ASSET LIABILITY MANAGEMENT OF MAJOR PRIVATE BANKS IN INDIA

ABSTRACT

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Introduction

Assets Liability Management is an integral part of the planning process of Commercial Banks. It is the most important aspect for the banks to manage Balance Sheet risk, especially for managing of liquidity risk and interest rate risk. Failure to identify the risks associated with business and failure to take timely measures in giving a sense of direction threatens of the institution. Asset Liability Management (ALM) can be defined as the mechanism to analyse the risks faced by a bank due to mismatches between assets and liabilities either due to changes in liquidity position or due to changes in interest rates. Liquidity is an institution's ability to meet its liabilities either by borrowing or converting assets. Apart from liquidity, a bank may also have a mismatch due to changes in interest rates as banks typically tend to borrow short term (fixed or floating) and lend long term (fixed or floating).

Implementing Asset Liability Management in banks is a regulatory requirement in India, as well as an imperative for Strategic Financial Management for Banks. With profit becoming a key - factor, it has now become imperative for banks to move towards integrated balance sheet and its different maturity mix will be looked at profit angle of the bank. A comprehensive ALM policy framework focuses on bank profitability and long term viability by targeting the interest margin (NIM) ratio and Net Economic value (NEV), in subject to balance sheet constraints, significant among these constrain are maintaining credit quality, meeting liquidity needs and obtaining sufficient capital.

Objectives of the study

Asset and liability management is the practice of managing the assets and liabilities of the firm. It is a dynamic process of planning, organizing, controlling of assets and liabilities their volumes, mixes maturities, yields, & costs in order to maintain liquidity. ALM is mainly done to know the profitability and liquidity position of the organization. The study focuses on the rate sensitive assets and rate sensitive liabilities of the banks and Net Interest income of the selected Private Sector Banks in India.

The following are the objectives of the study:

- *To analyse the rate sensitivity of Assets and Liabilities of selected private sector banks*
- *To compare and contrast the Net Interest Margin of the selected Banks*
- *To analyse the effectiveness of Asset Liability management of the selected private sector banks from the Net Interest margin figures.*

Materials and method for study

The research drew upon a combination of primary and secondary data sources for its findings. Informal conversations with bank personnel provided the primary data used in this study. The financial statements of the banks available from the respective bank's official websites and published data on financial performances were used as the secondary data. The period of the study was from financial years 2010-2011 to 2019-2020.

Conclusion:Asset Liability Management is a key driver of a company's profitability and long term sustainability. ALM models enable institutions to measure and monitor risk, and provide suitable strategies for their management. The study reveals the need to have periodic reviews of bank policies conducted by the bank's board of directors, management, and ALCO committee, with consideration given to external economic conditions, interest rate shifts, and overall risk. The banks need to keep an eye on these things at regular intervals to head off any potential problems

1. INTRODUCTION

1.1 OVERVIEW

1.1.1 Focus on some key ALM activities

The most effective ALM departments develop systems for managing both risks and returns. It is important to create proper KPIs, define what you want to achieve from your efforts, and find the people with the correct combination of talents and risk tolerance. Both the bank's risk tolerance and the reality of the market it serves must inform the strategy it employs.

✓ **Mismatch Management and Performance Measurement**

A bank must determine whether it will adopt a conservative stance towards ALM risks or if it will be more proactive and aim for better long-term profitability and a growth in economic value. Regardless of the path taken, a bank must appreciate the need of devoting sufficient talent and assets to the endeavour. If this isn't done, the business might suffer from bad management, leading to fluctuations in the company's core earnings/margin, economic value, and the outcome of economic activities.

✓ **Funds Transfer Pricing (FTP)**

The bank's ALM system is not complete without the funds transfer pricing system. It paves the way for risk-free corporate operations and lays the groundwork for open pricing and product details. FTP was developed to help find interest margins and eliminate interest rate and financing or liquidity risk. It essentially fixes the margin on loans and deposits by applying a transfer rate to each asset and liability that takes into account their individual repricing and cash flow profiles. The ALM section benefits because it is able to centralise and control interest rate mismatches and because business performance is separated into separate portfolios to which specific measurements may be applied. As an additional benefit, it helps divide labour fairly among the many divisions of an organisation and the treasury.

✓ **Liquidity Management**

ALM is primarily concerned with the balance sheet's inherent financing liquidity risk when it comes to liquidity issues. Sub-domino prime's effect has put the maturity transformation process, through which long-term mortgages and other securitized assets are funded with short-term liabilities, under the spotlight. Industry and regulators alike missed the significance of finance and liquidity as causes of the crisis, and the reliance on short-term capital bred inherent faults in the business model. By ALM, banks may evaluate the health of their financing and liquidity sources. Banks must manage liquidity, interest rate, and currency mismatches as a natural consequence of engaging in maturity transformation to suit the needs of their clients. Before the latest crises, ALM units only analysed and "controlled" liquidity within predetermined boundaries. The recent events have shown that liquidity consequences may be catastrophic to a bank, demonstrating the seriousness of ineffective management.

The Pillars of ALM:

Broadly, the process of ALM reset on the following three important pillars:

- ALM information system: This comprises of availability of information, accuracy and sufficiency.
- ALM organisation: Setting up of asset ability management committee and organisation setup at different levels.
- ALM process: Management of liquidity risk, interest rate risk, market risk trading risk, capital planning and profit planning

2. LITERATURE REVIEW

Bhati, Shyam & De Zoysa, Anura &itaree, Wisuttorn (2021)[1]: When it comes to bank liquidity, India is one of the few nations that have a mandated regulatory policy. Banks of various types will be affected differently by these rules. The primary goal of this research is to compare private and public sector banks in India by analysing their liquidity drivers and then

evaluating the efficacy of their respective liquidity management approaches. The study's results indicate that, like their private sector counterparts, public sector banks depend on asset-based liquidity. The research indicated that various explanatory factors, including call rate, discount rate, cash reserve ratio, capital to total assets, foreign currency reserve with RBI, and size, were significantly related to liquidity for both private and public sector banks.

SalvinSurjith FP and N. Sathyanarayana[2]: This paper examines management of asset-liability in ICICI bank. The main objective is, to understand the problems involved in maintaining and managing assets and liabilities. The present study has been conducted on the basis of secondary data and is descriptive in its nature. The study period was confined to a period of five financial years from 2008-09 to 2012-13. To test hypothesizes the correlation was applied with the help of SPSS.21 Software package. The net profit has been maintained in the increasing rate which shows that the company has performing well during the study period. From the study it is clear that ICICI looks forward to generate a more favourable service in the near future.

Dr. Manjula Jain, Dr. Monica.C. Singh and Amitabh Pandey[3]: The development of the banking system is always associated with the contemporary changes in the economy.With advanced technologies tempting banks to enter every business that had been thrown open the banks are now moving towards universal banking concepts, while adding new channels and a series of innovative product offerings catering to various segments at an attractive price. This research aims to find out the status of Asset Liability Management in the commercial banks working in India with the help the available secondary data on the subject matter. The paper discusses the various risks that arise due to financial intermediation and by highlighting the need for asset-liability management; it discusses the Gap Model for risk management.

Dr. Baser Narayan[4]: The study attempts to evaluate the changing perspectives of the banks in identifying and facing the risks and maintaining Asset Quality so as to ensure profitability with the help of ALM techniques. It also tries to assess the effectiveness of Asset Liability Management as a strategy vital to the progress and development of the Indian banking sector in

particular and the economy in general. The study indicates that Asset-Liability Management (ALM) was a comprehensive and dynamic framework for measuring, monitoring and managing the market risk of a bank. In Indian context, the banking industry did not feel the importance of the ALM system till the interest rate was regulated by RBI.

Dr. Anurag B Singh and Ms. Priyanka Tandon[5]: This paper discusses issues in asset liability management and elaborates on various categories of risk that require to be managed. It examines strategies for asset-liability management from the asset side as well as the liability side, particularly in the Indian context. It also discusses the specificity of financial institutions in India and the new information technology initiatives that beneficially affect asset-liability management.It has been found in the study that ALM is a successful tool for risk management.

3. RESEARCH METHODOLOGY

3.1 Research Design

A research design is a plan that specifies the source and types of information relevant to the research problem. It is a strategy specifying which approach will be used for gathering and analyzing the data. The research design used in this study is analytical research design.

3.2 Data Sources

The research drew upon a combination of primary and secondary data sources for its findings. Informal conversations with bank personnel provided the bulk of the data used in this study. Secondary sources mostly the financial statements of the selected private sector banks, RBI guidelines, related documents, books, journals, annual operation reports, magazines, articles, published and unpublished official records of bank, and other websites, all contributed to the data set used in this research.

3.3Tools of Data Analysis

MS Excel-2013 was used for encoding and editing the gathered data. Methods such as t-tests, F-tests, correlation analysis, regression analysis, and structural equation modelling were used to examine data sets collected. Duration gap analysis was performed in this study to further investigate the ALM.

3.4 Period of Study and Banks selected for the study

The study was based on the financial data of seven major private sector new generation banks in India. The following banks were selected for the study – HDFC Bank, ICICI Bank, Axis Bank, Kotak Mahindra Bank (KM Bank), IndusInd Bank, Yes Bank and Development Credit Bank (DCB Bank). The study was conducted for a period of 10 years from financial years 2010-2011 to 2019-2020.

4. RESULTS

4.1 ASSET LIABILITY MANAGEMENT

Periodically, the bank should take steps to reduce the liquidity and credit risks associated with its business activities. The bank's balance sheet could be negatively impacted if the risk is not identified. ALM is one method used to evaluate this kind of threat. It's a method for assessing the imbalance between assets and debts. By utilising this approach, the bank will be able to reduce the extent to which its assets and liabilities are mismatched.

The effect of interest rate movements on the financial condition of a bank is called interest rate risk. Since, it has a direct impact on the profitability of a bank, it becomes a significant area for the management of a bank to focus on the methods to manage and mitigate this risk. The earnings perspective and the economic value perspective are the two most common perspectives of assessing a bank's exposure to interest rates.

Table 1 Rate Sensitive Assets (Rs. in crores)

Year	AXIS Bank	Indices	DCB Bank	Indices	ICICI Bank	Indices	IndusIndBank	Indices	KM Bank	Indices	YES Bank	Indices	HDFC Bank	Indices
2010-11	43841.6	100.0	3159.2	100.0	217710.5	100.0	14720.4	100.0	96581.8	100.0	3757.2	100.0	63455.2	100.0
2011-12	63773.6	145.5	4505.2	142.6	287123.4	131.9	16975.9	115.3	78512.2	81.3	9362.9	249.2	77509.6	122.1
2012-13	93366.2	213.0	6203.4	196.4	337070.4	154.8	19425.0	132.0	77342.4	80.1	14524.0	386.6	112820.4	177.8
2013-14	127887.1	291.7	4895.8	155.0	321369.2	147.6	23854.1	162.0	60646.0	62.8	19520.1	519.5	157700.6	248.5
2014-15	160317.9	365.7	5477.6	173.4	302098.4	138.8	30952.4	210.3	46450.8	48.1	32403.1	862.4	184438.2	290.7
2015-16	214399.5	489.0	6576.7	208.2	351051.9	161.2	39716.5	269.8	33287.7	34.5	53192.5	1415.7	230912.0	363.9
2016-17	262951.6	599.8	7802.2	247.0	413287.7	189.8	49635.9	337.2	25735.5	26.6	65746.0	1749.9	292902.9	461.6
2017-18	310703.5	708.7	9944.8	314.8	461643.0	212.0	63974.8	434.6	24694.2	25.6	89975.6	2394.7	351334.2	553.7
2018-19	343615.2	783.8	11774.4	372.7	515724.5	236.9	76664.8	520.8	17786.0	18.4	96583.3	2570.6	423951.3	668.1
2019-20	413425.9	943.0	14935.6	472.8	574102.1	263.7	93647.6	636.2	9204.1	9.5	122155.1	3251.2	531955.0	838.3
Mean	203428.2	464.0	7527.5	238.3	378118.1	173.7	42956.7	291.8	47024.1	48.7	50722.0	1350.0	242698.0	382.5
SD	126303.3	288.1	3664.2	116.0	111048.6	51.0	27361.2	185.9	29773.8	30.8	41518.8	1105.0	155594.1	245.2
CV(%)	62.1		48.7		29.4		63.7		63.3		81.9		64.1	
AGR(%)	2.3		5.7		13.8		3.8		-19.8		0.7		2.8	
't'Value	22.9		7.1		8.7		10.2		-14.5		13.3		13.0	
'p'Value	0.000**		0.000**		0.000**		0.000**		0.000**		0.000**		0.000**	

A maximum of 943.0 for rate-sensitive assets have been set at AXIS Bank, 472.8 at Development Credit Bank, 263.7 at ICICI Bank, 636.2 at IndusInd Bank, 3251.2 at YES Bank,

and 838.3 at HDFC Bank, all from a base year level of 100. But, at Kotak Mahindra Bank, rate sensitivity has gone from 100 in the base year to 9.5 now. For most of the sampled financial institutions, the rate-sensitive asset exhibits a rising tendency throughout the research period. Rate-sensitive assets had a mean index of 464.0 at AXIS Bank, 238.5 at Development Credit Bank, 173.7 at ICICI Bank, 291.8 at IndusInd Bank, 487.7 at Kotak Mahindra Bank, 1350.0 at YES Bank, and 382.5 at HDFC Bank. With the exception of Kotak Mahindra Bank, a number of private sector banks have seen a decline from the base year level in the mean index of rate-sensitive assets. AXIS Bank has the highest co-efficient of variation of rate-sensitive assets at 62.1 percent, followed by Development Credit Bank at 48.7 percent, ICICI Bank at 29.4 percent, IndusInd Bank at 63.7 percent, Kotak Mahindra Bank at 63.3 percent, YES Bank at 81.9 percent, and HDFC Bank at 64.1 percent. This data reveals that ICICI Bank's rate-sensitive assets are less stable than YES Bank's. At the time period of this analysis, the other banks' rate sensitivity assets are roughly average.

H01: There is no significant difference between the years and between the banks in the rate sensitivity asset of the selected new private sector banks.

Table 2 Analysis of Variance - Rate Sensitive Assets

Sources of Variance	Sum of Squares	Degrees of freedom	Mean Square variance	F Ratio	'p'Value
Betweenthe Years	2.43	9	2.7	5.593	0.000 **
Betweenthe Banks	1.15	6	1.91	39.719	0.000 **
Residual	2.6	54	4.82		
Total	1.65	69			

Table 2Analysis of Variance results demonstrate that there is a considerable difference in the average rate-sensitive assets of private sector banks between years and across banks, with a F ratio of 5.593 and 39.719, respectively, being more than the table value of 2.059 and 2.272 at the 1% level. So, in the selected new-generation private-sector banks, the null hypothesis is rejected both across time and across institutions.

Table 3 Rate Sensitive Liabilities

Year	AXIS Bank	Indices	DCB Bank	Indices	ICICI Bank	Indices	IndusInd Bank	Indices	KM Bank	Indices	YES Bank	Indices	HDFC Bank	Indices
2010-11	42794.5	100.0	3253.8	100.0	203605.1	100.0	15541.3	100.0	87010.0	100.0	3375.1	100.0	60357.3	100.0
2011-12	63981.2	149.5	4569.6	140.4	281766.2	138.4	18237.3	117.3	71967.9	82.7	9087.7	269.3	71113.3	117.8
2012-13	93250.3	217.9	6501.7	199.8	310079.5	152.3	20132.9	129.5	71439.4	82.1	14259.4	422.5	105247.5	174.4
2013-14	127559.6	298.1	4992.4	153.4	285671.5	140.3	23966.7	154.2	55132.0	63.4	18358.5	543.9	145497.4	241.1
2014-15	158469.8	370.3	5290.8	162.6	296280.2	145.5	31644.5	203.6	40984.9	47.1	31547.7	934.7	180320.1	298.8
2015-16	215505.7	503.6	6470.9	198.9	335156.4	164.6	39890.8	256.7	30027.0	34.5	52629.8	1559.3	222980.5	369.4
2016-17	254176.0	593.9	7459.0	229.2	395664.9	194.3	51043.6	328.4	21549.0	24.8	63308.2	1875.7	270553.0	448.3
2017-18	296564.7	693.0	9889.5	303.9	437955.1	215.1	63576.3	409.1	21542.9	24.8	87877.7	2603.7	329253.6	545.5
2018-19	331235.5	774.0	11185.3	343.8	486672.7	239.0	75264.3	484.3	16099.8	18.5	95506.3	2829.7	406776.5	673.9
2019-20	402200.2	939.8	13772.9	423.3	533980.1	262.3	94752.4	609.7	8175.2	9.4	117396.3	3478.3	496009.2	821.8
Mean	198573.7	464.0	7338.6	225.5	356683.2	175.2	43405.0	279.3	42392.8	48.7	49334.7	1461.7	228810.8	379.1
SD	121184.0	283.2	3303.6	101.5	103724.1	50.9	27073.4	174.2	27401.6	31.5	40406.5	1197.2	146339.5	242.5
CV(%)	61.0		45.0		29.1		62.4		64.6		81.9		64.0	
AGR(%)	2.6		6.7		14.0		4.0		-19.5		0.5		2.8	
't'Value	24.0		6.9		9.5		9.9		-13.5		13.5		13.6	
'p'Value	0.000**		0.000**		0.000**		0.000**		0.000**		0.000**		0.000**	

According to the data in the table, the rate sensitivity of liabilities has risen from a base year of 100 to a maximum of 939.8 for AXIS Bank, 423.3 for Development Credit Bank, 262.3 for ICICI Bank, 609.7 for IndusInd Bank, 3478.3 for YES Bank, and 821.8 for HDFC Bank. Kotak Mahindra Bank, on the other hand, has seen its rate-sensitive liability fall from 100 in the base year to 9.4 during the last year under study.Except for Kotak Mahindra Bank, the rate-sensitive asset class exhibits a rising trend across the research period. AXIS Bank has the highest rate sensitivity liability index at 464.0, followed by Development Credit Bank at 225.5, ICICI Bank at 175.2, IndusInd Bank at 279.3, Kotak Mahindra Bank at 48.7, YES Bank at 1461.7, and HDFC Bank at 379.1. With the exception of Kotak Mahindra Bank, all other banks have seen an increase from the base year level in the mean index of rate-sensitive liabilities. AXIS Bank has the highest co-efficient of variation of rate-sensitive liability at 61.0 percent, followed by Development Credit Bank at 45.0 percent, ICICI Bank at 29.1 percent, IndusInd Bank at 62.4 percent, Kotak Mahindra Bank at 64.6 percent, YES Bank at 81.9 percent, and HDFC Bank at 64.0 percent. This data reveals that ICICI Bank's rate-sensitive liability is less stable than YES Bank's.

The rate-sensitivity of the liabilities of the other private banks in the sample is roughly average. All private banks have rate-sensitive liabilities growing at a positive annual rate. During the time period under consideration, private sector banks' rate-sensitive liabilities grew at a rate that was statistically significant: 1% annually. Table 3 reveals that, with the exception of Kotak Mahindra Bank, a small subset of private sector banks exhibit an upward trend in the mean value index of their rate-sensitive liabilities from the base year level. ICICI Bank's rate-sensitive liability is also more stable than YES Bank's, which is highly variable. During the study period, rate sensitivity of liabilities at all other private banks was low. For the purpose of utilising the Anova test to investigate the statistically significant correlation between the years and between the banks, the following hypothesis has been formulated.

H02: There is no significant difference between the years and between the banks in the rate sensitivity liabilities of the selected private sector banks.

Table 4 Analysis of Variance- Rate Sensitive Liabilities

SourcesofVariance	Sum of Squares	Degreesoff reedom	Mean Squarevariance	F Ratio	'p'Value
BetweentheYears	2.2	9	2.44	5.725	0.000**
BetweentheBanks	1.03	6	1.71	40.086	0.000**
Residual	2.3	54	4.26		
Total	1.48	69			

Table 4 Analysis of Variance reveals that there is a statistically significant difference in the average rate sensitivity of private sector banks between years and between institutions, with the F ratio value being 5.725 and 40.086 being greater than the table value 2.059 and 2.272 at the 1% level of significance. So, in the chosen private sector banks, we reject the null hypothesis both across time and across institutions.

Table 5 Interest Rate Sensitivity Ratio

Year	AXIS Bank	Indices	DC Bank	Indices	ICICI Bank	Indices	IndusIn dBank	Indices	KM Bank	Indices	YES Bank	Indices	HDFC Bank	Indices
2010-11	1.02	100.00	0.97	100.00	1.07	100.00	0.95	100.00	1.11	100.00	1.11	100.00	1.05	100.00
2011-12	1.00	97.29	0.99	101.54	1.02	95.30	0.93	98.27	1.09	98.28	1.03	92.55	1.09	103.67
2012-13	1.00	97.73	0.95	98.27	1.09	101.66	0.96	101.86	1.08	97.53	1.02	91.50	1.07	101.96
2013-14	1.00	97.86	0.98	101.00	1.12	105.21	1.00	105.08	1.10	99.10	1.06	95.51	1.08	103.10
2014-15	1.01	98.75	1.04	106.63	1.02	95.36	0.98	103.27	1.13	102.10	1.03	92.27	1.02	97.29
2015-16	0.99	97.11	1.02	104.68	1.05	97.96	1.00	105.12	1.11	99.87	1.01	90.79	1.04	98.50

2016-17	1.03	100.98	1.05	107.73	1.04	97.69	0.97	102.67	1.19	107.59	1.04	93.29	1.08	102.98
2017-18	1.05	102.27	1.01	103.57	1.05	98.58	1.01	106.24	1.15	103.27	1.02	91.98	1.07	101.50
2018-19	1.04	101.26	1.05	108.42	1.06	99.10	1.02	107.54	1.10	99.52	1.01	90.84	1.04	99.13
2019-20	1.03	100.34	1.08	111.69	1.08	100.55	0.99	104.35	1.13	101.43	1.04	93.47	1.07	102.01
Mean	1.02	99.36	1.01	104.35	1.06	99.14	0.98	103.44	1.12	100.87	1.04	93.22	1.06	101.01
SD	0.02	1.84	0.04	4.25	0.03	2.96	0.03	2.84	0.03	2.93	0.03	2.76	0.02	2.16
CV(%)		1.86		4.08		2.98		2.75		2.91		2.96		2.14
AGR(%)		872.75		308.32		-6.03		580.77		196.48		-72.39		-34.84
't'Value		2.157		4.703		-0.076		3.477		1.457		-1.675		-0.381
'p'Value		0.063[NS]		0.002**		0.942[NS]		0.008**		0.183[NS]		0.132[NS]		0.713[NS]

Table 5 shows the Interest Rate Sensitivity Ratio of selected private sector banks in India throughout the years 2010-11 to 2019-20. The Interest Rate Sensitivity Ratiohas risen from its base year level of 100 to a maximum of 102.27 in AXIS Bank, 111.69 in Development Credit Bank, 105.21 in ICICI Bank, 107.54 in IndusInd Bank, 107.59 in Kotak Mahindra Bank, and 103.67 in HDFC Bank. Nonetheless, YES Bank's Interest Rate Sensitivity Ratio has dropped from 100 in the base year to 90.79 today.

The Interest Rate Sensitivity Ratio demonstrates an erratic pattern throughout the time frame of this analysis. AXIS Bank has an Interest Rate Sensitivity Ratio index of 99.36, while Development Credit Bank's is 104.35, ICICI Bank's is 99.14, IndusInd Bank is 103.44, Kotak Mahindra's is 100.87, YES Bank's is 93.22, and HDFC Bank's is 101.01. For the sampled private

sector banks, the trajectory of the mean index of interest sensitivity ratio varies from the level of the base year.

AXIS Bank has the lowest interest-sensitive variance at 1.86 percentage points, followed by Development Credit Bank at 4.08 percentage points, ICICI Bank at 2.98 percentage points, IndusInd Bank at 2.75 percentage points, Kotak Mahindra Bank at 2.91 percentage points, YES Bank at 2.96 percentage points, and HDFC Bank at 2.14 percentage points. This data reveals that Development Credit Bank's interest sensitivity ratio is more stable and consistent than AXIS Bank's.

Throughout the study period, the interest-sensitive ratio of the remaining private banks is moderate. With the exception of ICICI Bank, Yes Bank, and HDFC Bank, all private sector banks have a positive Annual Growth Rate of Interest Rate Sensitivity Ratio. Apart for the Development Credit Bank and the IndusInd Bank, no private sector bank has a statistically significant sensitivity ratio to interest rate growth.

H03: There is no significant difference between the years and between the banks in the Interest Rate Sensitivity Ratio of the selected private sector banks.

Table 6 Analysis of Variance of Interest Rate Sensitivity Ratio

Sourcesof Variance	Sum of Squares	Degrees of freedom	Mean Square variance	FRatio	'p'Value
BetweentheYears	0.012	9	0.001	1.588	0.142 NS
BetweentheBanks	0.121	6	0.020	24.177	0.000 **
Residual	0.045	54	0.001		
Total	0.177	69			

Table 6Analysis of Variance shows that, at the 1% level, the F ratio of 1.588 is less than the table value of 2.059, while the F ratio of 24.177 is more than the table value of 2.272, indicating a statistically significant difference between the years but not between the banks. Thus, for the selected private sector banks, the null hypothesis is accepted for the years but denied for the banks.

Table.7 Net Interest Income Ratio (NII)

Year	AXIS Bank	Indices	DC Bank	Indices	ICICI Bank	Indices	IndusIndBank	Indices	KM Bank	Indices	YES Bank	Indices	HDFC Bank	Indices
2010-11	1078.2	100.0	75.2	100.0	4187.1	100.0	315.1	100.0	354.9	100.0	85.5	100.0	2545.8	100.0
2011-12	1567.1	145.3	119.6	159.0	6635.8	158.5	271.4	86.1	654.9	184.5	171.4	200.5	3709.6	145.7
2012-13	2585.4	239.8	186.1	247.5	7304.1	174.4	340.4	108.0	1225.8	345.4	336.7	394.0	5227.9	205.3
2013-14	3686.2	341.9	197.3	262.3	8366.6	199.8	459.0	145.7	1518.5	427.8	511.2	598.2	7421.2	291.5
2014-15	5004.5	464.1	142.0	188.8	8114.4	193.8	886.4	281.3	1858.1	523.5	788.0	922.0	8386.6	329.4
2015-16	6563.0	608.7	189.1	251.5	9016.9	215.4	1376.5	436.9	2097.6	591.0	1246.9	1459.1	10543.1	414.1
2016-17	8017.8	743.6	227.7	302.8	10734.2	256.4	1704.2	540.9	2512.5	707.9	1615.6	1890.5	12296.8	483.0
2017-18	9666.3	896.5	284.4	378.3	13866.4	331.2	2232.9	708.6	3205.7	903.2	2218.8	2596.3	15811.1	621.1
2018-19	11951.6	1108.4	368.4	489.9	16475.6	393.5	2890.7	917.4	3720.1	1048.1	2716.3	3178.4	18482.6	726.0
2019-20	14224.1	1319.2	508.2	675.9	19039.6	454.7	3420.3	1085.5	4223.7	1190.0	3487.8	4081.3	22395.7	879.7

Mean	6434.4	596.76	229.8	305.62	10374.1	247.77	1389.7	441.04	2137.2	602.14	1317.8	1542.02	10682.0	419.59
SD	4483.1	415.78	128.3	170.61	4682.1	111.82	1145.6	363.59	1282.7	361.40	1168.9	1367.79	6561.3	257.73
CV(%)	69.7		55.8		45.1		82.4		60.0		88.7		61.4		
AGR(%)	1.62		3.75		6.17		1.86		1.86		0.46		2.80		
't'Value	16.896		5.731		8.981		9.767		23.32		10.783		15.487		
'p'Value	0.000**		0.000**		0.000**		0.000**		0.000**		0.000**		0.000**		

From the data in the table 7, it can be seen that the net interest income of the banks studied has increased from the base year level of 100 to a maximum of 1319.2 for AXIS Bank, 675.9 for Development Credit Bank, 454.7 for ICICI Bank, 1085.5 for IndusInd Bank, 1190.0 for Kotak Mahindra Bank, 4081.3% for YES Bank, and 879.7 for HDFC Bank. Over the time frame of this analysis, net interest income increased for all the seven banks under study. AXIS Bank has a mean index of 596.76 for net interest income, while Development Credit Bank is at 305.62, ICICI at 247.77, IndusInd at 441.00, Kotak Mahindra at 602.14, YES at 1542.00, and HDFC at 419.59. The selected private sector bank's mean index of Interest Rate Sensitivity Ratio is on an upward trend from the base year level. Net interest income is most volatile for Yes Bank at 88.7%,IndusInd Bank at 82.4%, AXIS Bank at 69.7%,HDFC Bank at 61.4%, Kotak Mahindra Bank at 60% followed by Development Credit Bank at 55.8% and ICICI Bank at 45.1%.

5. CONCLUSION

Asset Liability Management is a key driver of a company's profitability and long term sustainability. ALM models enable institutions to measure and monitor risk, and provide suitable strategies for their management. The study reveals the need to have periodic reviews of bank policies considering external economic conditions, interest rate shifts, and overall risk. The banks need to keep an eye on these things at regular intervals to head off any potential problems. From the banks under study, it can be seen that the net interest income of the banks studied has increased from the base year level.The selected private sector bank's mean index of Interest Rate Sensitivity Ratio is also on an upward trend from the base year level.

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