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A Study on Effect of Asset Liability Management on Financial Performance of Axis Bank

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***Abstract*: Asset-Liability Management (ALM) is one of the significant tools of risk management. Indian banking sector is exposed to various risk prevailing in the market like interest rate risk and liquidity risk etc. Failure to identify these risks leads to effect the financial position of those banks and financial institutions. For this reason Reserve bank of India come up with the tool called Asset Liability Management. This study examines the effect of ALM on financial performance of AXIS Bank. The key objective of this study is to know the risk management strategies and effect of asset-liability mix on financial performance of the bank. The data is collected from secondary source and analytical research methodology is used for this study. The correlation and regression analysis tools were taken on to set up the relationship and outcome of the ALM on the financial performance of AXIS Bank. The study found that the bank is exposed to changing interest rates, facing liquidity problem for short term. It also found that the quality of assets affects the financial performance of banks.**

***Keywords*: Deposits, Loans, Financial Performance, Interest Rate Risk, Liquidity Risk**

1. Introduction

In today's economy service sector continues to expand its operations, the financial service sector also experiences speedy growth through increasing demand for asset as well as liability portfolio. As asset and liability portfolio's performance usually influences the productivity of an organization so as increasing profitability invites more challenges to financial sector. The timing and volume of assets and liabilities and the connection between both of these may be essential in maximization of profit. Particularly, growth in financial market activities might result in such a way that the value of an organization's liabilities might exceed the value of its assets. Bank and financial institution provides various services, which involves diverse classes of risk like credit risk, liquidity and interest rate risk. If they failed in determining these risks leads to effect the financial position as well as market position. This shows that level of risks increased is connected with asset and liability portfolios it is because of changes interest rates and unstable financial market activities. The unsteady financial markets and changes in interest rate require essential asset and liability portfolio management. This puts pressure on industry operators to improve their profitability by finding effective strategies for managing their asset and liability portfolios.

Hence, one of the strategies to address such kind of risk is Asset Liability Management. ALM is one of the Risk Management tool used by various financial institutions and banks in order to deal with the risk associated with them due to dissemblance among assets and liabilities because of liquidity problem or fluctuation in interest rates. A well-organized ALM structure intends to manage the maturity, mix, volume, rate sensitivity, liquidity and quality of the assets and liabilities as an overall, so as to get a pre-established, risk or reward or risk ratio. The objective of ALM is to turn the banks completely ready to deal with the up-coming challenges. This study is used to examine ALM in relation to financial performance of AXIS bank. An efficient ALM of AXIS bank concentrates towards maximizing their earnings as well as lowering and controlling various risks. This pointed towards reaching targets such as liquidity, revenue maximization, and capital adequacy in order to improve the productivity of AXIS bank.

2. Literature review

1. Vaidya and Shahi.D (2015) conducted a study on An analysis of Asset-Liability Management in Indian banks and foreign banks. This research main objective is to study the Assets Liability Management of Indian public sector and private sector banks by using maturity gap analysis. This study is based on analytical research. This research found that public sector banks were very traditional in management of liquidity risk; foreign banks concentrate on corporate sector lending for 1 to 5 years and it did not have good liquidity. But private sector banks have very good short term liquidity as compared to public sector banks and foreign banks.
2. Mr. Chetan Shetty, Ms. Pooja Patel and Ms. Nandini (2015) conducted study on An Analysis of Private Banks Exposure to Asset Liability Management. The main objective of this study is to study the Asset Liability Management with reference to new private banks in India. The descriptive methodology was used in this study. This study observed the effect of Asset Liability Management on profitability of the five private banks profitability in Indian financial market by using ratio analysis and gap analysis methods. This study

tried to measure the liquidity risk is exposed to extend over a period from 2011 to 2015 by all five private banks. This study found that all private banks have been exposed to liquidity risk. The study also points out that ICICI Bank and HDFC Bank have better Asset Liability Management structure in practice.

3. Salvin Surjith FP and N. Sathyanarayana (2014) conducted research on A study on Asset and Liability Management in ICICI bank. This paper looks at ICICI bank asset-liability management. The key intention of this paper is to know the problems involved in maintaining and managing assets and liabilities. The study has been conducted was descriptive in nature. A study on Asset and Liability Management in ICICI bank this study was limited to a five financial years period from 2008-09 to 2012-13. The most important findings of this study are: the cash ratio of ICICI bank has not been maintained as per the standard, the cash has been maintained was less than the standard that indicates the ICICI bank have to maintain more cash balance. The capital turnover ratio of the ICICI bank was acceptable. The net profit of ICICI bank has been maintained in the growing rate that shows the bank has performing well during this study period. This study shows that ICICI bank looks forward to create a more good service in the future. The bank's balance sheet has been reliable and it indicates future expansion and growth.
4. Kanjana E. N (2013) conducted research on Asset-Liability Management in banks: a dynamic approach. The descriptive research methodology is used in this study his paper evaluated the impact of composition of assets and liabilities strategies and measures undertook by banks and its impact on their productivity in particular and performance in general. Since the implementation of asset-liability management guidelines from Reserve Bank of India in the year 1997, there are strict efforts by banks to reduce mismatch of asset and liability. The study recommended much scope for banks to get better profitability by mentoring assets and liabilities mismatch and reducing that mismatch.
5. Rao, A. V. (2013) conducted study on An Empirical Study of Asset Liability Management. The analytical and descriptive research methodology was used for this study. This study found that ownership and structure of the banks do have a most important bearing in the Asset Liability Management method. It is further noted that there is a best correlation and best asset-liability maturity pattern is there in State Bank of India and its Associates. To meet the maturity liabilities, majority of the Indian banks and foreign banks borrow money from money market because they are liability-managed banks. The private banks are very aggressive for use long-term investments and the short-term funds and also for profit generation. Finally this study points out a strong relation among net worth and fixed assets for all groups of banks.

3. Need for the study

In a fairly deregulated environment, banks are now required to determine on their own, the interest rates on deposits and advances in both domestic and foreign currencies on a dynamic basis. Intense competition for business involving both the assets and liabilities, together with increasing instability in the domestic interest rates as well as foreign exchange rates, has brought pressure on management of banks to maintain a good balance among assets and liabilities.

The study will help to focus on the effectiveness of assets and liabilities management on the business of AXIS Bank. AXIS Bank tries to throw light on the approach of Assets Liabilities Management so that the emerging risk can be handled in order to maintain profitability effectively. The Assets and Liabilities Management has been applied as a method to relate the assets and liabilities of the AXIS Bank and their pattern for expected rate of return on the bank and their pattern for expected maturity. The management of the asset and liability can help the AXIS Bank in adjusting their liability in order to meet demands of loans, need of liquidity and safety requirements effectively.

4. Statement of the problem

The landscape of Asset Liability Management for the financial sector is always changing. Different academic and practicing financial professional have even questioned the strengths of the traditional methods of identifying, measuring and administering the risk. The present study attempts to evaluate the changing perspectives of the AXIS Bank in identifying and facing the risk and maintaining asset quality so as to ensure profitability with the help of the Asset Liability Management techniques. This study also tries to assess the effectiveness of Asset Liability Management as a strategy vital to the progress and development of AXIS Bank.

5. Objectives of the study

1. To study the risk management in AXIS bank.
2. To measure the interest rate risk and liquidity risk of AXIS Bank by using gap analysis.
3. To identify the effect of assets and liabilities mix on financial performance of AXIS Bank.

6. Scope of the study

Asset Liability Management is mainly connected with risk management and presents a complete and dynamic outline for managing, measuring, and monitoring the risk connected with assets and liabilities. In this course, it alters asset-liability portfolio and assesses different types of risks in a dynamic way in order to administer risks. The study will facilitate to focus on the effectiveness of asset and liability management on the business of AXIS Bank. The scope of the study is limited to the AXIS Bank. The present study is based on five three successive recent years. This study mainly focuses on the liquidity risk management, interest rate risk management, and assessing the optimal mix of assets and liabilities of AXIS Bank. The analysis would be carried out to check whether there is a relationship between asset liability management and financial performance of the bank.

7. Research methodology

This study is an analytical research; analytical research is non-interactive document research. It illustrates and interprets the data acquired from the sources, where available data of AXIS Bank is used for the study. The basic reason of this analytical study is to establishing the ALM cause and its effect on financial performance of AXIS bank.

Source of the data **-** The present study is largely depended on secondary data. The necessary data involves financial facts and figures are collected from the AXIS Bank's annual reports, published record and from other online sources.

Data analysis **-** The data for 3 years is collected and analyzed with the help of Gap analysis, Ratio analysis correlation and regression analysis tools; it is represented by using charts and tables. The study enables the bank to understand the impact of assets and liabilities mismatch on financial performance. Tools planned for this study includes

Gap analysis - Gap Analysis is a method of Asset Liability management. It determines gap difference between RSL and RSA at a given point of time. The gap reports points out whether the organization is in a point to benefit from rising interest rates by having a positive gap or whether it is a point to benefit from failing interest rate by a negative gap. In case of positive gap mismatch, surplus liquidity can be positioned in money market instruments, creating investments swaps and new assets etc. For negative gap mismatch, it can be financed from market borrowings (call or term), repos, bills rediscounting and deployment of foreign currency changed into rupee.

Thus: GAP=RSA - RSL

Ratio analysis - Enhance in the productivity of a bank is all the time headed by the composition of assets and liabilities. Hence the following ratios are calculated to identify the optimal mix assets and liabilities of AXIS Bank in relation to financial performance.

- Capital adequacy ratio
- Return on equity
- Asset turn over ratio
- Net interest margin ratio
- Nonperforming asset ratio

Correlation and regression analysis **-** Correlation and regression analysis is applied to study to compare the effect of asset quality, capital adequacy, income diversification and operational efficiency (independent variables) on the financial performance (dependent variable). In order to get a clear picture of the performance of the AXIS Bank. This study taken up ROE which assesses the bank's profitability. ROE displays the power of a bank's management to produce profits from the bank's assets.

$$r = \frac{n\sum xy - \left(\sum x\right)\left(\sum y\right)}{\sqrt{n\left(\sum x^2\right) - \left(\sum x\right)^2}\sqrt{n\left(\sum y^2\right) - \left(\sum y\right)^2}}$$

Limitations of study

- The findings of the study may not be universally accepted.
- This study is largely based on secondary information that may be biased and precise.
- The report presents only 3 successive recent year's data.
- This study examines effect of Asset Liability Management only on financial performance of AXIS Bank.

8. Data analysis and interpretation

A. Gap Analysis

In order to assess the liquidity and interest rate risk, the present study utilizes the GAP analysis, which is an apparatus for overseeing both the liquidity and loan fee chance risk. Usually the banks will have demand deposits, term deposits, barrowings, reserve and surplus, capital and bills payable etc. as RSL and cash, bank balances with RBI, investments, approved securities, loan and mutual funds etc. as Rate Sensitive Assets. These assets and liabilities are exposed to market interest rates. Depending upon the sensitivity of the liabilities and assets to the interest rate changes, they are ordered into various maturity buckets. Maturity bucket is the time intervals (1day, 2-7 days, 8-14 days, 15-30 days, 31 days – 2 months, 2 months – 3 months, 3 months – 6 months, 6 months – 1 year, 1year – 3 years, 3 years – 5 years, over 5 years) in which the estimation of a specific asset or liability is put contingent on its maturity time period. The contrast between RSA and RSL for every time bucket can be called as GAP/MISMATCH. In order to fix this gap or mismatch problem Reserve Bank of India set the prudential limits and suggested the banks to fix internal acceptance points for different maturity gaps relying upon the asset and liability outline.

Table 1
Rate Sensitive Gap as on March 2018 (Rs. in crore)

Maturity Period	Gap	+VE or -VE	Cumulative gap
1 day	26472.49	+VE	26472.49
2 days to 7 days	-22245.4	-VE	4227.09
8 days to 14 days	-415.87	-VE	3811.22
15 days to 30 days	546.86	+VE	4358.08
31 days to 2 months	-14424.45	-VE	-10066.37
2 months to 3 months	-14034.11	-VE	-24100.48
3 months to 6 months	-28216.55	-VE	-52317.03
6 months to 1 year	-46498.42	-VE	-98815.45
1 year to 3 years	25877.9	+VE	-72937.55
3years to 5 years	28251.56	+VE	-44685.99
Over 5 years	36573.51	+VE	-8112.48
Total	-8112.48	-VE	-16224.96

Analysis and interpretation

In the year 2018 the time buckets 1 day, 15 days to 30 days, 1 year to 3 years, 3years to 5 years and over 5 years are showing the positive gap and the remaining time buckets 2 days to 7 days, 8 days to 14 days, 31 days to 2 months, 2 months to 3

Table 2
Cumulative Gap as a percentage of Total Cumulative RSL as on 2018 (Rs. in crore)

Maturity Period	Total Cumulative RSL	Cumulative gap	Cumulative Gap as a % of total Cumulative RSL	Prudential Limit by RBI (%)	Internal tolerance limit (%)
1 day	9306.55	26472.49	284.450	-5	-5
2 days to 7 days	40859.8	4227.09	10.345	-10	-8
8 days to 14 days	50195.01	3811.22	7.592	-15	-10
15 days to 30 days	65903.88	4358.08	6.612	-20	-15
31 days to 2 months	96383.67	-10066.37	-10.444	-40	-25
2 months to 3 months	128875.42	-24100.48	-18.700	-40	-25
3 months to 6 months	183918.84	-52317.03	-28.445	-40	-30
6 months to 1 year	273509.43	-98815.45	-36.128	-40	-35
1 year to 3 years	339191.9	-72937.55	-21.503	-40	-35
3years to 5 years	378827.26	-44685.99	-11.795	-40	-35
Over 5 years	601638.87	-8112.48	-1.348	-40	-35

months, 3 months to 6 months, 6 months to 1 year showing negative gap. In the year 2018 the bank more rate sensitive liabilities than the rate sensitive assets and it indicated interest sensitive ration is valued less than 1 and vice versa. The bank faced the problem in the short term period of the deposits in the bank.

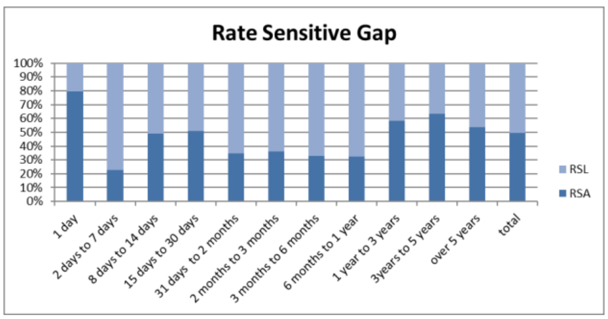

Fig. 1. Chart showing Rate Sensitive Gap for the year 2018

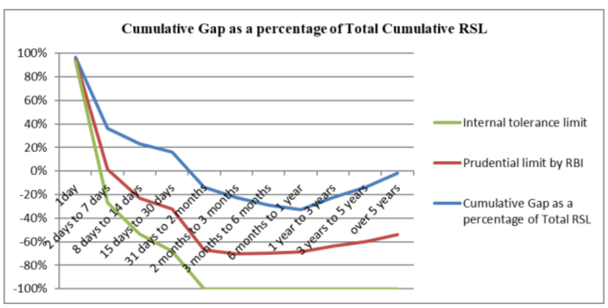

Fig. 2. Chart showing Cumulative Gap as a percentage of Total Cumulative RSL as on 2018

Analysis and interpretation

The cumulative gap is showing both the positive as well as the negative gap in the year 2018. The percentage of cumulative gap of the bank ranges from 1.348% to 284.450% this shows that bank as acting within the prudential limit by RBI and internal tolerance by bank. The bank has negative in the medium term and the long term rate sensitive assets and rate sensitive liabilities. The positive cumulative gap indicated that excess of the assets to reprice in the upcoming years and the negative gap indicates that an excess of deposits to reprice. The Net interest income margin of the bank is increasing that will reflect how the bank effectively and efficiently managed the interest rate exposure in rate sensitive assets and rate sensitive liabilities in the bank.

Table 3
Ratio analysis

	Capital Adequacy Ratio (%)	Return on Equity (%)	Net Interest Margin Ratio (%)	Non-Performing Asset Ratio	Asset Turnover Ratio
2016	15.29	3.87	3.90	1.04	9.58 : 3
2017	14.95	1.73	3.67	1.06	9.35 : 3
2018	16.57	0.13	3.44	3.6	3

B. Correlation and Regression Analysis

Above tools are used to analyse the relationship between Asset Liability Management and Financial Performance of Axis Bank

This part introduces the connections between descriptive variables and their relationship with Axis Bank's operations as indicated by the four independent variables like Capital adequacy, income diversification, asset quality, operational and one dependent return on equity (ROE). The Pearson's correlation co-efficient demonstrates the magnitude and direction of the relationships; whether they are strong positive or negative and strong or weak. Another purpose of correlation is to test whether independent variables are highly correlated with each other or not. The Regression is used to measure goodness of fit of the independent variables in explaining the variations in dependent variable (Axis Bank's financial performance).

Correlation between ROE and CAR: Capital adequacy is negatively correlated to return on equity (ROE). The coefficient

Table 4
Pearson Correlation analysis

	ROE	Capital adequacy	Income diversification	Asset quality	Operational efficiency
ROE	1				
Capital adequacy ratio	-0.691	1			
Income diversification	0.996	-0.749	1		
Asset quality	-0.825	0.978	-0.869	1	
Operational efficiency	0.906	-0.931	0.938	-0.986	1

of determination is -0.691 which depict that the connection could not be highly strong. This explains that the bank will have a power to absorb credit undertakings or any losses. Generally, a bank that depends more on leverage experiences more unstable earnings and this also affects the credit creation and liquidity function of the bank which in turn will affect the performance of the bank. So in order to out-perform, the bank should increase its capital investment on risk free assets like T-bonds and T-bills.

Correlation between ROE and Income Diversification: Income diversification of the bank is positively correlated to return on equity (ROE). The coefficient of determination is 0.996 which indicates that the relationship between income diversification and ROE is very strong. This means income diversification or product mix leads to increased financial performance. This indicates that the bank generates their revenue from different activities in order to have a sound profitability and financial performance.

Correlation between ROE and Asset Quality: Asset Quality of the Axis Bank has negatively correlated with return on equity. The coefficient of determination is -0.825 which indicates that the correlation relationship between asset quality and return on equity is moderately negative it is because of the loan loss reserve of the bank which increased with relation to total loans; this might push the bank's profitability at risk. The reality that loans comprise the largest share of assets in banks that will be used to make income for investors and therefore cast a negative impact on the profitability if the Loan Loss Reserve (LLR) increases.

Correlation between ROE and Operational efficiency: Operational efficiency of the bank is positively correlated to return on equity (ROE). The coefficient of determination is 0.906 which indicates that the relationship between operational efficiency and ROE is very strong. As the relationship is very strong indicates that the bank is efficiently using its assets to generate more revenue. The efficiency of operations saves time cost and increases the production of a bank. Hence the increase in the revenue is increased the value of operational efficiency which is associated with high return on equity (ROE).

Table 5
Regression model summary

R	1.00
R square	1.00
Adjusted R square	65535.00
Std. Error of the estimate	0.00

The regression result of return on equity (ROE) for Axis Bank shows that coefficient of determination (R square) is 1.00; correlation coefficient (R) is 1.00 and adjusted R square is 65535.00 of the entirety variation in the worth of the return on equity is caused by the result of the changes in variables of independent. It point out the financial performance of Axis Bank can be forecasted through different variables of independent used in the study which are Asset quality, income diversification, operational efficiency and capital adequacy. In this result it can be seen that income diversification and operational efficiency has a positive significance on the relationship with return on equity. On the other hand capital adequacy and asset quality has an immaterial impact on return on equity (ROE) of the Axis Bank.

9. Summary of findings

A. *Liquidity risk management*

The Axis Bank is carrying Asset Liability Management guidelines as per the instructions issued by the Reserve Bank of India. This mainly consists of liquidity risk management and interest rate risk management. The bank prepares statement of residual maturity to maintain adequate liquidity without keeping any large idle funds.

While analysing the statement of residual maturity from March 2016 to March 2018 it is found that:

- There is a mismatch in the short term and medium term maturity bucket (i.e. 2-7 days, 8-14 days, 15-30 days, 31- 2 months, 2 months – 3 months, 3 months – 6 months and 6 months to 1year). These are the critical maturity bucket as per Reserve Bank of India norms because short term and medium term liquidity is very important a bank. Here the Axis Bank faced some problem in efficiently managing rate sensitive assets and rate sensitive liabilities in short term and medium term run.
- The residual maturity bucket shows that the bank does not have any negative mismatch in the long term maturity bucket (i.e. 1 year – 3 years, 3 years – 5 years and over 5 years.

B. *Interest rate risk management*

Through interest rate risk management, Axis Bank monitors the effect of various possible changes in the market conditions. For this purpose, the bank prepares the statement of residual maturity the gap analysis is the widely used technique for the measurement of interest rate risk.

While analysing the statement of residual maturity from March 2016 to March 2018 it is found that:

- The statement of residual maturity shows that the Axis Bank have negative cumulative gap or mismatch in the maturity bucket during the last 3 years.
- Expect 2016 the Axis Bank never crossed the internal tolerance limit as well as prudential limit for cumulative mismatch. So the bank benefited from changing interest rates in the last 2 years expect 2016 and not faced problem in management of interest rate risk.

The correlation and regression analysis tools indicate that Asset Liability Management factors have positive relationship with return on equity of the Axis Bank.

10. Conclusion

The study examines that the bank is having very good liquidity in the long term but it is facing liquidity problem for short term and medium term, they need to address the immediate concern of liquidity. But in overall it can be say that the Axis bank is exposed to changing interest rates. This study also examines that whether there is positive correlation between financial performance and Asset Liability management factors. The Asset Liability Management is the very important factor in influencing the financial performance of the banks. The analysis showed that the Asset Liability Management has a significant impact on financial performance. Income diversification being most strong and important factor, it leads to increase in financial performance of the bank. A slight decrease in income diversification could lead to very high reduction in profits. Operational efficiency also plays an important role in influencing financial performance of Axis Bank. The Asset quality and capital adequacy is irrelative as compared to other factors. However, in terms of overall impact Asset Liability Management factors on financial performance of Axis Bank, this factor is not strong as compared to other factors. In general, the performance of the bank is good in terms of profitability with good Asset Liability Management strategy.

11. Suggestions

- The Axis Bank is paying huge amount interest in the last 3 years. In order to reduce the interest expenses, it is suggested to the bank to increase the current account holders. The current account funds can be utilized to increase their income without any payment of interest to the current account holders.
- The bank is facing liquidity in the short term and medium term during the period of the study. To solve this problem, it is suggested to the bank to increase the lending of short term loans and advances maturing within longer time periods. This will help the bank too have sufficient amount of funds to make settlements of deposits and to manage their working capital needs.
- To deal with interest rate risk it is suggested to the bank to re-aligning its assets and liabilities portfolio, so that they can reduce the holding of long duration securities in order to mitigate the interest rate risk.

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