Role of Technology in Relationship between Liquidity & Profitability Management of Financial Institutions offering Microfinance Services

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Abstract

Microfinance has been looked upon as an important means of financial inclusion in India. But sound financial health of financial institutions providing microfinance is a big concern. When the financial health of a bank is sound it is the guarantee for depositors and has equal relevance to shareholders, owners' employees and the whole economy as well. As a regular practice, efforts have been made at regular intervals, to measure the financial position of each microfinance institution and deal with its financial operations resourcefully and successfully. In this paper, an effort was made to evaluate the financial performance of Ujjivan Bank and NABARD for five years (20016-2021). Analysis is done based on Liquidity & profitability which are two major indicators for financial performance. For this reason, various liquidity ratios were calculated, the technique of correlation was used and a t-test was applied to conclude.

Keywords: Microfinance, Liquidity, Profitability, Ujjivan Bank, NABARD

Introduction

Liquidity risk is defined when an organization when assets of an organization are not sufficient to meet the liabilities falling due. Liquidity risk is defined as the is the risk of being unable to satisfy claims without mutilation of the financial capital of the firm.MFIs encompass a host of financial institutions engaged in advancing loans to low-income groups. The essential features of microfinance loans are that they are of small amounts, with short tenures, extended without collateral and the frequency of loan repayments is greater than that of traditional commercial loans. These loans are generally taken for income-generating activities, although they are also provided for consumption, housing and other purposes (RBI, 2011). The overall Gross Loan Portfolio (GLP) of MFIs, i.e., the outstanding amount of loans extended to microfinance borrowers, grew from ₹1.79 lakh crore as on March 31, 2019 to ₹ 2.32 lakh crore as on March 31, 2020 Microfinance institutions consciously take risk as they perform their role of financial intermediation in the economy. Consequently, they are exposed to a spectrum of risks, which include credit risk, interest rate risk, liquidity risk, and operational risk. Managing these risks is essential for their survival and sustainability. It is vital on the part of the firm to ensure that there is neither absence nor overabundance of liquidity to meet its short-term obligations. The issue in liquidity management is to achieve the desired trade-off between liquidity and

profitability. Three drivers for illiquidity in MFIs are deposit withdrawals, operating costs, and maturing debt, and maturing debt presents the greatest risk.

The basic challenge for MFI is to survive totally on cash reserves. The highest risk situation before an MFI could be cash reserves to cover two months of operations during shut down or going under losses.

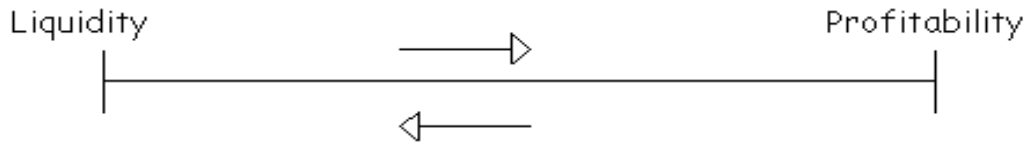
Today firms prefer to focus on the ability of an organization for managing future risk as to they think it is the best indicator of the long term success of financial institutions rather than focusing on existing or past financial and operational performance management. The basic challenge with the banks is to ensure the liquidity of the banks under normal business conditions because their assets are illiquid in long term and liabilities are liquid and are short term in nature. Liquidity failure of even a single bank providing microfinance services can lead to repercussions resulting in financial distress on a wider basis. Cash reserves of banks are at risk not only for reason that they can be demanded by depositors but also financial institutions may have previous loan commitments, which can be called out when needed (Gatev, Schuermann, & Strahan, 2007).

The liquidity of an asset is seen as how quickly, easily and expensive it is to convert the particular asset into cash (Berger & Bouwman, 2008). Liquidity is also defined as near-cash assets held by the company. Those financial ratios which are used to measure the liquidity of a company are referred to as liquidity ratios the inability of the company to pay its short-term financial obligations can lead way to serious financial distress.

The profit earning capacity of the company is most affected by the liquidity of the company. There exists an inverse relationship between liquidity and the profitability of the company. As it is a fact that holding current assets in large, especially cash can reduce risk and strengthen the liquidity of the firm but also leads to a reduction in overall profitability.

Profitability of the bank is when the bank generates revenue in excess to cost. A strong banking system is profitable and can withstand negative shocks to the economy and contributes to the stability of the financial system.

The Liquidity Versus Profitability Principle: There is a trade-off between liquidity and profitability; which means giving up another and gaining the other.



As can be seen in the above picture "*Liquidity*" is on one end of a straight line and "*Profitability*" is on the other end of the straight line, which means liquidity moves one step forward on the line, then profitability will move away from the other

Similarly, there exists is a direct relationship between higher risk and higher return. A company that takes higher risk can put its liquidity position in danger. However, a company that ensures higher returns will increase its profitability.

Technological Impact on Liquidity and Profitability of the Organization

In contemporary economies, technological innovation has emerged as a key factor influencing organizational effectiveness. Information systems, automation, artificial intelligence (AI), financial technologies (FinTech), and enterprise resource planning (ERP) systems are examples of digital technologies that have completely changed how businesses handle resources, make money, and keep expenses under control. Liquidity, or an organization's ability to satisfy short-term commitments, and profitability, or the ability to create earnings compared to expenses and invested capital, are two of the most important financial performance variables impacted by technology. The previous scholarly and professional study on how technology adoption affects organizational liquidity and profitability is summarized in this overview of the literature. Big data and cloud computing are examples of cutting-edge technologies that assist banks in precisely identifying and growing long-tail clients, offering tailored financial products based on client needs, occupying niche markets with unique products, growing market share and business volume, and enhancing operational efficiency (Wang, 2024). Lastly, FinTech assists banks in conducting thorough analyses of credit customer characteristics, which reduces the amount of risk that banks take on, strengthens risk identification, mitigates credit risk caused by information asymmetry, and ultimately increases bank profitability (Jin et al., 2025).

Objectives of the Study

- **a.** To study the liquidity position of financial institutions providing microfinance services.
- **b.** To evaluate the liquidity position of the selected financial institutions.
- **c.** To understand the relationship between liquidity and profitability.

Conceptual Framework and Hypothesis Development

The liquidity of the company is if it is capable to meet its short-term liabilities using its current assets. A current asset constitutes the customer requirement there are good chances of the company becoming insolvent if customers do not pay their debts, eventually affecting the reputation of the company.(Hasanaj & Kuqi, 2019). On one hand, liquidity is an effective tool for measuring the risk while on the other it is an essential element for the capital cost of banks(Babu, 2019). (Bagh et al., 2017) It was found in a study that liquidity and profitability are positively correlated which in turn boosts the profitability of the firm. In a study(Sulieman Alshatti, 2014) it was recommended there is a need that banks need to invest the excess of their liquidity in various instruments and draws benefits from the time value of money. There was the need to strike a balance between sources and uses of funds also a need for an analytical study to identify tools for the detection of strengths and weaknesses of liquidity for facing any contingency that arises in future. (Hossain & Alam, 2019)With the poor management of working capital, unnecessary funds are tied up in idle assets with zero productivity this in turn can reduce liquidity. James Clausen (2009), in the article "Accounting 101 – Financial Statement Analysis in Accounting: Liquidity Ratio Analysis Balance Sheet Assets and Liabilities" has analysed the financial statements for measuring the performance of the company. Ratio Analysis is used as a tool for determining the profitability and liquidity of the company by investors and lending institutions. If poor performance is indicated by the ratios investors may not be ready to invest.

Gopinathan Thachappilly(2009), in his study on "Financial Ratio Analysis for Performance Check: Financial Statement Analysis with Ratios Can Reveal Problem Areas" stated that liquidity ratios help improve financial performance. More profitability can have negative implications on the liquidity of the business which can, in turn, spoil the reputation of the company and lead to financial troubles.

Liquidity is an important concern for an organization not only in crisis but also in good times. Good liquidity paves way for profitability and both are important concerns for any organization.

For measuring liquidity following variables are taken into consideration

1) Liquid Assets: Liquid assets, however, are the assets that can be converted into cash very quickly which include inventory, accounts receivable, and stocks.
2) Govt and other securities: The government securities market, deals with tradeable debt instruments issued by the Government for meeting its financing requirements and improving the trading liquidity of the market.
3) Deposits: Deposits include total customer deposits in the form of current, savings and term deposits while short term borrowing includes money market instruments, CDs and other deposits, these are seen as completing the requirements of liquidity. The prevalent liquidity risk for a bank is when depositors choose to withdraw money are in large numbers.
4) Investments: Investments are stocks, mutual funds or other such investments which can be converted to cash easily are considered liquid assets.
5) Current assets: Current assets are those which are used in funding day to day operations of the business, they include cash, cash equivalents, accounts receivable, stock, inventory, marketable securities, pre-paid liabilities, and other liquid assets. The problem is that current assets include liquid assets plus short-term loans to MFI customers. This is not considered practical, because liquidity safety stock has a loan portfolio which is a very important part of liquidity. This is measured as serious fault as most of MFI's lending's are for the short term. (Gtz, 2000)
6) Return on Assets: Return on assets (ROA) indicates the profitability of the company relative to its total assets. If an investor, manager or analyst wants to know about the efficiency of the company in managing its assets to generate earnings they can look at ROA.

The conceptual model was developed to study the relationship between liquidity and profitability of the banks providing microfinance services.

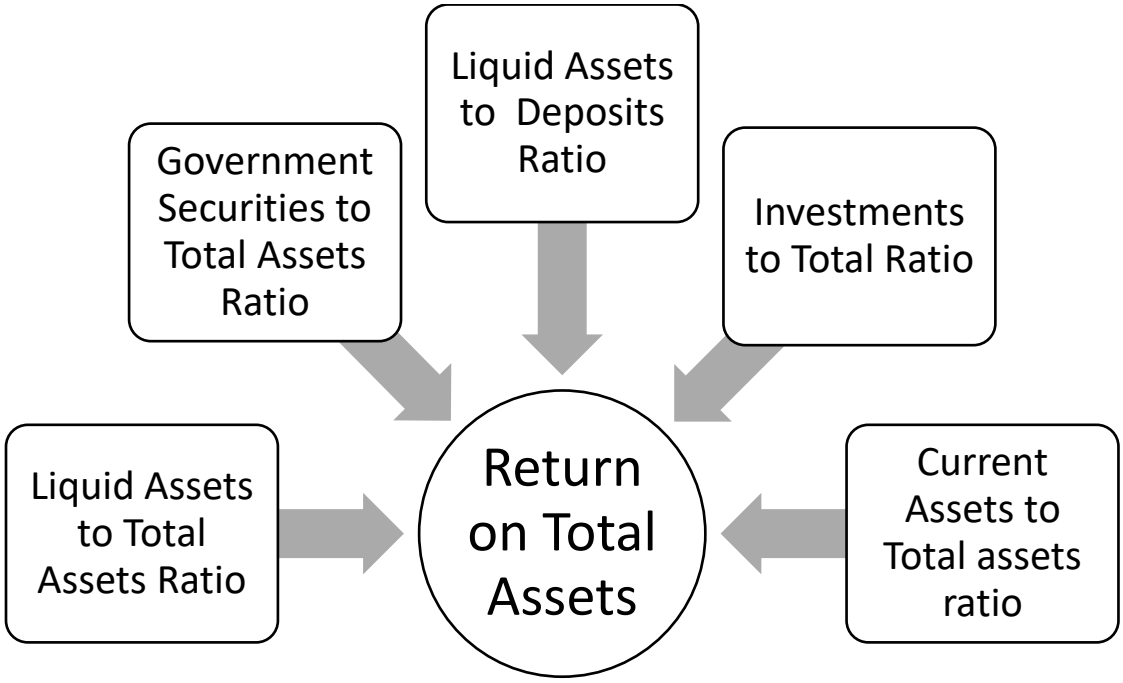


Figure 1: Conceptual Model

Table no. 1:Hypotheses Development

Hypotheses	
H1	The Liquid Assets to Total Assets ratio has a significant impact on Return on Assets.
H2	The Government and other securities have a significant impact on Return on Assets
H3	The Liquid Assets to Deposits ratio has a significant impact on Return on Assets
H4	The Investments to Deposits ratio has a significant impact on Return on Assets.
H5	The Current Ratio to Total Assets ratio has a significant impact on Return on Assets.

Research Methodology

As this research is aimed at identifying the cause and effect relationship between liquidity and profitability so this research is causal type research. Liquidity and Profitability of financial institutions providing microfinance services. Ujjivan Bank and NABARD are taken for study. Ujjivan Small Finance Bank Limited is a bank in India focused on the mass market, which caters to financially underserved and unserved segments and commits to increasing financial inclusion in the country by serving the poor in urban and semi-urban areas whereas the National Bank for Agriculture and Rural Development is a top regulatory body for overall regulation of regional rural banks and apex cooperative banks in India and serves rural poor of the country. The data is secondary and is collected from published annual reports of the banks from the year 2016 to 2021. The main purpose of the study is to establish a relationship between liquidity

and Profitability by the application of various techniques of ratio analysis, average, Standard Deviation, Coefficient of variation, Pearson correlation and t-test.

Data Analysis

The liquidity position of the banks under study is presented in tables no 2 to 6 by computing 5 ratios that represent the liquidity position of the banks.

Table No.2: Liquid Assets to Total Assets Ratio of Banking Companies

Sr. No.	Company	Year					Mean	S.D.	C.V.
		2020-21	2019-20	2019-18	2017-18	2016-17			
1	Ujjivan Bank	0.126	0.072	0.068	0.065	0.071	0.080	0.025	31.689
2	NABARD	0.012	0.022	0.024	0.045	0.037	0.030	0.013	48.829

In table 2, it is depicted that the liquid assets of Banking companies which includes cash balances with RBI and other banks as well as money at call and short notice, gives a ratio of 0.080 with total assets in Ujjivan Bank and 0.030 in NABARD on an average. During the period of study Ujjivan Bank with a C.V. of 31.689shows consistency in maintaining the liquid assets, on the other hand, NABARD was the most variable with a C. V. of 48.829.

Table No: 3Government Securities to Total Assets Ratio of Microfinance Institutions

Sr. No.	Company	Year					Mean	S.D.	C.V.
		2020-21	2019-20	2019-18	2017-18	2016-17			
1	Ujjivan Bank	0.118	0.130	0.865	0.703	0.202	0.403	0.353	87.49
2	NABARD	0.005	0.004	.002	.003	.006	0.004	.001	32.30

The investment in Govt. and other securities held by the bank visa viz. to total assets are clear indicators of banks liquidity position. The extra consistency is shown by NABARD as its coefficient of variation is lowest as compared to Ujjivan Bank.

Table No. 4: Liquid Assets to Deposits Ratio of Banking Companies

Sr. No.	Company	Year					Mean	S.D.	C.V.
		2020-21	2019-20	2019-18	2017-18	2016-17			
1	Ujjivan Bank	0.669	0.102	16.566	30.462	1.265	9.813	13.443	136.99
2	NABARD	0.188	0.143	3.266	1.658	0.136	1.078	1.385	128.45

In table 4 the liquid assets to deposit ratio are computed and the average is least at 1.078 with NABARD and highest at 9.813 with Ujjivan Bank. The consistency is depicted by the figures

of NABARD as its coefficient of variation is the lowest and the more flexible Ujjivan Bank with a high coefficient of variation.

Table No. 5: Investment to Deposits Ratio of Banking Companies

Sr. No.	Company	Year					Mean	S.D.	C.V.
		2020-21	2019-20	2019-18	2017-18	2016-17			
1	Ujjivan Bank	6.540	1.824	0.225	4.376	14.404	5.474	5.544	101.279
2	NABARD	0.188	0.143	3.266	1.658	0.136	1.078	1.385	128.450

In table 5 the Investment to deposits ratio is computed which is also an important tool for measuring the financial performance of a banking company. The average is the highest of Ujjivan bank as compared to NABARD. The coefficient of variation figures is high for NABARD which indicates greater flexibility and the consistency is shown in the coefficient of variation figure of Ujjivan Bank.

Table No.6: Current Assets to Total Assets Ratio

Sr. No.	Company	Year					Mean	S.D.	C.V.
		2020-21	2019-20	2019-18	2017-18	2016-17			
1	Ujjivan Bank	0.025	0.017	0.003	0.001	0.920	0.193	0.406	209.80
2	NABARD	0.007	0.009	0.010	0.010	0.010	0.009	0.001	12.41

The current assets to total assets ratio of the banking companies are lowest with an average of 0.009 for NABARD and highest with an average of 0.193 for Ujjivan Bank. The NABARD shows the highest level of consistency because its coefficient of variation is lowest at 12.41.

Profitability Ratios

The 'Earnings/Profit' is a traditional parameter for measuring financial performance. With higher income financial difficulties are reduced so the chances of failure of banks are reduced. (Cole and Gunther, 1996). For analysis of earnings, accounting ratios are depicted in table no 7.

Table No.7: Returns on Assets ratio

Sr. No.	Company	Year					Mean	S.D.	C.V.
		2020-21	2019-20	2019-18	2017-18	2016-17			
1	Ujjivan Bank	0.0004	.0221	.0188	0.00080	0.000025	0.0080	0.011	1.310
2	NABARD	0.76	0.79	0.79	0.76	0.8	0.78	0.018	0.023

Relationship between Liquidity & Profitability

Financial institutions must have the finest balance between liquidity and maximizing the earning capacity, as financial institutions are liquidity creators as well as a liquidity provider. The next table in the sequence shows the relationship between liquidity & profitability. In this, the techniques of correlation and t-test are applied to test the significance of the result obtained. Liquidity management is one of the bank's main goals as it has a larger impact on profitability.

Table No:8Testing the Hypothesis

Hypotheses	Financial Institutions	Significance	Verdict
H1 The Liquid Assets to Total Assets ratio has a significant impact on Return on Assets.	Ujjivan Bank	0.006	Accepted
	NABARD	1.808	Accepted
H2 The Government and other securities have a significant impact on Return on Assets	Ujjivan Bank	0.065	Accepted
	NABARD	7.781	Rejected
H3 The Liquid Assets to Deposits ratio has a significant impact on Return on Assets	Ujjivan Bank	0.178	Accepted
	NABARD	0.001	Accepted
H4 The Investments to Deposits ratio has a significant impact on Return on Assets.	Ujjivan Bank	0.092	Accepted
	NABARD	0.655	Accepted
H5 The Current Ratio to Total Assets ratio has a significant impact on Return on Assets.	Ujjivan Bank	0.370	Accepted
	NABARD	7.692	Rejected

In the given table no.8't' value is calculated for testing the hypotheses. The calculated value is less than the tabulated value at 4 degrees of freedom and 5%level of significance for H1 for both organizations therefore it is accepted and can be further analysed that the liquid assets to total assets ratio has a significant impact on return on assets of an organization. In the case of H2 it is accepted in the case of Ujjivan Bank and rejected in the case of NABARD as the calculated value (7.781) is more than the tabulated value (2.776), hence Govt. and other securities didn't have much significance on the return on assets of NABARD.H3 and H4 are accepted in case of both the organizations, therefore liquid assets to assets to deposits ratio and investments to deposits ratio have a significant impact on return on assets of an organization.H5 is rejected for NABARD and it was concluded that current assets to total assets ratio have no significant impact on return on assets.

Table no.9: Correlation Values

S. No	Company	r values				
		Liquid Assets and Total Assets	Govt. & Other Securities (Investments) Assets and Total Assets	Current Assets and Total Assets	Liquid Assets and Deposits	Investments and Deposits
1	Ujjivan Bank	0.997	0.799	0.406	0.423	0.995
2	NABARD	0.780	0.996	0.988	0.225	0.985

In above table no.9 correlation values have been calculated to identify the association between various variables. As can be seen in the table liquid assets and total assets are highly and positively correlated, it shows the increase in liquid assets leads to an increase in total assets. Govt. & Other Securities (Investments) Assets (r= 0.799) and Total Assets(r=0.996) are also positively correlated. Current Assets and Total Assets are positively correlated but the correlation value(r=0.406) is less in Ujjivan Bank as compared to NABARD where (r=0.988). Liquid Assets and Deposits have positive correlation values but when compared Ujjivan Bank has a high correlation value(r=0.423) when compared with NABARD(r=0.225).

Findings

The findings of the study are as follows:

- Based on the liquid assets to total assets ratio the highest average of liquid assets are maintained by Ujjivan Bank as compared to NABARD. The consistency in liquid assets is maintained by Ujjivan Bank whereas NABARD is not able to maintain that much consistency level.
- Based on Govt. & other securities (investments) assets to total assets ratio the highest average level of Govt. & other securities is maintained by Ujjivan bank. More consistency is shown by NABARD as seen from the investment Govt. securities point of view.
- Based on the liquid assets to deposits ratio, the highest average is maintained by Ujjivan Bank along with consistency as compared to NABARD.
- According to the return on total assets ratio, the average of returns was highest for NABARD as compared to Ujjivan Bannard is maintaining the highest profitability as compared to Ujjivan Bank.
- All the variables of liquidity (liquid assets, current assets, investments, deposits and Government securities) have a strong and positive association between them, an increase in one variable leads to an increase in another variable.
- Ujjivan Bank was showing a high average in maintaining its current assets for 5 years in comparison to NABARD.
- The Government and other securities and current assets didn't have much impact on the profitability of NABARD, the likely reason for this nonimpact on the profitability is that

various businesses have set various rates for the ratio of their standard and that's why it can't lead to much productivity insight.

- Maintenance of liquid assets, deposits, investments, government securities and current assets had a significant impact on the profitability of Ujjivan Bank.The deposits to assets ratios that a bank has to maintain have a significant impact on its profitability as measured by Return on assets. As there exists a strong positive linear relationship which concluded that an increase in the level of deposits will also bring an output of an improvement of return on assets.

Conclusion

Optimisation of cash is significant to all financial institutions, especially when there is a tough economic scenario. Cash is seen as the lifeblood of any organisation. Microfinance institutions having a proper formulation of policies and procedures for liquidity management will not only improve profits but will also reduce the risk of organizational failure and will also make their chances of survival high. Efficient policies for liquidity management will not only provide a strategic advantage but financial institutions can derive maximum benefits at a minimal cost. If the asset-liability strategy is riskier financial institutions can be compelled to recover an unexpected liquidity shortfall by borrowing from a peer microfinance institution or commercial bank. It is analysed on the deposit side that even the poorest clients served by microfinance institutions want to save and accumulate funds which will provide a strong capital base for microfinance institutions. It is the very poor clients who seek to prepare for unforeseen expenses and emergencies and therefore they are particularly interested in the savings products. One client may experience an emergency and can withdraw his funds the others can increase their weekly saving deposit after selling their product in the local market. On the contrary microfinance institutions would face a brutal liquidity crisis, if the majority of their depositors were faced with an emergency at the same time, due to any natural disaster The study concludes that the liquidity of financial institutions can be efficiently managed by increasing their deposits, liquid assets, government and other securities and investments. It was also concluded in the paper that liquidity has a significant impact on profitability. Previous research shows that by improving working capital management, automation and digital accounting systems increase liquidity. Automated inventory systems, computerized invoicing, and real-time cash monitoring are examples of technologies that maximize inventory levels and minimize receivables collection delays. Organizations can estimate cash demands more accurately and quickly thanks to improved financial reporting, which lowers the risk of liquidity shortages.

Recommendations

Since liquidity has the potential for making or breaking financial institutions, therefore microfinance institutions should have a clear policy for liquidity management from the beginning. The study will help formulate the policy for liquidity management where the stakeholders of the MFI are represented. Liquidity policy will be helpful not only in deciding the acceptable liquidity instruments but also in the size of transactions and signature requirements. This study will help in understanding factors for liquidity management that are interrelated. Like a loan, demand is closely linked with the deposit flows. Diversification of

customer base is extremely necessary for microfinance institutions, as there can arise unproductive excess liquidity due to seasonal swings also lending opportunities can be lost due to liquidity shortages. This situation arises particularly at harvest time when some customers will replenish their savings while others may pay their seasonal loans. Further, the policy must mention the types, maximum maturities and the issuers of those securities that are considered lawful liquid investments. In the absence of a centralized liquidity desk handling all collateral requirements and borrowing needs, will be much more difficult. So, for microfinance institutions centralizing liquidity management for the entire branch network at the head office seems to be the best solution. It is also recommended that microfinance institutions should spend their excess liquid volume, which remains idle after compliance with regulatory and consumer requirements. It may also be advised that banks spend their excess liquid volume, which stays idle after compliance with regulatory and consumer requirements, they should invest in portfolios and gain an advantage from the time value of surplus capital.

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