



The capital adequacy ratio (CAR), also known as the weighted asset capital-to-risk ratio, is a measure of a company's financial strength. It expresses the bank's available capital as a percentage of the risk-weighted credit exposure of the bank. (Source: Investopedia) In this case, the capital adequacy ratio (CAR) is on the rise and showing a positive trend.It is a good indication of the efficiency and performance of the commercial Banks.

Regression Analysis

Here for finding a relationship between Net Profit and Loans and Advances, simple regression analysis is used. Here the dependent variable is Net Profit, and the independent variable is Loans and Advances. For the computation and analysis of data, SPSS 25.0 is used. Average Net Profit and Average Loans and Advances are used as input. The average is calculated from the financial data of 20 banks. From the analysis, different output was found, and SPSS generated a different table with output. Later part of this analysis, we will try to describe the output tables and reach some conclusion.

Table 03: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.756[a]	.571	.518	192.82150

a. Predictors: (Constant), Loans and Advances

R-Value of R indicates the relationship between the dependent and independent variables. Here, R's value is .756, which indicates a positive relationship between Net profit and loans and advances.

R Square - R Square indicates that independent variables can be explained as the percentage of the dependent variable variance. Here from the table, we can see that R Square = .571 or 57%. That mean a 57% change of dependent variable (Net profit) can be predicted by the independent variable (Loans and Advances)

Adjusted R Square - Adjusted R Square is a better measure of determining the fitness of the model. It increased the reliability of R Square. As per we know that R Square never decreases. In some cases, it creates significant problems when some insignificant variable is added to the model. Here R Square value increased but Adjusted R square value decreases.

Adjusted R Square can only be increased when one or more variables are added in the model, and that or those are significant for making a change in output or decision. Here the positive Adjusted R Square with little change from R square value is a good indicator of the model's fitness.

Std. Error of the Estimate: It is also called root means square error and the general error term variance, and is the square root of Mean Square Residual (or Error). It shows how well sample estimation estimates the accurate population estimation. Here larger Std. Error of the Estimate indicates the larger amount of variability.

Table 04: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	396235.053	1	396235.053	10.657	.011[b]
	Residual	297441.047	8	37180.131		
	Total	693676.100	9			

a. Dependent Variable: Net Profit

b. Predictors: (Constant), Loans and Advances

F value and Sig: Here, the F test and Sig (p-value) are used to find the model's overall significance. More precisely, it is used to assess the validity of the regression model. The value of F is obtained by dividing the Mean Square Regression (MSR) (36235.053) by the Mean Square Residual (Error) (MSE) (37180.131). Here the calculated value of F is 10.657. Moreover, p valued is 0.011. Here p-value 0.011 < α = 0.05. It expressed that the independent variable in the model can reliably predict the dependent variable. One thing to be remembered is that this test does not test the reliability of individual independent variables other than for the group of variables.

Table 05: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1516.927	165.073		9.189	.000
	Loans and Advances	.003	.001	.756	3.265	.011

a. Dependent Variable: Net Profit

Regression Analysis

Regression testing measures the dependency of the dependent variable on the independent variable. From the table, the Regression equation here is:

$\hat{Y} = a + bX$

$\hat{Y} = 1516.927 + 0.003X$

From this equation from the table, we can assess the positive relationship between dependent and independent variables. It indicates that if the volume of the Loans and advances or independent variable increases by 1 BDT, then the Net profit or dependent variable increases by 0.03 BDT.

4. Conclusion

We may note the dramatic changes in the performance that occurred in 2012. Both ROA and ROE dropped dramatically in 2012. After that, it continues to drop. In 2012, however, the CTI ratio rose. On the other hand, ratios like CAR have been rising exponentially since its inception. The loan-to-deposit ratio is showing almost a sustainable trend throughout the years. It is fluctuating between 80% - 97%. The fall of the profitability ratios in 2012 occurred for many reasons. The primary reason is political instability. In Bangladesh, it is the major influential factor that affects almost everything from the people's lifestyle to business policy. Other reasons may be loan defaults, inefficiency in the workforce, lack of profitable

investment opportunity, inefficient management of liquidity, increased interest rate and so on. Also, we can notice an excellent positive relationship of net profit with loans and advances from the analysis. In contrast, maintaining a higher amount of liquidity may result in lower profitability. So, liquidity should be carefully maintained and efficiently used. Also, proper policy compliance will bring good results.

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